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RURAL WOMEN AND ENVIRONMENTAL DEGRADATION: THE CASE OF ASEKO- BUTA BER KEBELE IN ARSI ZONE

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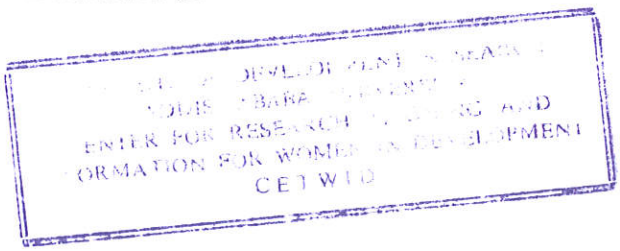

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Rural Women and Environment Degradation: The Case of Aseko Buta-Ber Kebele, Arsi Zone

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TABEL OF CONTENTS

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List of Tables

List of Acronyms

AAU - Addis Ababa University

CSA - Central Statistical Authority

EPA - Environmental Protection Authority

FAO - Food and Agricultural Organization

FGD - Focus Group Discussion

Kms - Kilometers

NGO - Non- Governmental Organization

UN - United nations

UNDP - United Nation Development Programme

UNEP - United Nation Environment Programme

UNESCO - United Nation Educational, Scientific and Cultural Organization

UNICEF - United Nation International Children Emergency Fund

UNIFEM - United Nation Development Fond for Women

WHO - World Health Organization

Abstract

The purpose of this study was to look into the impacts of water resource degradation and deforestation on the life of rural women. The study attempts to explore the extent of the problem on women, investigate the change in women's life style and identify the coping mechanisms adopted by rural women to cope with the problem they encountered.

The target population of the study is rural women living in Aseko- Buta Ber kebele. In-depth interviews, key informant interviews, Focus Group Discussions and structured interview are employed to collect data and both qualitative and quantitative analysis has been carried out.

The study has found that women are forced to wait an average of 4-6 hours to get turn at the water point and are forced to travel longer distance an average of six kilometers in search of new sources. The study further reveals that, fetching water from distant source and carrying heavy loads exposed women to higher health risks. Common problems repeatedly mentioned are headache, chest and back pain and other complications. The findings show that the depletion of forest resources has forced women to travel longer distances in search of fuelwood. They travel an average 9-25 kms in search of fuelwood, 2-3 times per week, and to switch to inferior quality fuel. Women spent more time in the collection of fuel and it requires their scarce time and limited energy .The study has also revealed that in the process of gathering fuelwood and water women have been raped and abducted.

The study found that the participants employed a variety of coping mechanisms to cope up with water and fuelwood scarcity. The copings mechanisms most often used by the women are traveling long distance to fetch water and more efficient utilization of water. Using dung and waste materials is also the predominant means of coping mechanism of the women for fuelwood scarcity.

Environmental degradation has adverse implications for women and girls in the area. The main reason for this is that it is usually women who are the main collectors and user of water, fuelwood and animal feed. This specific study has found that in Aseko- Buta Ber kebele the facts of forest and water resource degradation are extremely severe: shockingly, it has adverse class and gender effects.

CHAPTER ONE

1 Introduction

1.1 Background of the Study

Ethiopia is Africa's tenth largest country, covering a land area of 1.1 million square kilometers (EPA, 2002). According to the 1994 census, Ethiopia has an estimated population of 79 million inhabitants. The society is predominantly agrarian where 85% of the population lives in rural areas out of which women constitutes about 50 percent. Population projections indicated that the country's population would grow to 86 million by 2010 (CSA, 1999). World Bank (2006) reported that Ethiopia belongs to the group of least developed countries, and has an annual per capita income of US $ 170, with two thirds of the population unable to afford even the most basic necessities. One of the major challenges facing the country in striving for development is environmental degradation, manifested in the degradation of land, water resources as well as loss of biodiversity (Damel, 2001).

Over the last couple of decades, the population of the country increased so much that the population carrying capacity of the environment decreased, climatic conditions became erratic, both man made and natural disasters ravaged the country. This massive environmental degradation due to natural factors, unwise use of its natural resources, unsound ecological practices and rapid population growth has an adverse impact on the over all development of the country (Muluneh, 2003).

Renewable natural resources, i.e. land, water, forests and trees as well as other forms of biodiversity, which meet the basic needs for food, water, clothing and shelter, have now deteriorated to a low level of productivity in most parts of the country (EPA, 1997). It has become common fact that the ongoing natural resource degradation is desperately affecting the majority of the rural poor whose livelihood is entirely dependent on these resources.

Men and women are exposed to different environmental stresses in different ways. In Third World Countries, women are largely responsible for survival tasks that are essential for daily life. They grow the food crops, provide water, gather fuel and perform most of the other works that sustain the family. As the daily user of the natural resources, women are often the hardest hit by environmental degradation (Bruijn, Halsema, ,& Hombergh, 1997).

Women are doubly affected by environmental degradation, first because of poverty, and second because of their role and status in the traditional patriarchal society. In such a setting, environmental degradation has placed a disproportionate burden on women, largely because of their social and economic role, which expose them to a greater number of environmental hazards (Arne, & Gunner, 2005).

According to Aster (2003), traditionally, the Ethiopian women are primary responsible for household chores that keep them inside the house for most of the time. As they prepare food for the household, they are often exposed to high level of smoke and dust for long period of time that reduces their life expectancy more than that of men. The responsibility of undertaking household chores, caring for children and elderly etc significantly reduce women's time for other activities, as well as exposes them to health risks that the men are not exposed to the same frequency. Moreover girls often help their mothers in household chores, depriving them of valuable time for education.

1.2 Statement of the Problem

In recent years, environmental degradation has become one of the major threats of the world population. The principal victims of environmental degradation are the most under privileged people and the majority of these are women. Their problems and those of the environment are very much interrelated (Dankelman and Davidson, 1988).

The degradation of critical resources (land, forest and water) adversely affected the life of rural women. As Professor Wangari Mathain has stated when the rural environment

becomes unsustainable, it is the women whose lives get disrupted more. The negative outcomes of the loss of natural resources reflect often heavily on women, adding to their responsibilities and multiple roles in families and communities (Mathain, W. cited in Franks, 2007).

The links between women and the environment have only recently begun to be recognized by environmentalists, development specialists and those engaged in raising the status of women. Scholars have become increasingly concerned about impacts of environmental degradation on women. Those studies give us a global picture and very rarely case studies from across Africa. But the issue of women and environment are differing through place and time.

The existing literature on environmental degradation in Ethiopia, seem to neglect or de-emphasize the impacts on women. The researcher intends to obtain vital information relating to the environment, investigating women's views towards their surroundings. Most of the account on such issues are very patchy and lack seriousness and do not give us a full picture on the situation of women in the countryside.

The views of rural women about the effects of environmental degradation on their every day life have not been sufficiently documented. Thus, there continues to be large knowledge gaps in our understanding of what changes occur in the rural women's lives and calling for a comprehensive research work.

The main purpose of this paper is to fill the gap by assessing the effects of environmental degradation (loss of forest and scarcity of water) on rural women by taking the case of Aseko *Woreda* (a term given to provincial administrative unit, which is equivalent to a district).

1.3. Research Questions

1. To what extent does environmental degradation affect rural women's life?
2. What major effects do environmental degradation bring about on the day-to-day activities of rural women?

3. What are the coping mechanisms developed by rural women to address the problem?
4. What should be done to minimize the impacts of environmental degradation on rural women?

1.4 Objective of the Study

The general objective of this paper is to look into the overall impacts of environmental degradation on the lives of rural women.

Specific Objectives

1. To explore the extent of the problem that environmental degradation exerts on women's life.
2. To investigate the change in the women's social life as a result of deforestation and water resource degradation.
3. To identify the coping mechanisms adopted by rural women to cope with the problem.
4. To suggest possible recommendations given to mitigate the adverse impacts of environmental degradation on rural women.
5. To contribute to the ongoing dialogue on women and environment by looking into the issue specifically in the context of water and forest resource depletion.

1.5 Significance of the Study

In recent years, some studies have been published on environment and women with a more global context and few studies have been conducted at regional and national levels. But many scholars argue that local level study gives a clear picture of the problem on the ground. Such region-specific studies are of paramount importance to identify the specific impacts of environmental degradation on women.

It is assumed that this study will provide a brief account about the impacts of environmental degradation on the lives of rural women. As there is not much studies on the women of the study area, it will contribute a little by serving as a background study for

those who are interested to make further research on the area. It also contributes to the recognition of the problems and helps to design and propose appropriate development intervention mechanisms for those women living in over depleted environment.

1.6 Delimitation of the study

This study is delimited based on the following two reasons; first, although all forms of environmental degradation affect the lives of women, the extent and the degree of their impact differs from one another. According to various researchers in the field, deforestation and water degradation are believed to be the major problems that critically affect the survival of human beings (Demel, 2001). In order to make the study specific and manageable, it is delimited to the impacts of deforestation and water resource degradation. Second, the problem of deforestation and water resource degradation affect the entire area of the Woreda however, for the sake of in-depth and manageable study, this study is delimited to one kebele (the smallest administrative unit of local government next to woreda).

1.7 Limitation of the Study

The study is limited both in scope and time in that data collection has not covered the whole target population. The study was based on small samples and limited data. It would have been better if, different institutional plays, men and women from different social status have been included. Above all, the research would have been more comprehensive and conclusive if it had been carried out at a woreda level. However, it was limited to Aseko- Buta Ber kebele only because due to many factors such as financial and time constraints to undertake the research.

1.8. Operational Definition of Terms and Phrases

Carrying Capacity-is the ability of an environment to sustain the resource demands of a species or a community without losing its ability to regenerate the resource (Kemp,1998).

Coping Mechanisms:-the pattern formed by the many separate adjustment that women devise in order to obtain and use resources to solve the immediate problems confronting them (Abeya,2001).

Deforestation:- is the destruction/clearing of forests as part of a commercial forestry enterprise or for some other economic purposes such as the expansion of settlement, gathering fuel or to clear agriculture land.

Environment: -refers to a combination of the various physical and biological elements that affect the life of an organism (Kemp,1998). It is viewed in its totality that comprises natural and socio-cultural systems in which human and other organisms live and interact.

Environmental Degradation: - in this context refers to loss and depletion of water and forest resources.

Environmental Management:- is defined as the process that seeks to ensure that development is in harmony with safeguarding the quality of ecological processes and conserving the stocks resources (Diana,1999).

Past time: - In the context of this study it refers to the period before fifty yours ago.

Sustainable Development: - is development that meets the needs of the present generation without compromising the ability of the future generations to meet their needs (EPA, 1997).

CHAPTER TWO

2. *Literature Review*

2.1 Environmental Degradation

Environment is a complex concept. It refers to the entire external influences, natural and man made that can impinge on the life-support systems essential for health and survival. It includes the living and the non-living things with their ecosystem, and the society and the social activity. The physical and biological elements that affect the life of an organism is interwoven, interconnected and interdependent and everything for the survival of life emanated from these complex whole of the environment (Aster, 2003).

The environment has become an area of major socio-political focus during the last 40 years. Interest in the environment grew not because people started to care so much about it and valued its functions, but because of the increasing seriousness of environmental problems. The life supports system of the environment, which was initially available everywhere as a free gift of nature are deteriorating and being polluted (Commings, Vandam, & Valk, 2002).

Environmental degradation is the greatest problem that mankind has ever faced. It is manifested by deforestation, soil erosion, air and soil contamination, reduced water catchments, drought and desertification. Along with the distortion of the physical environment the socio economic conditions also deteriorate. In the past few centuries the world has lost one third of its original forests and the rate of change has been accelerating rapidly in the past two decades. In the developing countries it was estimated that two-third of the forest resource would disappear by the year 2000 mostly because of clearance of land for production (Aster, 2003).

The accelerating degradation of the living environment in the recent years and in many ways has become the most dangerous of the threats that the world population face. Environmental degradation takes many forms and they are related to one another, forming

a vicious cycle (Harrison, 1993). In the Third World, over grazing, massive deforestation for agricultural activities, construction materials, fuelwood and cattle fodder has blocked the cycling of soil nutrients, intensified water resource degradation and accelerated surface runoff, minimizes the infiltration rate of water in to the soil. These led to recurrent drought and desertification. These causes and effects are combining to break the ecological cycles upon which life-support systems depend. Add to this, the increasing pressure upon resources from ever-growing population, rising human aspirations, and the financial constraints, political instability and civil war which all contribute for a catastrophe of epic proportions (Dankelman and Davidson, 1988).

For instance, as World Bank (1994) reported Sub-Saharan Africa's forest cover, estimated at about 679 million hectares in 1980 has been diminishing at a rate of about 3.7 million hectares per annum, and the rate of deforestation has been increasing. As much as half of Sub-Saharan Africa farmland is affected by soil degradation and erosion, and up to 80 percent of its pasture and range areas show signs of degradation.

Means of subsistence in developing countries are severely affected by degradation of natural resources since whose life is directly related with primary mode of production. Attempts to produce subsistence crops in highly marginal environment result in severe soil erosion, as well as the concomitant destruction of forest and water resources and thus, begin a cycle of accelerated impoverishment of the people and the environment (Yeraswork, 2000). According to Selamawit (2004) poverty is closely linked with degradation of land, forest and water resources of the environment. Likewise human well-being is intimately linked to environmental well- being, making environmental degradation both a cause and effect of poverty.

In Ethiopia natural resource degradation has been going on for centuries in different parts of the country. It is manifested in the degradation of land and water resources as well as loss of biodiversity (Environmental Protection Authority, 1997). Environmental degradation have several causes and consequences. As a result it is difficult to get common

causes and solution for the problem. Taddesse (1995:39), cited in Selamawit (2004) has put it aptly as follows:

> The causes of environmental degradation are diverse and often complex. They are largely place-specific and are greatly influenced by local socio-economic and national political forces operating on a particular society. There can be no mono causal explanation. Sometimes the causes are difficult to distinguish from and are dependent on other causes. The solutions to problem are equally difficult to achieve.

Degradation of the natural resources of the environment has serious economic and social consequences (Selamawit, 2004). Massive environmental degradation caused by soil erosion and desertification affects the agricultural sector, which is the core of Ethiopian's economy. According to Demel (2001) together with population pressure, environmental degradation is going to halt the development of the country. Supporting this idea Alemneh (1990) stated that deprivation of traditional means of livelihood is most often a result of environmental degradation resulting from such natural and man-made disasters as drought, flood, deforestation etc. Such conditions have already pushed great numbers of rural poor into marginal environment where critically low levels of water supplies, shortages of fuel, over-utilization of grazing and arable lands and population density have deprived them of their livelihood.

According to Commings et al (2002) access to and control of environmental resources vary according to gender relations. In this regard, the principal victims of this environmental degradation are women whose lives are intrinsically related to land, water, forest and the main components and integral part of an eco-system. For instance, deforestation has caused the loss of these essentials for rural women and many indigenous communities. What could have been obtained free from the forests now has to be purchased in the market place. Women as resource managers now need cash, earned only through employment. But in a situation of gender asymmetry, even among the poor, women are the poorest of the poor with lack of access to and control of environmental resources. Thus, adverse effect on

any one of the eco-system components will definitely disturb the other components due to the strong linkages and inter-relationship with each other and create a havoc on the life of people, especially women, living in the rural areas.

The implication of environmental damage in rural areas is particularly serious for women who are generally found on the most marginal land and have the primary responsibility for providing household subsistence. These women rarely have alternative income-generating employment opportunities (Mazumder, 1992).

2.2. Women and the Environment

The fact that the relationship between people and the environment is not gender-neutral became clear in the mid 1980s. Some organizations, focusing on the day-to-day lives of communities, argued that the position and concerns of women were invisible in environmental debates, even though, women are playing a significant role in environmental management and sustainable development, conservation, promoting training efforts and organizing themselves at local national and international levels (Sachs, 1996).

In the 1980s governments and development agencies became much more aware of the need to consider gender issues in their environmental and natural resource management programmes. This led to change in project design and implementation. Policy makers came to appreciate that women play an essential role in the management of natural resources, including soil, water, forests and energy and often have a profound traditional and contemporary knowledge of the natural world around them (World Bank, 1991).

Since time immemorial, women, particularly those living in the rural areas of Third world countries have played a vital role in managing natural resources such as soil, water, forest and energy. Their tasks in agriculture and animal husbandry as well as in the household make them the daily managers of the living environment. They have a profound knowledge of the plants, animals and ecological process around them (Bruijn, M. et al, 1997). With their extraordinary skills and traditional knowledge women have proved to use and manage water, forest, land and other natural resources. They have their own devised

systems and ways to sustain and manage the resources, which are the basis of survival for their families and communities. Through their practical experiences and management skills, they have acquired immense knowledge of the various types of plants, grass, medicinal plants, kind of fuelwood and various species of fodder plants (Kunwar, 1999).

Kunwar (1999) further strongly argued that women know better than any scientist what grass, herbs, shrubs, trees are best for them and should be planted to maintain a balanced eco-system and well-being of their families and communities. Historically and in terms of grassroots' realities women are managers of natural resources and dependent on them for their livelihood. Neglect of these roles will therefore adversely affect sustainability of any strategies for environmental development (Mazumder, 1992).

The two-way relationship of women to the environment has also been acknowledged: their responsibilities as a day to day environmental managers make women both victims of and contributors to the natural environment's degradation and pollution (Gaag, 2004). Gradually, awareness grew of many grassroots success stories of women fighting to conserve local resources. This then led to women being viewed as major local assets to be harnessed in the interests of better environmental management (Davidson cited in Braidotti, Charkiewcz, & Saskia, 1994).

The United Nations Environmental Programme (2005) stated that sustainable environmental and economic development is not possible without the empowerment of women and gender equality. The active participation of women and integration of gender issues in environmental polices and action are critical determinants for the implementation of the commitments of the Beijing Platform for Action (1995), the world summit on sustainable development (2002), and the Millennium Development Goals.

2.3 Rural Women and Natural Resources

Scholarly work on rural women's lives and the environment in particular locations and time periods has flourished in recent years, yet theories of rural society and feminist scholarship incorporate only fragments of this work (Sachs, 1996).

Perhaps, like no other group, rural women live close to the natural world. Raising plants and animals for their families' food, producing agricultural goods for the market, gathering fuelwood for cooking and collecting water from streams and local wells has set the rhythm for rural women's activities in many localities. Thus, in their daily contact with plants, animals, land and water, women are knowledgeable about and utilize local species and environments (Saches, 1996).

Rural women have been the custodians of biodiversity (Shiva, 1989). They produce, reproduce, consume and conserve biodiversity in agriculture. However, in common with all other aspects of women's work and knowledge, their role in the development and conservation of biodiversity has been rendered as non-work and non-knowledge. Their labour and expertise has been defined into nature, even though it is based on sophisticated cultural and scientific practices. Women's biodiversity conservation differs from the dominant patriarchal notion of biodiversity conservation (Mies and Shiva, 1993).

Some concerns about rural women's roles as environmental managers and as key actors in achieving sustainable development have grown at the international level. In the UN conference on Environment and Agriculture and in the adoption of agenda 21, notably chapter 24, "Global action for Women towards Sustainable and Equitable Development" it is stated that rural women's technical knowledge to sustainable resource use in soil and water conservation and management, forest use and conservation and plant and animal genetic resource management needs to be recognized (FAO, 1996).

According to Aster (2003), in all rural parts, the link between women and the environment is basically strong in relation to the following critical resources i.e., water, forest and land.

2.3.1 Women and Water

Water is needed in all aspects of life. The supply of water is vital for the survival and health of the family,and is mostly the concern of women and children. In many areas women are invisible water managers. They search for potable water supply and satisfy the water needs of the family, domestic animals and, also in many cases, for agriculture. Yet, they are excluded from planning, implementation and maintenance of water supply project (Aster, 2003).

The increase in the global degradation of ecosystems, the excessive consumption of water, contamination and pollution along with the impact of extreme poverty are contributing factors to an environmental catastrophe (Gaag, 2004). This has had profound effects on the availability of drinking water and consequently has led to the violation of the right to life (Gaag, 2004). Many sources indicate that women are the most affected by water crisis. More than half of the 1.2 billion people who do not have access to water are women and girls. Investigations by UNIFEM (2003) have verified that in most developing countries women are responsible for water management at the domestic and community level. Therefore, scarcity of water primarily affects the capacity of women in most rural parts.

According to UNESCO (2003) women use vegetation and forests for medicinal purposes, for food and fuel, as well as for income generation and these eco-systems rely on healthy water supply. Thus, as the environment deteriorates, women's livelihoods become increasingly vulnerable.

In the context of Ethiopia, patriarchal ideology and the traditional gender division of labour determine the social position of women that forces them to undertake productive, reproductive, community management roles and confine them to the traditional role of managing homes. Thus, like in all other developing countries, women in Ethiopia play a vital role both as water supplier and water mangers. Therefore, in the water scarce areas, women suffer severe consequences because of its impact on the dynamic of social relations, work pattern and health (Nigist, 2007).

In most part of Ethiopia water resource degradation is intensified by massive deforestation, which accelerates surface run off and minimizes the infiltration rate of water into the soil. As a result, scarcity of potable water is a common phenomenon for both urban and rural dwellers, which has a direct consequence for the work burden and sanitation of people, especially women and children, who are engaged in fetching water in rural areas (Aster, 2003).

After 1977 United Nation water conference launched the water decade, water is acknowledged as the basis of life and human civilization. The future of the world depends on the use we make of this finite and vulnerable resource today. Securing a safe and adequate supply of it is now a major task for every government. Over the years, women have accumulated an impressive store of environmental wisdom. Women have always been the ones to find water, choosing their sources according to certain criteria such as accessibility, availability, distance, time, quality and use. But, the fact that women have special knowledge here, know where to collect water and how to cope when supplies are scarce has been consistently neglected for centuries in development programmes (Dankelman and Davidson, 1988).

At the International Conference on water that took place in Johannesburg in 2002, the need to recognize the role of women in water policies and water management systems must be sensitive to gender issues and to insure their participation has been widely accepted. Recent approaches to gender participation aim at considering women in relation to other groups with distinct stakes and roles in the provision and maintenance of water and sanitation services. The women's role in any sphere linked to water must be strengthened and their participation must be broadened (UNEP, 2005).

2.3.2 Women and Forest

Forests are essential to sustain world ecology and human life. They protect watersheds and regulate water flows, the absorption of rain and evaporation. They maintain the ecological balance for a regular and clean water supply and help to protect agricultural lands,

especially those downstream. Moreover, for most of the world population it serves as a source of energy (Dankelman and Davidson, 1988).

Energy supplies of the rural areas of the third world depend on biomass such as fuelwood, twigs, and crop residuals and cattle dung. In these countries almost 3 billion people rely on wood for heating and cooking. This heavy dependency on wood for fuel combined with rapid population growth has contributed to accelerate forest and woodland destruction. As a result, degradation and destruction of forest and woodlands have accelerated soil degradation and erosion, eliminated wildlife habitats, which led to loss of biodiversity. This has severe implications for local and regional climates and hydrological cycles, thereby resulting in drought. Increased drought leads to degradation of natural resources, which in turn lead to desertification (Demel, 2001).

Deteriorating climatic and hydrological conditions negatively affect agriculture. For rural dwelling, forest destruction threatens not merely lifestyles and livelihood systems, but peoples' very survival (Aster, 2003). Despite its negative impacts human caused deforestation and the degradation of forest habitat is primarily due to expansion of agriculture, slash and burn practices, illegal logging and over harvest of fuelwood have been counting to upsetting the natural balance of the environment (Rahman, 2003).

The clearing of opened and closed forests is not only the problem of third world countries but also one of the world's most pressing land use problems. There are many factors that exacerbate deforestation. At the international level commercial logging, agricultural development, migration and resettlement and cutting of trees for firewood and charcoal and at the local level forest fire, growing demand for fuelwood and fodder, and grazing contribute to the loss of forest. The consequences are severe disturbance of the ecosystem that creates an unbearable situation for women (Dankelman and Davidson, 1988).

For centuries women have gathered forest products. Ninety percent energy supplies in Africa coming from biomass-fuel collection is mainly a task for women and children's help. This remains an important activity for all rural households in Africa. The time spent in forests and gathering wood, have taught women the many uses of trees, including

providing fibers for cloth, mat-making and basketry. Many trees are used as a source of food, offering vegetables and fruits. Women also know the medical uses of various trees (Sachs, 1996).

In Ethiopia environmental degradation, notably deforestation is one of the major challenges facing the country's striving for development. While little reliable information exists about the extent and location of the past and present natural forest and woody vegetation cover, historical sources indicate that forests might once have covered about 35-40 percent of the country's total land area. The country's forest and woodland resources have been declining both in size and quality. It has been estimated that forest covered 16 percent of the land area in the early 1950, 3-6 percent in the early 1980's and only 2.7 percent in 1989. This surviving remnant is largely found in the south -west part of the country (Demel, 2001).

As the United Nation (2002) reports, Ethiopia could have no natural forests left by 2020, if something is not done soon. The report describes the government attempts to prevent forest depletion as "futile and unsuccessful" and the state "does not given adequate attention to efficiently protecting its last natural forest resources".

According to Aster (2003), similar to other developing countries the major reasons for deforestation in Ethiopia are the clearing of forests and woodlands for cultivating crops and the cutting of trees and shrubs for various purposes mainly for fuelwood, charcoal, construction materials, etc. The underlying causes of deforestation are, however, closely linked with the vicious cycle of mutually reinforcing factors, namely poverty, population growth, poor economic growth and weak institutional framework.

With agricultural productivity lagging behind population growth rates the gap between availability and demand for agricultural land continues to grow, resulting in severe land use conflicts between crop farming, animal grazing, and forestry. Natural high forests and plantations are encroached upon and cleared for cultivation or grazing by local people. State and community forest interest collide with local grazing interests on hillside land;

grazing and fuelwood interests confront each other in the woodlands and bush lands (Demale, 2001).

2.4 Impacts of Environmental Degradation on Rural Women

Environmental degradation and destruction has increased the problem of women who is known as the backbone of rural economy and the main substance provider in the family. Deforestation and water resource degradation definitely affect the time, income, health, social support networks and indigenous knowledge of rural women (Brüijn et. al, 1997).

Due to fast depletion of forest cover rural women have to walk 8 to 10 km every day in search of water, fuel, fodder and minor forest product etc. Subsequently, the time they spend on household chores increases up to 15 hours on average, this leaving less time available for other activities. Collecting water and fuel wood is a backbreaking chore that saps women's energy and diminishes their involvement in productive activities and community affairs (Aster 2003; UNEP 2005). Aster (2003) further stated that the collection of water can take upto 60 percent of women and girls time. Many girls never get an opportunity to go to school because the responsibly of collecting enough water to keep their families alive takes precedence.

The carrying of water and fuel wood over long distance causes health hazards especially during development and pregnancy periods. Resulting from water resource degradation, women start using contaminated water and because of their frequently contact which puts them at risk of having serious illnesses (Kunwar, 1999).

In relation to health, shortage of fuelwood also leads rural women to use unsafe energy source that expose women and children to in-house air pollution since they spend relatively more time within the confines of the house. Apart from its health impacts environmental degradation, specifically deforestation and loss of vegetation cover expose rural women to losing the income generated from handicrafts and also medicinal plants become scarce (Aster, 2003).

While women in the rural area deal with many of the daily aspects of environmental change, including the consequence of degraded resources that depend upon for daily provision, they face the burden of sudden episodic changes as well. As a fact the level of vulnerability of actors is often related to their social and economic marginality. Thus, women can be considered as victims not only because of the direct impact of environmental degradation but also because of their economic status (Rahman, 2003).

2.5 Theoretical Background

Perceptions of women and natural environment connection are multiple, and have been evolving over the years. Successive studies and conferences, and debates at national, regional and sub-regional levels have tried to provide concrete meaning and body to this relationship, which still continues to be elusive for many policy makers. However, all of them agree that the close and the symbolic relationship that women have with the natural environment built up over generations is breaking down (Manzumder, 1992). There are different relevant schools of feminist thought and activism that relate to the analysis of women and the environment. In this section these various schools of thought examined as follows.

Ecofeminism

Ecofeminism is a feminist theory that deals with women and environment. It emerged in the 1980s. Ecofeminism, a new social movement explores, redefines and politicizes the connection between women and nature. From an epistemological standpoint, ecofeminists build on the work of feminist critics of science by recognizing the connection between the domination of women and the domination of nature (Shiva, 1989).

Proponents of Ecofeminism argue that there is a connection between women and nature that comes from their shared history of oppression by patriarchal society. They state that the domination of women is intimately linked to the domination of nature because both are characterized as having an essential capacity to provide and nurture life and therefore both are subject to the patriarchal need to dominate (Diamond and Orestein, 1990).

Shiva (1989) similarly argued that the violation of nature is linked with the violation and marginalization of women, especially in the third world where women produce and reproduce life not merely biologically but also through their social role in providing sustenance. Women in subsistent economies producing and reproducing wealth in partnership with nature have been experts in their own right of holistic and ecological knowledge of nature's processes. However, as Shiva explains, third world women have privileged access to a life-sustaining principle through their links to nature as they obtained food, water, fuel, shelter and other basic necessities. This has not been given attention by environmental planners and natural resource managers.

The ecofeminst epistemological claim follows from the connection noted between women and nature. The fact that women are most adversely affected by environmental problems make them better qualified as experts on such conditions and places them in a position of epistemological privilege that is, women have more knowledge about earth systems than men. This means that these women are in a privileged position to aid in creating new practical and intellectual ecological paradigms (Lorentzen and Eaton, 2005).

Ecofeminists also argue that western patriarchal society's views of women as "closer" to nature than men legitimize the subjugation of women and nature. Shiva (1993) stresses the ethical point of "women as care-takers" and see the linkage between nature and women as being due to a gendered cultural development that led to a deeper spiritual connection of women to nature than men have. The classic yet still unresolved topic of women's relationship to nature entails cultural specific understanding of nature, of gender division and women's relationship with nature.

Ecofeminists state that women, being the main users of resources like land, water and trees, know best how to mange and conserve these resources instead of overusing and exhausting them (Commings. et al, 2002).

Feminist Environmentalism

Feminist Environmentalism is a more materialistic and pragmatic political approach focuses on the historical and materialistic relations between women and nature (Commings. et al, 2002). They developed their arguments by criticizing ecofeminism on the grounds that the 'use of natural resources' does not necessarily imply management of natural resources: and raises the doubts regarding of whether women are really more interested in nature than in personals economic gain. Some authors argue that images of women as natural managers of forest are very positive and may be worth promoting even if there are doubts about whether such an intrinsic relationship really exists (Visvanathan, Lynn, Nisonoff and Wieger, 2002).

In opposition to the ecofeminst approach, feminist environmentalists, notably Bina Agarwal raises broader issues about the management of gender relations in connection with environmental management strategies. Agarwal also stresses on the role of customs, laws and social structures in determining women's relationship to their environment. In this perspective the different forms of relationship to the environment are seen as caused by different forms of interaction between human beings and their material interests (Agarwal 1992).

The historical materialist position claims that the appropriation and distribution of natural resources is differentiated and gender is one of the key axes of differentiation alongside for instance class, race and cast. Women of different classes races, localities, ethnicities and nationalities have numerous and varied interactions with nature (Rodda, 1991).

Feminist environmentalism see the privileged bond of women with nature as a result of societies and cultural development that exclude experiences of embodiedness (Mellor, 2001). Feminist environmentalism emphasizes another important point by criticizing ecofeminist thinking. Through the insinuation of a special nearness to nature, ecofeminists tend to construct "as abstract being women beyond historical and cultural differences"

(Commings et al, 2002:112). They criticize the failure to reflect diversity and the different needs of women.

Rural women's gathering fuel, fodder, and water and cultivating food for their families' subsistence places them in a particular relationship with natural environment. Because of these feminist environmentalists, notably Agarwal (1992) suggests that women are likely to be affected adversely in quite specific ways by environmental degradation. At the same time in the course of their everyday interactions with nature, they acquire a special knowledge of species varieties and the processes of natural regeneration. To take advantage of this special knowledge, feminist environmentalism as an alternative to ecofeminism attempts to move beyond the symbolic connections between women and nature. They argue that women must struggle with resources as well as meanings (Agrawal, 1992).

Feminist environmentalism offers possibilities and challenges for both feminism and environmentalism. Agarwal (1992) recommends that on the feminist front, there would be a need to challenge and transform notions about gender as well as the actual division of work and resources between the genders. On the environmental front, there would be need to challenge and transform not only notions about the relationship between people and nature but also the actual methods of appropriation of natural resources by the privileged.

Feminist environmentalism emphasizes that it is not enough to look at the position of women and the environment in isolation. Power relations between the sexes are determining factors and as a result, a shift towards an analysis informed by gender needs to take place.

The Gender, Environment and Development Approach

The current gender, environment and development approach is not only concerned with women but also with the social construction of gender and expectations attached to women and men. This view of gender and environment constitute feminist political ecology, cultural ecology and geographical ecology into one concept. It argues that gender is a

relevant factor in determining access and control of natural resources as it relates to class, race, culture and ethnicity to transform the environment and to achieve the community's opportunities of sustainable development. In other words, gender was found to be a distinguishing factor in determining human relationships with the physical environment and sustainable development (Bruijn. et al, 1997).

The current fundamental premise of a gender analysis is to accept that environmental change is not a neutral process, but rather it is rooted in historically, politically and socially constructed processes. In turn, environmental change also affects existing socio-economic inequalities (including inequality between the sexes) and political circumstances. There are three extensions of this premise. First, the costs and benefits of environmental change are not distributed equally among men and women. Secondly, the unequal distribution of costs reinforces existing social and economic inequalities between men and women. Finally, environmental change affects the ability of actors to control and resist one another. The ability of women to resist marginalization is often influenced by changes in environmental conditions (Rahman, 2003).

Although these positions are often counterpoised against each other, increasingly more sophisticated refinements are being made as a way to advance understandings of the relations between women and the environment (Coudworth, 2005).

The theoretical debate about the relationship of women and nature and women and the environment is still going on within feminist theories. Today, the political debate about women, enviroment and development in a global perspective is focused more often around the concepts of sustainable development (Gaag, 2004).

Though, there are different theoretical frameworks about women and environment, this paper is guided with feminist environmentalism perspectives. Because, insofar as there is a gender and class-based division of labour and distribution of resource and power, people's interactions with nature and so the effect of environmental change on people and their response to it is structured based on gender and class. For instance, rural women have typically been reasonable for fetching fuel, fodder and water. They are thus likely to be

affected adversely in quite specific ways by environmental degradation. At the same time, in the course of their every day interaction with nature; they acquire a special knowledge of species varieties and the process of natural regeneration. They could thus be seen as both victims of the destruction of nature and repositories of knowledge about nature, in ways distinct from the men of their class.

In this conceptualization, therefore, the link between women and the environment can be seen as structured by a given gender and class organization of production, reproduction and distribution. Feminist environmentalism underlines the necessity of addressing both resources and meanings. Therefore, for the purpose of this study the researcher is interested in analyzing, elaborating and understanding the impacts of environmental degradation on rural women in terms of feminist environmentalism perspectives.

CHAPTER THREE

3. Methodology

The study has employed both quantitative and qualitative research methodology to collect relevant data for this study. However, based on the issue under investigation, the researcher has employed mainly qualitative approach. This approach enables the researcher to deeply explore the topic and to present the findings from participant perspective. In order to gain a comprehensive data the researcher also employed a quantitative approach of data collection as a supplementary method. The design includes triangulation of tools. Thus, in-depth interview, focus group discussion, key informant interview and structured interviews were employed.

3.1 The Study Area

This study is conducted at Aseko-Buta Ber Kebele, which is located in Aseko wereda, Arsi zone, Oromia Regional State. Aseko woreda is purposely selected as the study site. The area is geographically located at the western corner of the great East African Rift valley escarpment. The woreda is bounded with Mertii woreda in the northwest, Gololchaa woreda in the east, Guna woreda in the south and Anichare woreda in the northeast (Please See Appendix H).

According to the Ethiopian climatic classification all the neighboring woredas are located in warm (kola) climatic zone, while Aseko is characterized by temperate (winadega) climatic condition. In the past, the rainfalls in the woreda was relatively high and warm enough for natural vegetation growth. Thus, unlike the neighboring woredas, it was previously covered with dense natural forest consisting of woodland Savanna, Acacia woodland bush and grassland. The area is commonly known by most as "Arba Gugu Forest". In recent years, because of high population pressure together with natural factors, the problem of environmental degradation has become acute in the area. According the Woreda officials, there is a great variation in the degree of the problem; some kebeles are extremely affected by the problem, while others are better off. Among the 18 kebeles in the

woreda, Aseko -Buta Ber kebele (based on the new administrative classification formed by merging the former kebeles of Aseko 01, Aseko Akababi and Buta) is highly affected by the problems and is taken as the study area.

The woreda is agro-ecologically divided into three zones i.e. highland 25%, middle altitude 48% and lowland 27%. According to the 1996 CSA report, the total population of the woreda is estimated to be 78,497 out of which 39,775 are male and 38,722 female. From this Aseko -Buta Ber kebele the specific focus of this research constitutes of 6,485 persons out of which 3,321are male and 3,164 are female.

The Woreda's economy mainly depends on agriculture (with traditional farming system by oxen and hand digging). The people are engaged in mixed farming (crop production and livestock husbandry) for survival. Major crops grown are sorghum, barley, wheat, teff, oil seeds etc. However, according to the information obtained from rural and agricultural development office of the woreda, the production of these crops recently has been decreased. Mainly because of climatic change, farmers were engaged in producing crops which are more adaptable to high temperature.

3.2 Sampling Procedure

The target population of the study is women who are living in Aseko- Buta Ber kebele.
Only women were selected because as a result of traditional gender-based division of labour, women are disproportionately affected by the adverse impact of environmental degradation. In order to obtain quantitative data, structured interview were administered. According to the information obtained from the kebele who are engaged in marriage officials, as a social obligation almost all women of the kebele are members of women's Idir (an indigenous self-help association). In the study area, there are three women's *Idirs* i.e *Selasse yesetoch idir, Yeaseko Akababei setoch meredaja idir and Yeaseko 01 setoch ider)*. Therefore, decision is made to access the women through Idirs.

The total numbers of the women Idir member were not too large to manage the data, therefore all are taken as sample and the total size was achieved in the sample frame. Thus, the samples of this study include 192 rural women who are members of local women Idirs.

In order to get adequate data for this study, in-depth and key informant interviews were held with both women and men residents of the area. Using kebele officials' guidance knowledgeable individuals and experts were taken as informants. In the selection process of informants snowball-sampling techniques were employed. In addition to this, data were gathered from woreda/ kebele environmental protection officials, Women's Affairs Representatives and Women's Association members.

3.3 Data Sources

The researcher has employed different types of data collecting techniques. This includes structured interviews, In-depth interviews, Key informant interviews and Focus Group Discussion. The justification of instruments of data collection is presented as follows:

In-depth Interviews were employed to collect data from the women. Conducting In-depth interviews among the women provided an opportunity for the researcher to get detailed information about the changes in women's lifestyle that resulted from the degradation of forest and water resources. It enabled the researcher to collect more data, which may not have been possible through any other means. To this end, detailed guiding questions were developed that include general background of the participants, information related to the impacts of environmental degradation and the coping mechanisms of the women.

Key Informant Interviews were employed with woreda/ kebele Environmental Protection Authority officials and Women's Affairs' Representatives. Participants were informed that their response will be kept confidential and will not be used in any way that harms the participants.

Structured Interview: since the target population of this study is rural women, structured interviews were prepared for all eligible samples and interviews were held with the

respondents. It was first developed in English, translated in Amharic and Afan Oromo languages and translated back to English so that the accuracy and consistency in wording was ensured. The questionnaires were developed to generate data on the actual impacts of environmental degradation and to explore the coping mechanisms of the women. The questionnaires were edited based on a pilot survey carried out prior to the study. To undertake this interview, the researcher trained/ oriented and employed five data enumerators. The structured interview method was supplemented with actual observation as well as group discussion.

Focus Group Discussion (FGD): in order to meet the objective of the study sufficiently, FGDs was conducted. This method was employed to collect data about group perspectives on economic and social aspects. It is also important to know the women's common attitude and opinions towards the environment. It offered a different perspective because the participants were able to interact and discuss the area of agreement and disagreement.

In this study two FGDs were conducted. The first group was consisted of eleven women, which are members of Nano Aseko Women's Association. The second group was selected from Aseko 01 Yesetoch Idir. The number of the discussants was ten. Therefore, a total of twenty one discussants participated in the FGDs.

3.4 Data Analysis

The data collected through the above different instruments were analyzed both qualitatively and quantitatively. Data collected using interview and Focus Group Discussion were analyzed qualitatively to investigate the findings. To this end, the researcher used units such as narratives, sentence and phrases to create categories. These categories or grouping of issues were served to put related ideas together in a series of topics in the analysis. In addition to this, the researcher also employed reflective analysis to present his own personal observation in the field. Data from various sources were examined and categorized as quantitative and qualitative data so that they could be analyzed accordingly. Simple statistics like percentage was used to describe the background of the respondents, which includes their number, age, marital, and educational

status. Data that was collected through structured interview were also analyzed using simple statistics (frequency and percentage) to show the degree of respondents' opinion on relevant and important issues. The structured interview, focus group discussion, in-depth interview and key-informant interviews results are going to be presented in continuation under each variable of the study.

CHAPTER FOUR

4. Findings and Discussion

This chapter is devoted to the presentation and analysis of the data relevant to the present study.

4.1. Background Characteristics of Participants

In this section, the demographic and socio-economic background of participants from both quantitative (structured interview) and qualitative study (in-depth interviewing, focus group discussions and key informant interview) is presented. This includes their sex, age, educational status, marital status, household structure, household composition, occupation and religion of participants. Such information is very useful for the following reasons: Firstly, to get information as to whom the survey was all about. Secondly, to assist readers easily to comprehend the findings. Thirdly, they are also important to properly interpret the survey result and to draw applicable recommendations. As it was noted in the methodology section the number of individuals covered in the structured interview were 192 women, the number of individuals covered in in-depth interview were ten, and participants in Focus Group Discussions were twenty one.

Based on the responses obtained from structured interview, the characteristic of the respondents were examined in terms of age, religion, marital status, educational status, occupation and number of years living in the area. The data are summarized in Table 1 below.

Table 1. Background Characteristics of Structure Interview Participants

Items	Category	Frequencies	Percentage
Age	20-32	62	32.2
	33-45	66	34.3
	46-58	52	27
	59-71	12	6.25
	Total	**192**	**100.00**
Religion	Orthodox	168	87.5
	Muslim	18	9.4
	Protestant	6	3.1
	Total	**192**	**100.00**
Marital Status	Married	130	67.7
	Single	6	3.1
	Divorced	30	15.6
	Widowed	26	13.5
	Total	**192**	**100.00**
Household Composition	Male headed	130	67.7
	Female headed	62	32.2
	Total	**192**	**100.00**
Household size	1-5	37	19.2
	6-10	85	44.2
	11-15	61	31.7
	15+	12	6.2
	Total	**192**	**100.00**
Educational status	Illiterate	89	47.1
	Only Read & write	55	28.6
	Grade (1-4)	23	12.0
	Grade (5-9)	20	10.4
	Grade (10^{th} or 12^{th} completed)	2	1.0
	Total	**192**	**100.00**
Occupation of household	Farming	121	63.0
	Petty trade	48	24.9
	Formal employed	5	2.6
	Fuel wood selling	9	4.7
	Daily labourer	9	4.7
	Total	**192**	**100.00**
Number of years living in the area	Since birth	118	61.5
	30-40	41	21.3
	20-30	25	13.0
	<20	8	4.2
	Total	**192**	**100.00**

The total number of participants covered in the structured interviews is 192 rural women. The age distribution of respondents ranges from 20-71 years. As indicated in Table 1, 32.2 percent were in the age category of 20-32 years; 34.3 percent were in the age category of 33-45 years, and 27 percent were in the age group of 46-58 years. Regarding marital status, the data shows that quite a significant proportion (67.7 percent) of the women were married, followed by the divorced (15.6 percent), widowed 13.5 percent and single3.1%.

Among 192 households, the majority (67.7 percent) were male-headed households and the rest (32.2 percent) were female-headed household. Concerning the size of household, the majority of the households had between 6 to 10 members (44.2 percent), followed by those with between 10 to 15 members (31.7 percent); those with household members between 1 and 5 (19.2 percent), and the remaining (6.2 percent) had above 15 household members.

Regarding educational status of respondents, 47.1 percent were illiterate and 28.6 percent could read and write, 12 percent had primary education, 10.4 percent had junior secondary education and only 1 percent had 10^{th} or 12^{th} completed.

Concerning religion of the participants the majority (87.5 percent) were followers of Orthodox Christianity, 9.4 percent were Muslim and 3.1 percent were followers of Protestantism. Regarding occupation of household, farming comprises the majority (63 percent), followed by petty trade (24.9 percent), 2.6 percent were engaged in formal employment, 4.7 percent were engaged in fuelwood selling and the remaining (4.7 percent) were daily labourers.

Regarding the number of years living in the area, quite a significant proportion (61.5 percent) of the respondents replied that they have been living in the area since birth, 21.3 percent of the women reported that they have lived in the area for 30-40 years, 13 percent responded that from 20-30 years and very few (4.2 percent) have been living in the area for less than 20 years.

Focus group discussion is a second major source of data for this study. As stated in the methodology section, two group discussions were conducted. All of the participants in the FGDs were women living in the area. The first group (11 in numbers) was selected from *Aseko 01 Yesetoch Merdaja Idir* and the second group (10 in numbers) was selected among members of *Nano Aseko* Women Association.

The age of FGDs participants are ranged from twenty to sixty. Concerning their religion, forty out of twenty-one were Orthodox Christian and seven out of twenty one were Muslim. Regarding their education, six of them had non-formal education (only read and write) and the remaining eight were illiterate (Please see appendix A).

In-depth and key informant interviews were the other methods employed in this study. Five of the participants (50%) were women and the rest five participants were maleresidents of the area. The age distributions of participants are ranged from 29 to 61 years. There were two participants in the age group 24-34, two participants in the age group 35-45 and four participants in the age group 56 and above (Please see appendix B).

The interviewees have different responsibilities in the wereda and kebele as well as in the community such as *yefirdshengo* secretary, *yehager shemagle(*elders), wereda officials etc. Six out of ten participants have been living in the area since birth and the rest lived in the area for years ranging from seven to twenty. Regarding the level of education of participants, five of them were diploma holders, while three participants had junior secondary education. The remaining two did not have any formal education but they could read and write (Please see appendix B).

4.2 Resource Degradation

Recent studies have suggested that the process of environmental degradation is largely place specific and is greatly influenced by the local socio-economic and national political forces operating in a particular society (Alemeneh 1990; Zenebe 2003 and Selamawit 2005). In the study area, there are three major problems that critically affect the residents.

These are water scarcity, shortage of fuelwood and farmland. These problems were investigated through both quantitative and qualitative tools of data collection.

As shown in Table 2, among the total of 192 respondents, the majority (61.4 percent) of the respondents said that water resource degradation is the main problem of the area that needs to get first priority, while (13 percent) responded that it was shortage of fuelwood, and the rest (11.4 percent) replied that shortage of farmland is the main problem.

Table 2. Types of Natural Resource Degradation in the Study Area

Resource	Frequency	Percentage
Shortage of water	118	61.4
Deforestation/Shortage of Fuelwood	25	13
Shortage of farmland	22	11.4
Not stated	27	14
Total	**192**	**100**

Results from FGDs also match with the survey results. FGDs participants stated that environmental degradation which is manifested in the form of water resource degradation and deforestation challenges their lives more than any other socio-economic problems that prevail in the area.

According to the findings obtained from women participants, scarcity of water is a critical problem in the area that needs to get first priority, while data obtained from male participants revealed that deforestation is the main problem in the area. This discrepancy between the response of women and male participants points to the gender dimension of the problem. According to feminist environmentalism, gender was found to be a distinguishing factor in determining human relation with the natural environment and their experience of understanding the impacts of resource depletion as well. Because of the central role played by women in the prevention, managing and husbandry of water and fuelwood they know very well which resources are degraded more. Field investigation of the area and interview held with government official revealed that both water resource

degradation and deforestation are a critical problem that needs to get first priority. Government officials argued that deforestation is the source of all other environmental problems that prevailed in the area. In fact, there is a wealth of evidences that shows deforestation exacerbate water resource degradation.

One informant aptly stated the extent of deforestation as follows:

> During the last two decades the area experienced massive deforestation that I had never seen throughout my life. In the near past the natural forest was found in the outskirt of each village but now all this has become history (1I, Age 61).

In many parts of the world deforestation, which is, converting forests into agricultural land and built up areas is becoming an increasingly critical issue. Literature indicated that tropical forests are vanishing at an estimated rate of 17 million hectares per annum. In the developing countries it was estimated that three-fourths of the forest resources would disappear by the year 2010, mostly because of clearance of land for production. Sources further indicate that in the past few years the world has lost one-third of its original forests and the rate of change has been accelerating rapidly in the past two-decades (Leulseged, 2005). Data obtained from the interviews and group discussion of this study regarding the rate of deforestation is consistent with the above statements.

Economic and cultural responses have failed to arrest the depletion and degradation of a number of resources that have traditionally been regarded as plentiful and naturally renewable. This includes forests, water, plant species etc. It is increasingly clear that such resources are not naturally renewable in full sense. All the conferences that underlined the environment issues of the present time confirmed that environmental problems exceed all bounds and that something drastic has to be done (Kumelachew, 1998).

Environmental degradation is a global phenomenon. What is different is that the causes and the types are place and time specific. It is clear that, from this study, the local environmental problems are the outcomes of a mismatch of local environmental conditions and the human efforts to generate resources from the environment. On the other hand, the

global environmental problems are the results of the cumulative effects of the local ones (Damtew, 2007).

Informants pointed out that there are a variety of causes of environmental degradation in the study area. According to both the qualitative and the quantitative findings, the major factor contributing to degradation is the explosive population growth in the area. Nowadays, the root causes of environmental degradation are believed to be population pressure, excess utilization of natural resources, deforestation and its outcomes, erosion, lack of rainfall, occurrence of high run off etc (Selamawit, 2004). Indeed the reason for degradation is varied and ranges from human-made to natural disasters.

4.2.1 Deforestation

As stated above, deforestation is one of the main problems that affect the lives of rural women. Though, figures are unlikely to capture the levels of deforestation in the kebele, to the eyes of the casual observer the bare mountains and hills within the kebele testify to the extent of deforestation has taken place in the area. High population pressure together with lack of employment opportunities, scarcity of farmland, weak institutional commitment on natural resources conservation and preservation activities, unwise use of natural resources, commercial logging and fuelwood consumption are the major causes of deforestation that were reported by the discussants as well as by key informants. Similarly, Table 3 shows that among 192 respondents the majority (82.2 percent) indicated that expansion for agriculture is the major causes of deforestation followed by clearing of trees for settlement (6.7 percent), wild fire (3.1 percent), for fuelwood (5.2 percent) and for construction materials (2.6 percent) respectively.

Table 3. Causes of Deforestation

Cause	Frequency	Percentage
Expansion for agricultural land	158	82.2
For settlement	13	6.7
For fuelwood	10	5.2
For construction materials	5	2.6
Not stated	6	3.12
Total	**192**	**100**

Supporting the above result one participant reported his observation as follows.

> The major occupation of the people in the area is agriculture. This means that the people are highly dependent on the environment. During the Imperial regime, the name of the Woreda was Mekanne Asted (it is a geez word literally meaning an area surrounded by forest). Now, as you see, there is no vegetation cover, the area has been turning to a desert. This is typically caused by high population pressure together with traditional means of production, which led to massive deforestation. In recent times, low level of productivity of the agricultural sector in addition to lack of farming land led many farmers and their young male children to engage in selling of timber and kenche (round and sometime angular form of wood used for house construction). These have become the day-to-day activities for most of the residents who have access to the nearby forest. Moreover, the government's intervention to tackle the problem of deforestation is not satisfactory. The government has the responsibility to keep the environment safe and suitable for living, but the government attempts to control the problem is not well organized, comprehensive and lacks the support of the people. Thus, as we see, the forest disappeared within a short period of time (7I, Age 52).

Lack of appropriate conservation and control practices to maintain vegetation cover and a decline in biodiversity are repeatedly reported as causes by participants. The government is aware of the extent of deforestation; all government officials that I interviewed affirmed

this. The government has been undertaking afforestation programs on the hillside of the kebele. But the government intervention to deal with the problem of deforestation has not given more attention to women's contribution. The role that local women can play in conservation has been little recognized by government organizations and NGOs. This is reflected in the very limited extent to which local women are involved in afforestation projects, including those, for example funded by World Bank Safety Net Programme (2007-2008) and food for work projects (2007). However, according to feminist environmentalism women in the course of their everyday interaction with nature acquire extensive knowledge of plants and the process with natural regeneration. Rural women's work with land, plants, and animals illustrate the variations in women's daily activities in their connection to nature, suggesting how women's situated knowledge and practices might provide keys to sustainable development (Bruijn et al 1997). Thus, ignoring this role has an impact on the sustainability of the project.

Both the qualitative and quantitative data confirmed that population pressure is the main cause of environmental degradation, notably deforestation and water resource degradation. But researches on deforestation indicate that "population growth is not the only factor to be blamed as a cause of environmental degradation. Many other factors that are economic, social, political and cultural in nature also have a large impact on the environment" (Leuelseged, 2005 p.19). For example, the qualitative data of this study reveal that, poverty is one of the problems in the study area that caused deforestation. Thus, it is clearly implied that not only the living and non-living resource in this area but also people are endangered as matter of life and death. Given that a strong relationship between poverty and forests is already established. Deforestation had significant human costs for the people of Aseko -Buta Ber kebele in general, and women in particular.

4.2.2 Water Resource Degradation

At present, a number of diversified and multipurpose national as well as international efforts are exerted to ensure an improved provision of potable water supply service in both rural and urban areas of the developing countries. In spite of these recognition and efforts,

the gap between the standard requirement and the actual delivery of the service is getting wider and inequitable. Consequently, an overwhelming majority of the rural poor particularly women are suffering from lack of adequate and quality potable water supply (Appleton & Smount, 2003).

Respondents were asked to indicate the causes of water resource degradation in the area. Accordingly, participants in the structured interview mentioned different reasons for water resource degradation in the kebele. As indicated in Table 4 below, quite a significant proportion (57 percent) of respondents replied that high population pressure is the main cause of water resource degradation, the next largest proportion (15.6 percent) of the women responded massive deforestation, followed by unwise use of water resource (10.4 percent) and the smallest proportion (3 percent) reported that recurrent droughts and shortage of rainfall are the major causes of water resource degradation.

Table 4. Causes of Water Resource Degradation

Causes	Frequency	Percent
High population pressure	110	57
Unwise use of water resources	20	10.4
Recurrent drought /shortage of rain fall	6	3
Massive Deforestation	30	15.6
All of the above-	6	3
Not stated	20	10.4
Total	**192**	**100**

Participants in the qualitative study, repeatedly stated that high population pressures together with shortage of rainfall are consistently deteriorating the quality and quantity of water in the kebele. Drought could also be mentioned as a critical and recurrent problem in the kebele. As for the causes of drought is concerned, two main reasons could be stated. Firstly, the volume of rivers and spring water is steadily decreasing for the rainfall does not

replace them. The second reason is the extreme effects of deforestation. This has strong implications on the amount of water in the area.

The result of this study is consistent with UNIFEM (2003)'s report about the causes of water resource degradation that as more people are added to world population the amount of water available per person would decrease. Due to population growth alone, water demand is expected to double in more than half of the world's countries. Population growth also exacerbates the water shortage directly by contributing to land degradation and deforestation. Thirty percent of developing countries still have no access to safe drinking water and 2 billion people are estimated to live in regions of water stress and scarcity.

Similarly, Daud (2005) has reported that population growth intensifies competitive pressure on access to water; it lowers the potential amount of water available per capita and introduces the risk to conflict over access to water resources. Regarding the quality and quantity of water FGDs discussants stated the following:

> When there is a long queue at the stream, we often fetch water from Mincha (unprotected stream). It is located faraway from our residence and is poor in quality. As a result, we are suffering from water born diseases like cholera, typhoid and bilharzias (Group B, Age 41).

From this one can understand that the rapid population growth especially in developing country has added to the limited capacity of the environment leading to water resource degradation (quality and quantity). As the quality depilated and the quantity declines, women, the primary provider of water in the household are likely to be affected adversely in quite specific ways by resource degradation.

In general, as shown in Table 3 and 4, the majority of respondents indicated that population pressure is the major cause for water resource degradation as well as deforestation. In addition to this, ignorance, drought and unwise use of natural resource are some of the factors that were identified as the causes of resource degradation. Some studies

so far conducted on deforestation and water resource degradation also confirmed these notions. It is clear that population pressure together with other mentioned factors contributed for the degradation of the living environment. According to feminist environmentalism, the degradation of the environment is non uniform and diverse in places. This may not be due to any single force. Degradation is the result of conjectural social factors and natural process within which people: women and men: are involved and related to each other over time (Brujin, et al, 2000).

4.3 Impacts of Environmental Degradation on Women

The purpose of this study was to explore the actual impacts of environmental degradation on women in the study area. Thus attempts have been made to investigate the consequences of environmental degradation on women. According to Gedyon (2003) environmental degradation affects everybody indiscriminate of gender. However, society is not organized in harmonious and egalitarian manner. Because of the mutual relationships *Visa-vis* control over property and resource and the existing patronizing and subject subordinate type of relationship, there are gender factors, class factors, and other factors that are discriminatory. Case studies on the rural areas in countries of the third world (Dankelman and Davidson 1988, Rodda 1993) have demonstrated how rural women frequently utilized the resource base in their daily task of meeting subsistence needs. These studies show how women have to walk longer distances and expend more energy to collect food, fuel and fodder for their households, inevitably suffering worse effects of environmental degradation than men.

All FGDs discussants as well as interview participants of this study agreed that environmental degradation affects both men and women, but the actual impact is more severe on women. The discussants elaborated this by saying that it is the women who know well about the impacts of water and fuel scarcity since in almost every household fetching and proper utilization of these resources is the responsibility of women. Therefore, effective and efficient utilization of fuelwood and water affects and benefits women first than anyone else.

An attempt has also been made to assess how women are affected by environmental degradation. According to feminist environmentalism the cost and benefits of environmental changes are not distributed equally among men and women, thus unequal distribution of costs reinforce the existing social, economic and other inequalities between men and women (Rahman, 2003). Both qualitative and quantitative data reveal that women are now forced to walk greater distances in search of fuelwood and water due to environmental deterioration. It may take a walk of four hours to reach a supply of water. An FGD participant explains the situation as follows:

> The area is suffering from dramatic changes; we are experiencing serious environmental resource degradation. Rapid population increase together with high rate of deforestation has damaged water resource, brought about erosion and lower agricultural productivity. As you know, our economy is based on agriculture .Now a days in our area lower agricultural productivity and crop failures are becoming common. We experience frequent food shortages. Thus, the deficiencies and the lower calories intakes reduce our resistance, affecting our health and that of our family. In addition to this, water and fuelwood scarcity has exposed us to walk further distance. We are struggling between life and death (8I, Age 55).

Change in the environment affect women directly and increase the women's level of drudgery. The costs to women include high disease rates, chronic malnutrition, disability and death. Exhaustion from the drudgery of hauling water and fuelwood leave women with little energy to prepare nutritional meals or to properly care for their children. This finding is consistent with other studies conducted in different part of the world for example, study on rural women and environment in Zambia (Franks, 2007) and the role of mountain women in management of sustainable development in India (Kunwar, 1999).

As stated earlier, because of the traditional gender based division of labour, women's role focuses on the productive, reproductive and sustenance of the family. Thus, women are usually the ones responsible for providing food and water for the household and suffer

disproportionately when common resources are degraded. Water and fuel source availability as well as its location has direct impact on women who are the household water and fuel managers and providers.

4.3.1 Impact of Water Scarcity on Women

This section deals with the actual impacts of water scarcity on women in the study area. Data from the structured interview and participants in the qualitative study informed that in the kebele scarcity of water is the main problem that has been severely affecting the society.

An attempt has been made to identify the main source of water in the past and the present time. About the sources of water in the past, the study revealed that a significant proportion (68.7 percent) of the women were using unprotected spring as main sources of water, while the rest (31.2 percent) of the respondents were using river water. In the present time, more than half (57.2 percent) of the women fetched water from protected spring, while the next largest proportion (29 percent) of the respondents are using unprotected spring as main sources of water and the remaining (13.5) use river water. Since 2003 the main stream in the kebele is protected to serve the people in full capacity, however, because of high population pressure together with recurrent drought in the area, the amount of water in the stream has consistently decreased, thus, exacerbating the workload of the women, either to wait long hours to get a turn at the stream or to fetch water from distant sources.

Table 5. Distribution of Source of Water in the Past and the Present

Main sources of water	Time			
	Past		Present	
	Frequency	Percentage	Frequency	Percentage
Spring unprotected	132	68.7	56	29
Spring protected	-	-	110	57.2
River	60	31.2	26	13.5
Total	**192**	**100**	**192**	**100**

An attempt has also been made to identify the place where washing of clothes and watering of animals was undertaken by the women in the past and the present time. The data are summarized in Table 6 below. The result depicted that there is a variation in the source and place of washing clothes and watering of animals. The majority of the respondents replied that in the past watering of animals and washing of clothes were undertaken at the water point, while the smallest proportion of respondents indicated that it was at home and both places. But at the present time more than half (53%) of the women undertake washing of clothes at home and (61.2 percent) replied that they undertake watering of animals at home. The main reason behind the change in the places of watering of animal is because of water and forest resources depletion the women are forced to look after their household cattle's by tiding at their home. Secondly, in recent times there is not enough amount of water at the stream to serve both animals and humans at the same time. As a result, women have been forced to undertake watering animals at home and this has increased their workload.

Table 6. Places of Washing of Clothes and Watering of Animals

Place	Washing of cloths				Watering of animal			
	Past		Present		Past		Present	
	Freq	Per.	Freq	Per.	Per.	Freq	Freq	Per.
At the water point	136	70.8	40	20.8	158	82.2	16	9.4
At home	6	3.12	102	53.1	6	3.5	104	61.2
At both place	40	20.	50	26	4	2.3	40	28.2
Not stated	-	-	-	-	24	12.5	24	12.5
Total	**192**	**100**	**192**	**100**	**192**	**100**	**192**	**100**

During the fieldwork I have observed for the most part, middle-aged women were responsible for bringing water. If young girls were instructed to fetch water, they had to be accompanied by older married women. In rare cases male members also share responsibilities for bringing water. However, whenever they do, they never carryd pots like

the women. Instead they used donkeys to carry the water. The findings from a study conducted on Bugna woreda are consistent with the current observations that women and children, especially older girls fetch water. Husbands do not fetch water normally, except when their wives are absent from home or sick (Hirut, 2000).

This indicated that since fetching of water is the responsibility of women in the household now the burden of women has increased because watering of animal and washing of cloth at home need more water in the household, thus transporting and fetching the water has increased the women's burden.

Data from Focus Group Discussions shows that women are severely affected by water scarcity. The women who experienced severe water scarcity used very strong words to describe their sufferings. "This is the fate of the poor". The problem has worsened when the responsibly of watering animals and washing clothes at home has been added to other reproductive, productive and household chores. River and streams dried out, thus leading women to go far distance and to wait long hours to get their turn to fetch water. One participant stated the following:

> In the past my household had more than twenty cattle. I got money by selling their products like butter and milk but now I am left only with one ox. Because of deforestation and water scarcity, I lost what I had. Now, feeding this single ox makes my life difficult. Just like what I do for my children, preparing the daily feed of the ox is added to my responsibility (silence...). Uhuu…preparing animal feed is another challenge. During the harvesting season members of the household together brought *geleba* (crop residual) into our house. The *geleba* is mixed with *fagloo* using water. The water is added to make the feed soft and as a result it needs more water. Everyday, preparing the feed of the ox is very difficult task. Therefore, if I had more cattle, it is me who suffers more (6I, Age 60).

The women's words show how much water scarcity impose burden on the daily activities of the women. Moreover, it has an economic implication for agrarian society. Reducing the

livestock population of the household means reducing productivity and this in turn affects the survival of the household.

Average Time to Fetch Water

An attempt has been made to explore whether the time women use to fetch water compared to the past time increased or not. The qualitative data shows that in recent year because of high population pressure together with recurrent droughts, the amount of water available in the kebele has decreased. Thus, the time and distance where women get water increased. FGD participants explained the challenges as follows.

> Our children spent the whole day at school, so fetching water is our responsibility. We got water after waiting in a 5-6 hours queue. This is not always possible; sometimes we return home with an empty pot and jerrican (a plastic container used to hold liquid substances), though we got the turn. At the water point in order to get turn, we often quarreled with each other. Thus, conflict at the water point is common. With increasing population, competing on a single water source has led to conflict, because the stream has not enough amount of water to feed the whole population of the area (3A, Age 55).

Respondents were asked to indicate the average time that takes them to fetch water. As shown in Table 7 more than half (55.2 percent) replied that it takes 4-6 hours to get water from the particular source while the smallest proportion of respondents 2(1 percent) replied that it takes less than one hour (See Table 7 below for more detailed information).

The qualitative data also supports the fact that women often have the responsibility of using and managing water in the household, thus everyday they are taking long hours to fetch water both from distant sources and to get turn. This reduces their time for education and other activities. For example, time invested in securing water excludes them from participating in decision-making process, fighting against poverty and improving their quality of life.

Table 7. Average Time to Fetch Water

Time	Frequency Percentage	
<1 hour	2	1
1-2 hours	20	10.4
2-3 hours	60	31.2
3-4 hours	4	2
4-6 hours	106	55.2
>6 hours	-	-
Other	-	-
Total	**192**	**100**

Average Distance Travelled in Search of Water

The respondents were asked whether the distance to fetch water increased or not. The response was 'yes' in most case. As shown in Table 8, the majority of the respondents out of 192, (77.6 percent) replied that in the present time they walk an average 2-8 kms to fetch water, followed by those who walk 9-15 kms 18.7% and 3.6% reported that they walk 16-22 kms. According to the respondents in the dry season when water scarcity was very serious, women travelled relatively longer distance to fetch water from the stream/river.

Table 8. Average Distance Travel in Search of Water

Time	Distance (Kms)											
	<2		2-8		9-15		16-22		23+		**Total**	
	F	P	F	P	F	P	F	P	F	P	**F**	**P**
Past	61	31.7	131	68.2	-	-	-	-	-	-	**192**	**100**
Present	-	-	149	77.6	36.7	18.7	7	3.6	-	-	**192**	**100**

Fetching water is an activity that is undertaken every day, thus, increasing the distance means increasing the women's level of suffering. According to my observation, the distance from which women had to carry water varied from two kilometers to ten kilometers. They had to carry water twice a day, which used to take at least half a day. In Aseko-Buta Ber kebele women had to travel far for water collection. According to the findings in the kebele 40 liters of water was used per day per family just for drinking and cooking. This implies that the amount of water that a household consumes per day is much lower than the standard set by WHO which is 40-50 liters per person per day (Hirut, 2000 citing Rodda). This has direct implications on their families.

Impacts of Water Scarcity on Women's Health and Social Network

Fetching water from distant source and carrying heavy load has its own impact on the women's health. Respondents were asked what health problem they encountered as a result of fetching water from distant sources. As indicated in Table 9 most of the participants 53.1 percent reported that they had headache, chest and back pain, kidney and uterine illness, and eye problem, 4 respondents (2 percent) replied that they feel pain resulting from heavy burden and frequent work. Women, especially those who were middle aged complained of pain in their neck and shoulders. Some common problems reported by the women were, tiredness and during the nighttime, fearing of attacks from wild animals and humans.

Table 9. Most Frequently Mentioned Problems Associated with Water Resource Degradation

Cause	Problems	Freq	Per.*
Fetching water	Different kinds of health complaints (headache, chest and back pain, kidney and uterine pain, eye complication)	102	53.1
	Pain resulting from heavy burden and frequent work	4	2.0
	Pollution exposed to water born diseases a	6	3.1
	Tiredness/Fatigue	76	39
	Fear during the nighttime	12	6

Note:* Since the response could have multiple responses the total percentage does not add to 100.

A participant explains what she encountered as a result of fetching water during the nighttime as follows:

> Last week I went to the water point during the nighttime. When I reached at the stream there were many women fetching water turn by turn. After some minutes one young boy came and wanted to fetch water before his turn. At this time, many of the women refused him. Thus, conflict arises at the water point against the boy. Surprisingly, the boy went to the top of the hillside just above the stream and started to throw stones on us. It was night; we could not see the stone direction and there was nothing to hide ourselves with. We ran out in different direction to escape from the stone and went back to our home. When I came back in the morning to collect my jerrcan (a plastic made container used to hold liquid substances) and to fetch the water, I faced additional problem as my jerrican was not there (4A, Age 45).

In terms of the quality of water, women reported that they never had access to clean water. In the entire kebele, no water purification methods were used. The poor quality of water

also had severe implications for the community's health and for women in particular. The same participant stated that it is not scarcity only but also the quality of the water is not good.

> Hence, we use polluted water; we suffer from water born diseases. In addition to this, we do not get treatment as we need. This is because economically we are poor; we do not have enough money to pay for health service and the rising price of medication.

In addition to the above impacts women also faced different socio-cultural problem that results from water scarcity. Focus group discussants and interview participants reported that women are frequently exposed to rape and abduction when they go far distance to fetch water. Women also indicated that scarcity of water dismantled their social network. A participant explains her experiences as follows:

> In our area once a girl is engaged and married, she is expected to join *Mahiber* (local association most of the time established in connection to religion). This is our tradition that we inherited from our families. But, now this thing is in danger. For example, I am Christian and I was member of *Yemaryam Mahibir*. According to the association rules and regulations each member of the Mahibir must pay (prepared food and drink) according to their turn. But for the preparation of the food and drink it needs more (approximately 70-90) jerrican of water. In the past time we did everything together in mass (from fetching the water up to preparing the food) because of various reasons this is not possible today. Women like me, who do not have children, no one want to help us. Thus, I left the Mahiber (she kept silent for long period) I am not a member of that association anymore. My feeling is not good because, I interrupted what my mother had practiced throughout her life (3I, Age 42).

So, from the words of the above informant's it is possible to understand that the impacts of water scarcity not only affect the socio-economic situation of women but also have socio-cultural and emotional challenges. During the research and fieldwork, the researcher found

that for poor rural women, the lack of access to water meant an increase in the workload, reducing livestock population resulting in greater poverty. The increase in poverty and health hazards further reduced the ability of poor women to cope with hardship and marginalization.

4.3.2 Impacts of Deforestation on Women

One of the indicators that is commonly used to assess the level of environmental degradation is the availability of fuelwood in a community. Literature on environmental degradation has shown that fuelwood scarcity in many part of developing world gives evidence to the seriousness of deforestation. Most respondents in this survey pointed out the major causes of deforestation to be shortage of farmland and population pressure, followed by cutting of trees for fuelwood and construction materials (see Table 3 for more detailed information). This consensus is similar to the findings of FGDs and key informant interview results. According to the participants the major causes of the disappearance of forest were the increase in land cultivation, human consumption for fuelwood and housing and other necessities; livestock grazing and settlements. A number of the respondents indicated that all of the above activities to a varying degree have contributed to the vanishing of forests.

When the relationship between deforestation and women's vulnerability was examined, interesting observation, come to light. As the environment deteriorated women's livelihoods become increasingly vulnerable. For example, time allocation studies show that in developing countries rural women work on average of 12 to 18 hours per day, compared to 8 to 12 hours for men (Jacobson cited in Gedeyon, 2003). Since a large part of their daily tasks revolve around the collection of household biomass women are usually more affected by the growing commercialization and degradation of community-based resources, notably forests.

Fuelwood Scarcity and its Impacts on Women

In order to explain the extent of fuelwood scarcity participants have identified changing fuel sources and varieties, increasing distance of fuel source and changing time spent as the major indicators.

As it indicated in Table 10, respondents were asked to identify the primary sources of fuelwood in the past years and the present time. In the past year, the primary source of fuel was trees for proportion of (94.8 percent), followed by bushes and agricultural residuals (2.1%) each. In the present time however, the primary source of fuel is agricultural residuals which accounts for (54.2%), followed by animal dung and kerosene (17.7%) each.

Table 10. Sources of Fuel in the Household

Source	Time			
	Past		Present	
	Frequency	Percentage	Frequency	Percentage
Trees	182	94.8	8	4.2
Bushes	4	2.1	12	6.3
Agricultural residuals	4	2.1	104	54.2
Animal dung	2	1	34	17.7
Kerosene	-	-	34	17.7
Total	**192**	**100**	**192**	**100**

In the kebele all of the women and key informants interviewed reported that crop residual nowadays constituted nearly the entire sources of fuel. Due to the extreme wood shortage, for example, sorghum stalks were even used in the construction of hunts. FGDs discussants reported about scarcity of fuelwood as follows.

> In the near past the forest was found in the outskirts of each village. We were never worried for fuelwood collection. We were very selective, when using fuelwood we

have had the knowledge which wood (tree) give more heat and light, and which wood does not have smoke that is hazardous for our health. We have a profound knowledge about the variation. For example, Weira (*Olena europaea*) is more preferable because it has no smoke and gives more heat and light. But now we do not have any option, we use whatever is available around (6A, Age 60).

The data obtained from both quantitative and qualitative analysis show that fuelwood scarcity is clearly observed in the area. This is manifested both in quantity and quality of fuelwood.

Fuel quality according to respondents is measured in terms of flammability, good smell, absence or little smoke, burning for long time, dryness, etc. Respondents noted that as a result of scarcity of fuels they started to use poor quality fuel sources .The poor quality fuels that women identified includes Dedeho (*Euclea Shimpri*) and Bisana (*Capparis fomentosa*). The use of different inferior quality fuel has different implication on the health of women who are responsible for the daily kitchen work. When the fuel has poor burning quality, it is required in relatively large quantity, causing smoke that negatively affects health and taste of food.

A study conducted by Hirut (2000) on Boguna woreda also confirmed that the unsustainable removal of trees, which resulted in depletion of vegetation cover in terms of quantity as well as quality push the rural households to divert to other fuel types, which hardly fulfill the above, mentioned qualities. As can be seen from Table 10, in the present time the second largest proportion of respondents were found to use animal dung as alternative fuel source, which is used by many women. But in terms of quality it is the most inferior quality as identified by the women.

Results of both the quantitative and the qualitative data show that the distance from and time spent to collect fuelwood has increased in the present time when compared to the past. One participant in the interview explained this as follows:

As a result of deforestation, in the present time the distance where I collect fuel wood is too far from my residence. For example when compared with the place where I fetch water the location of fuelwood is too far, it takes one day a round trip (1A, Age 30).

As shown in Table 11, more than half (51%) of respondents replied that in the present time they travel an average 9-15 kms, while, (24.4%) from 16-22 kms and (16.1%) travel from 2-8 kms respectively. As can be seen from the same table, in the past almost all (95%) of the respondents were travelling to collect fuelwood an average less than 2 km and the rest (4.1%) reported that they traveled from 2-8 kms. However, the results of this study regarding the average distance covered by women are not consistent with other researches conducted in different parts of the country. For example, a research conducted in Gojjam revealed that women travel an average 5.5 kms to gather fuelwood while in Addis Ababa the average distance women travel to collect fuelwood reached up to 10 kms (Aster, 2003; Fikirt 1991; Alemayehu, 1996). This may be due to the reason that environmental degradation is place and time specific, thus the degree and the extent of the problem varies accordingly and this is equally important in determining the response to the problem.

Table 11. Average Distance Traveled in Search of Fuelwood

	Past		Present	
	Frequency	Percentage	Frequency	Percentage
<2	184	95.8	-	-
2-8	8	4.1	31	16.1
9-15	-	-	98	51.0
16-22	-	-	47	24.4
23^{+}	-	-	15	7.8
Total	**192**	**100**	**192**	**100**

It is true that scarcity of fuelwood increases the time women spend on fuelwood collection. Respondents were asked about the average time spent in fuel gathering. In this regard

when looking at the difference between the present and the past (in Table 11), the time spent in collecting fuel is very high, greater than six hours in the present time as compared to less than one hour in the past. This could be justified by the existence of high rate of deforestation in the area together with unwise use of fuel by the women.

The distance traveled in search of fuelwood has an impact on the time and frequencies of gathering fuel. Fuelwood is the principal source of domestic energy in Ethiopia. Women who are the primary provider of household energy, travelled at least one full day to collect wood, while a generation ago it could be collected within a half hour walk from their homes (Hirut, 2000). According to the survey results about one third (37.5%) of responses replied that they collect fuel 2-3 times per week (See Table 12). This implies that women are forced to walk 60 kilometers per week only for fuelwood collection. In addition participants of the FGDs pointed out that the frequencies of fuelwood collection in the household increased, when there are feasts, holidays, and other socio cultural ceremonies.

Table 12: Frequency of Collecting Fuel Wood in the Household

Frequency of collecting											
Once a week		2-3 times/week		4-5 times/week		Every Day		Other		**Total**	
Freq	Per	Freq	Per	Freq	Per	Freq	per	Freq	per	**Freq**	**Per**
54	28.1	72	37.5	12	6.3	36	18.7	18	9.4	**192**	**100**

Studies on the additional length of time and greater distances women have to walk to collect fuelwood shows that burden of ecological change has fallen disproportionately on women and young children (Gedeyon, 2003). Apart from the time and distance wood gathering is not merely a matter of picking up sticks lying around. Rather it is a complex and energy consuming operation. Collecting fuelwood from distance and inaccessible sources require more energy and considerable courage. Due to the dangerous location of the sources of fuelwood, women are exposed to various types of problems. The researcher observed that walking steep slopes and climbing mountains to collect fuelwood is the

everyday challenge of women in the study area. Sometimes the fittest women climb up trees often in bare feet; falls and injuries from-cutting tools and stones are common.

According to this study, the situation of women to get fuelwood becomes difficult during the rainy season. Research finding on women and fuelwood scarcity indicate that the rainy season makes fuelwood gathering and transporting very complicated (Fikirit 1991; Hirut 2000 and Selamawit 2004). A participant describes the challenges they had faced in the process of transporting the wood and in time of using the wood as follows:

> In the summer season when it rains the roads become slippery and wet. We get soaked through. In addition to this, because of the rain the wood becomes wet and the weight that we carry increases. Thus, it needs more energy and determination to transport. Moreover, the wood becomes more smoky and unable to burn easily. To get dry wood we need to move further with that slippery and sharp terrain. In most cases we got fuelwood after crossing the Bogido river, from the place called Meroo. Sometimes, when sudden rainfall occurs, the volume of the river rises up and it becomes difficult to cross. As a result, we are forced to spend more time until the flood passes and the volume of the river decreases (3B, Age 36).

The women's words tell the severity of the problem that scarcity of fuelwood increase the time women spend seeking fuel wood and exacerbate women's physical and psychological burden. Another FDGs participant explains the situation:

> The forest has entirely disappeared from our surrounding. Thus, we are supposed to go far distances to collect fuelwood which takes one day for a round trip. As you see me, because of this day-to-day arduous work I am exhausted both mentally and physically (4B, Age 49).

Carrying heavy load and traveling long distances has an impact on health. Most of the participants of this study reported that they have been exposed to different kinds of illness (headache, spinal cord pain, eye complication etc.). Apart from the hard task they accomplish on the average 3 times per week, they could also become victims of rape and

abduction. The major problems that women experienced because of fuelwood collection are enumerated in Table 13 below.

Table 13. Most Frequently problems Associated with Fuelwood Collection

Cause	Problems	Frequency	Percentage*
Fuelwood Collection	Chest and back pain	98	51
	Headache and eye problem	60	31.2
	Internal disorder	154	80.2
	A break on arm leg and other body part	19	9.8
	Falling down and pain	132	68.7
	Tiredness	151	78.6
	Abduction and rape	6	3.1

Note: * since the response could have multiple responses the total percentage does note add to 100.

A total of 192 women respondents were asked to report any health and social problem they have encountered. Accordingly, the majority of them (80%) replied that they feel internal disorder. The second largest numbers of respondents (78.6%) feel tiredness. These respondents who have encountered falling down and pain accounts for (69%), (51%) reported that they had chest and back pain, 31% headache and eye problem while (9%) of the respondents reported that they had fracture on arm/leg and other body part and those who replied abduction/rape accounts for (3%). Moreover, most respondents reported that collecting fuelwood from distant sources might have resulted in health problem that is not felt at the time being, but it will result in pain during old age.

Previous research on women and environment as well as the result of this study revealed that women are exposed to indoor pollution; emissions from biomass fuels are dangerous sources of air pollution in the home, where women cook during all or part of the year. In other words since they spend relatively more time within the confines of the house and

fuelwood scarcity has forced women to use unsafe energy sources like animal dung and excrement which is more smoky and had bad smell. According to the researcher's observation it seems likely that respiratory and eye disease, which are so abundant among women of the study area, are caused by wood and other biomass burning.

Rape and abduction is another problem that was pointed out by responds and discussants. The women explained this, "sources of fuelwood is far away from human settlement so, the abductor and rapist get the courage to do whatever they want", thus the women do the work with fear and anguish. The following case illustrates how a woman experienced rape.

> One day I went to collect fuelwood from the nearest forest that is *Aseko gara* (hill side). At the bottom of the gara there is a farmland. That day the owner of the farmland prohibited me from collecting the wood, because he claimed that the hillside above his farmland was under his control. Then I begged him to get his permission to collect the wood. After some conversation he told me the following "this is your last chance, you do not come here again, come on let me help you". I became very happy and followed him. When we reached the middle of the forest, I never expected that, he would rape me. I got pregnant after that. At that time I did have any idea what so I do. The only option that I had is to tell him. Then one day I went to his work place and told him everything. For a while he becomes angry. But he did not want to quarrel with my brothers, so he married me and I became his third wife (1B, Age 32).

A participant summarized her life experience and what women encounter as a result of deforestation as follows:

> I began collecting fuelwood when I was around 7 years old, to assist my mother. At that time there was no shortage of fuelwood. I gathered fuelwood from around our farmland. It was not far from my family house. But now it is a degrading life full of humiliation and shame. We were often victims of rape and abduction because the forest is too far from population settlement and the abductor and the ripest get the courage to do whatever they want to do. Moreover, nowadays the price of fuelwood

has increased from 1:50 cents to 20 birr per bundle of donkey, and even this is not available as required (2I, Age 56).

Furthermore, deforestation and scarcity of fuelwood has an economic implication on women. Many informants pointed out that until recent time the women rarely bought goods and materials for household consumption except salt. Even they prepared their own clothes using local resources. But now they are forced to buy everything including water and fuelwood, which were available everywhere in the past.

A close examination of the above statements reveals that scarcity of fuelwood has a huge impact on the physical and economic well being of women. Both the qualitative and the quantitative data demonstrated that women must walk a long distance to collect fuelwood often increasing women's work load, sapping their energy, risking their personal safety. Also the data shows there is an increasing incidence of violence when they traveled to remote location. Research findings on deforestation in various countries have shown, in rural areas where fuelwood supply is scarce, leaving home very early to have more time to gather fuelwood is a daily routine among women. Thus, deforestation and loss of vegetation have forced women and girls to wake up earlier and walk further in search of fuel wood (Diana 2005; Fikirte1991 and Hirut 2000).

4.4 Coping Strategies

In this section, women's responses to coping mechanisms for environmental degradation will be discussed. Recently, anthropologists and other micro-level social scientists have paid particular attention to coping strategies or risk aversion behavior of people who live in marginal environments. Studies show that whenever detailed and systematic investigations have been made it is clear that each society has come up with successful mechanisms of coping (Selamawit, 2005). This is not to say that local people have completely mastered the hazards or that their strategies are necessarily appropriate today with major changes in population dynamics and technological advancements. But it does mean that an understanding of indigenous knowledge systems is essential.

Most of the time local knowledge about plants, animals and other resources is well developed and it is this knowledge that permits people to adopt and survive in marginal environments. A number of scholars who wrote about cultural ecology have various understanding and definition about coping strategies. Nevertheless, generally coping strategies are dynamic responses of human, social and cultural adjustments to changing environmental conditions (Abeya, 2001).

According to feminist environmentalism, women provide alternative perspectives and strategies for dealings with environmental problems (Agrawel, 1992). But the indigenous survival strategies of women in time of environmental degradation are not well documented. However, the researcher of this study has attempted to investigate the coping strategies of women during the time when they faced shortage of fuelwood and water scarcity. Interviewees and informants have identified different coping mechanisms that women rely upon to address particularly water and fuelwood scarcity.

As revealed by the findings, the women in this study utilize a number of strategies. Under the following section the strategies of the women employed to cope up the problem they faced are presented as follows.

4.4.1 Coping Strategies for Water Scarcity

Participants were asked about the strategies they have been employing in order to cope up with scarcity of water. Respondents were also asked to specify strategies (if they have) that they use to cope up the challenges they face. Depending on the differing circumstances, women employed a variety of strategies. These strategies are summarized in Table 14 as follows.

Table 14. Coping Mechanisms of the Women for Water Scarcity

Resource	Mechanisms	Freq	Percentage
Water	Travel long distance to fetch water	96	50
	More efficient utilization of water	76	39.5
	Washing clothes at the water point	12	5.7
	Reduce the frequency of food preparation	9	4.6
	Serve uncooked meal	-	-
	Changing to food items which required less water	-	-
	Total	**192**	**100**

In order to cope up with water scarcity half (50 percent) of the women answered that they traveled long distance to collect water as their primary strategies. The next largest proportion of respondents (39.5 percent) applied more efficient utilization of water in the household as their primary mechanisms. Washing clothes at the water point accounts (5.7%) and reducing the frequencies of food preparation (4.6 %) are other coping mechanisms that were mentioned by the women.

As can be inferred from the above discussion, women often have the responsibility of using and managing water in the household, providing an opportunity to know the means of how to manage scarce resources. When they encounter water scarcity they employed different coping mechanisms. As can be observed from Table 14, women travel long distance to fetch water, more "efficient" use of water and washing of clothes at the water points are very common mechanisms. Nevertheless, time invested to secure water exclude them from participating in other activities that is crucial for their advancement. In general, women as water carriers and providers always have to make sure that there is enough water in their household.

Similarly, participants in the interviews and FGDs pointed out some coping mechanisms that the women employed to cope up with water scarcity. In order to ease their problem the women used different strategies and techniques. Such as reducing consumption, sharing

water whith neighbors; using rainwater for long periods by storing more during the rainy season and fetching water during the nighttime. During the fieldwork it became evident that the women took clothes and utensils to the water site to wash them. In the nighttime women had to haul water from comparatively less distance, they carried water to the village to wash their utensils, clothes and watering small domestic animals. The following words from participant in the interview demonstrate this fact.

> To avoid conflict and to get turn early often I moved to the stream during nighttime. But at this time I needed someone to accompany me because as a human being I have fear and anguish to walk alone in the night. Sometimes we visit the stream in-group. This gives us some courage to fetch more than two times within a single night (8I, Age 55).

The statement of the women elaborated that fetching water during the nighttime is an important coping strategies but participants frequently reported that this mechanism is not the best alternative, since it poses additional problems that arise out of fear and the cold temperature of the night, which expose women to back pain and frequent coughing. Thus, it may or may not be explicit to the women that these coping strategies have its own negative consequences.

4.4.2 Coping Mechanism of Women for Fuelwood Scarcity

As stated above, fuelwood scarcity is the major problem that affects women directly, since they have the responsibility to supply and manage household fuel. As indicated in Table 15 women employed different mechanisms to cope up with fuelwood scarcity. The findings show that, quite a significant proportion (35%) of the women use dung and waste materials (*gibisbis*) as their predominant means of coping mechanism for fuelwood scarcity. The next largest proportion (25%) of the women replied that "efficient and effective" utilization of fuelwood is another strategy to cope up with fuelwood scarcity while (18.8 %) replied that they use food items, which require less fire to cook as mechanisms to cope with fuelwood shortage (see Table 15 below for more detailed information).

Table 15. Coping Mechanisms of the Women for Fuelwood Scarcity

Resource	Mechanisms	Freq	Per.
Fuelwood	Using dung and waste materials	68	35
	Efficient utilization of fuelwood	48	25
	Change of food item which require less fire to cook	36	18.8
	Travel long distance to collect fuel wood	22	11.4
	Buying from sellers and borrowing from neighbors	18	9.4
	Total	**192**	**100**

Data obtained from qualitative methods also goes with the above results. Participants in the interview and group discussions describe many strategies to cope up with fuelwood scarcity. This includes use of alternative energy source like animal dung and charcoal, sharing fuelwood with neighbors, using alternative energy source other than fuelwood, like kerosene, buying fuelwood from individual collectors and sellers and planting eucalyptus tree only for fuelwood supply on their back yards (only those who have garden). During the fieldwork I observed that eucalyptus tree is planted at the backyards of many households. In addition, economizing fuelwood is the other strategy that is often undertaken by women. In this regard their coping strategies permit the women to adjust or to cope with the critical fuelwood crises. A 49 years woman participant reported her mechanism as follows:

> I have been using different mechanisms to secure fuelwood for my household. But most frequently I used to collect fuelwood from very far distance as the main strategy, sometimes I bought fuelwood from individual fuel seller, though the price is shocking. Just 10 years before the price of one donkey bundle was 1 birr and fifty cents but today it rises to 20 birr and as compared to the past the amount of wood is decreased. Even with this price, the supply is not enough. Thus, in order to minimize the problem I traveled about five hours to access the forest; it takes one day for a round trip (9A, Age 37).

The majority of participants in the qualitative study shared the idea of the above woman. The explanation given for this price increase is the scarcity of fuelwood supply from the surrounding area. Participants also reported that in order to minimize their fuelwood consumption they have been using kerosene for lighting and to prepare fast food. Despite its health impact they are often accustomed to use dung and excrement for baking injera (baked food made of barley, sorghum and teff flour) and bread.

To sum up, analysis of coping strategies aims at an understanding of community change, the availability of options and the reason of selecting one option over the other and other social dynamics. The findings of this study demonstrate that the woman use different strategies to manage the circumstance, expanding efforts to solve fuelwood scarcity and seeking to master, minimizes or tolerate challenges. In general, as shown in both the qualitative and the quantitative data, to resist the impacts of environmental degradation the women have developed different coping mechanisms. These include change in diet, reduction in consumption, traveling far distance to collect fuelwood and reducing the number of livestock population etc. However, the above-mentioned coping mechanisms are used at various levels and to various scarcities or problems.

Though, the objective of this study is not on the impacts of coping mechanism, in spite of their use as a solution for problems of the women, coping mechanisms have a far reaching impact on the social, economic and cultural life of the community as well.

CHAPTER FIVE

5. *Summary, Conclusion and Recommendations*

5.1. Summary

This study has focused on the impacts of environmental degradation on the life of rural women (impacts of water resource degradation and deforestation) and to identify the coping mechanisms adopted by rural women to cope up with the problem they encounter as a result of the degradation of their immediate environment. To achieve this objective the following research questions were formulated.

1. To what extent does environmental degradation affect rural women's life?
2. What major effect does environmental degradation bring about on the day-to- day activities of rural women?
3. What are the coping mechanisms developed by rural women to address the problem?
4. What should be done to minimize the impacts of environmental degradation on rural women?

Result of the quantitative and the qualitative data revealed the following findings:
Deforestation and water resources degradation are critical problems that severely affect the lives of women in the study area. Informants pointed out that different causes of resource degradation. High population pressures, ignorance, poverty together with other socio-economic and national political factors are identified as major factors that exacerbate the depletion of forest and water resources.

In the study area because of gender-based hierarchies and the subordinate gender roles, women perform tasks such as collecting fuelwood, water and fodder. Thus, as water and fuelwood managers' the study shows that women and children suffer disproportionately by the effect of environmental degradation.

Water being one of the scarce resources in the area (about 6485 people share a small stream) the depletion of water has increased the burden and the time women spent on fetching water. Both the qualitative and the quantitative results of this study reveal that women are forced to wait for an average of 4-6 hours to get turn at the water point and forcing them to a travel longer distance of an average of six kilometers in search of new source. They carry and transport 20-25 liters of water at their backs for 1-2 hours in difficult and dangerous paths, two times a day.

Fetching water from distant source and carrying heavy loads exposed women into higher health risks. The majority of women in this study complained about several types of pain (headache, chest and back pain, pain in their neck and shoulders and eye complication etc). In addition to this women are also exposed to different socio-cultural problems. These include rape and abduction, conflict at the water point, and erosion of their social network.

Women being responsible for fuelwood collection and use in the household, they are the first who are concerned and face anxiety due to fuelwood shortage. The results of this study reveal that the depletion of forest resources have forced women to travel longer distances (they travel an average of 9-15 kms) in search of fuelwood, 2-3 times per week, and also to switch to inferior fuel quality. Women spend more hours in the collection of fuel and it requires their scarce time and limited energy. At present, the major source of fuel in the kebele is crop residual (sorghum stakes) and animal dung (which is more smoky and dangerous to health). Good quality fuels are no more available in the area; use of less quality fuel negatively impacts women's daily work as well as their health. The majority of the respondents in this study replied that they feel internal pain; fatigue, chest and back pain. Moreover, collecting fuelwood from distant sources expose women for gender based violence particularly rape and abduction.

An attempt has been made to investigate the coping mechanisms that women rely upon to address particularly the problem of water and fuelwood scarcity. Thus, the result shows that depending on differing circumstances women have employed varieties of strategies.

In order to cope up with water scarcity, the majority of the participants travel long distance to collect water. The participants also employ more "efficient utilization" of water in the household as their primary mechanisms. Washing clothes at the water point, reduce the frequencies of food preparation. Serving uncooked meal and changing to food items that required less water are the mechanisms that often employed by the women. The qualitative study results also revealed that women employed strategies such as reduced consumption, sharing of water with neighbors; using rainwater for long periods by storing more during the rainy season and fetching water during the nighttime.

Women often have the responsibility of using and managing water in the worst conditions, sometimes having water for daily chores and providing an opportunity to know the means of how to manage scarce resources.

Data obtained through qualitative and quantitative methods identified that to cope up with fuelwood scarcity women employed varieties of strategies. This includes use of unsafe energy source like animal dung and charcoals," efficient and effective utilization" of fuelwood, changing to food items which required less fuel to cook, travel long distance to collect, buying from sellers, sharing fuelwood with neighbors, use of alternative fuel source other than fuelwood like kerosene and planting eucalyptus tree on their back yards were identified as mechanisms to cope with fuelwood shortage.

5.2 Conclusion

Studies show that due to their interaction and interferences with the immediate environment to fulfill their economic, social and political needs people in this world have been exploiting the planet earth very rapidly. High population pressure, poverty, unwise use of natural resources and ignorance are combined synergically to contribute the degradation of the environment. Thus, the consequence of environmental depletion negatively affects human health and welfare they hindering development. This will affect generation to come.

This study pronounced that in the study area the availability of a large proportion of the poor rural population has severely eroded natural resource over the past two decades. This has particularly adverse implications for women and girls in the area. The main reason for this is that it is usually women who are the main collectors and user of water, fuelwood and animal feed. A typical rural woman expected to take over the diverse tasks in production, reproduction and household chores. Thus environmental degradation increased the range of working hours. All these simply mean prolonged hours of working beyond the capacity that an individual can be done.

This specific study has found that in Aseko- Buta Ber kebele the facts of environmental degradation are more than exaggerations: shockingly, it has adverse class and gender effects. Women face the greatest shock with resource degradation / exhaustion. The depletion of fuel sources and water resource degradation in the immediate environment has lengthened their daily journey, spending more time and energy to get hold of these resources in the further distances, exposing them to gender- based violence; a decrease in women's income from non-timber forest products and agriculture, an adverse effect on their health and nutrition, an erosion of women's social support networks; and a decline in their traditional knowledge of plants and species.

In this research it has become evident that in order to cope up with scarcity of water and fuelwood in the household, women have employed a variety of mechanisms .The strategy they employed include fetching water during the nighttime, travelling long distance to collect water and fuelwood, sharing water and fuelwood with neighbors, using unsafe water and fuel sources, reduce the frequency of preparing food, "efficient utilization" of fuelwood and water, buying from sellers are some of the mechanisms employed by most of the participants.

Even though division of labor between men and women show both cross-cultural as well as cross regional variation within a country, it is a widely accepted fact that women in most culture, take the responsibility of collecting water, fuelwood and fodder from various sources and managing it at home. From the survey results and discussion, it can be

concluded that the degradation of natural resource in the study area which resulted in reduced supply of resource, has caused wider and complex problems for women, their families and their environment.

5.3. Recommendations

Based on the finding from the respondents of this study the researcher would like to recommend the following:

- Since high population pressure is one of the reasons for the fast depletion of the natural resources, family planning education is urgently needed.
- Upgrading domestic water supply and the use of natural method of water purification needs to be encouraged.
- Alleviate women's heavy work load, which often involves long hours spent daily to gather fuel, fetching water, producing and preparing food, maintaining their homes, nurturing their children and, in addition, earning incomes that are essential to the survival of their families. Using eco-friendly fuel like biogas and developing fuel saving energy systems such as improved heating and cooking stoves can achieve these. And the improvement of rural water supplies through the rehabilitation of existing wells and the installation of new ones.
- Priorities need to be given to infrastructure development (clinic, school, electricity and road etc) to improve women's access to water, fuel, and health, education and extension services.
- Improving rural women access to resources through alternative policy instruments that ensure more equitable gender-based distribution of land, labor, capital, technology, social services and infrastructure.
- Gender sensitive environmental awareness program need to be supported by the government as well as by NGOs and donors.

- Women's views and opinion regarding the environment, their needs, problems and priorities must be addressed in the national and regional agenda.

- Rural women would play a vital role if they are invited to participate in the formulation of development plans and policies, which affect their well-being.

- Research institutions are better to reorient their programs to address the problems of rural women, particularly in areas of technology for alternative energy sources, time saving technology in view of requirements of health and safety.

- Development intervention is needed to alleviate the problem of these women. Thus, government and NGOs need to give special attention to water and afforestation projects.

Finally, efforts to protect the environment require a range of actions, including converting local resources (like using solar energy), introducing new technologies and taking economic and legal measures to prevent and conserve the environment. For Aseko-But Ber kebele these actions are urgently needed to alleviate the problem of women and to meet the goals of the socio-economic development and to protect the productivity of the environment for future generations.

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Appendices

Appendix A

I. Background Characteristics of FGD participants

Group	Code	Age	Sex	Religion	Level of Education
A	1A	30	F	Orthodox	Primary
	2A	20	F	Orthodox	Primary
	3A	55	F	Muslim	Illiterate
	4A	30	F	Orthodox	Primary
	5A	55	F	Orthodox	Only read & write
	6A	60	F	Muslim	Only read & write
	7A	50	F	Orthodox	Primary
	8A	21	F	Orthodox	Primary
	9A	37	F	Orthodox	Illiterate
	10A	25	F	Orthodox	Primary
	11A	38	F	Muslim	Illiterate
B	1B	32	F	Muslim	Only read and write
	2B	41	F	Orthodox	Illiterate
	3B	36	F	Orthodox	Illiterate
	4B	45	F	Muslim	Illiterate
	5B	26	F	Orthodox	Primary
	6B	52	F	Muslim	Illiterate
	7B	40	F	Orthodox	Only read & write
	8B	49	F	Orthodox	Only read & write
	9B	58	F	Muslim	Illiterate
	10B	35	F	Orthodox	Only read & write

Appendix- B

II. Background Characteristics of Interview Participants.

Code	Sex	Age	No years leaving in the area	Educational status	Occupation	Responsibilities
1I	M	61	Since birth	7th	Merchant	*Yeager Shemagle*
2I	F	56	Since birth	6th	Petty trade	*Yefirdshengo* Secretary
3I	F	42	Since Birth	8th	Farming	Chairperson women Association
4I	M	46	7 year	Diploma	Government Employee	Head of wereda EPA office
5I	M	39	20 Year	Diploma	"	Wereda official
6I	F	60	Since birth	Only read & write	No	-
7I	M	52	Since birth	Diploma	Teacher	Chairperson of women's Idir
8I	F	55	Since birth	Only read & write	-	Yeager Shemagle
9I	F	29	9 years	Diploma	Government Employee	TLNR Conservation & Protection
10I	M	34	16 years	Diploma	"	Women's affair Representative

Appendix -C

Structured Interview Questionnaires for Women *Idir* Members.

Addis Ababa University

School of Graduate Studies

Institute of Gender Studies

Dear Respondents:
This study is conducted in partial fulfillment of the requirement for the degree of Master of Arts in Gender Studies. The purpose of the structured interview is to get information about the impacts of environmental degradation on the life of rural women. I would like you to note that the information to be obtained from you is very essential to the successful completion of this study. Since your responses will be kept confidential, please give your honest response. I therefore highly appreciate to taking your precious time in giving response for the interview.
Thank You for your Cooperation.

Name of enumerator ----------

Case study Area .....

Date of the Interview .....

Sample No, ...

Code number.....

Part I. Background Information of Respondents

1.Age----------Years.

2.Maretial status

A. Married B. Single C. Divorced D. Widowed E. Separated

3.What is your religion?

A. Orthodox B. Muslim C. Protestant D. Catholic E. Others (specify)----

4. Type of household composition? A. Female headed B. Male headed

5. Household structure?

A. Total number of family members B. Number of female household members

C. Number of male household members D. Total number of children you give birth to

6. Educational status

A. Illiterate B. Only Read and write C. Grade (1-4) D. Grade (5-9)

E. Grade 10 th or 12 th Completed F. Other (specify)……..

7. If your answer for question number six is "illiterate" why you are not educated?

---

8. If your answer for question number six is "only reading and writing " why you are limited to reading and writing only?----------.

9. Do you own property? A. Yes----------B. No.----------If 'yes' what----------

10. What is the major occupation of the household?……

11. Does your household have supplementary income? A. Yes B. No.

12. If the answer for q no 11 is 'yes' what is the major source?……..

13. Does your household own livestock? A. Yes B. No

14..If the answer for q no 13 'is Yes, how many?

Part 2. Information about Natural Resources Degradation

Below are questions that are designed to know your knowledge about the Impacts of environmental degradation and you are requested to answer the questions accordingly.

1. How many years did you continuously live in this area?

   A. Since birth B. >10 years C. >15 years

   D. >20 years E. Others (specify)---------

2. What kind of problems prevail in your area?

   A. Health B) Food insecurity C. Lack of Educational opportunity

   D. Environmental degradation (deforestation and water resource degradation)

   E. Other (specify)……

3. What are the most difficult problems currently affecting your life?

   A. Shortage of fuel wood B. Shortage of water C. Shortage of farmland

   D. Lack of educational opportunity E. Absence of electricity

F. Unemployment G. Absence of adequate health service

H. Lack of infrastructure I. Other (specify).....

2.1 Water Resources

2.1.1 Is there any water resource degradation in your locality (decreasing in quantity and quality)? A. Yes B. No

2.1.2 If your answer for question no 2.1.1.is" yes " what do you think the reason could be?

A. High population pressure B. Unwise use of water resources

C. Recurrent drought / Shortage of rainfall D. Massive deforestation

E. Other (specify)----------

2.1.3. What are the main water sources in your locality in the past years?

A. River B. Spring unprotected C. Spring protected D. Pond

E. Hand dug well F. Public tap G. Other (specify)----------

2.1.4. What are the main water sources in your locality in the present years?

A. River B. Spring unprotected C. Spring protected D. Pond

E. Hand dug well F. Public taps G. Other (specify)----------

2.1.5 If the source of water is public tap, do you get the service whenever you need it?

A) Yes B) No

2.1.6 Who fetches water in your household? How is that decided?----------

A. Husband B. Wife C. Son D. Daughters

E. Wife and Children F. Other (Specify)_____.

2.1.7 Does the distance it takes you to fetch water increase at the present time compared to the past? A. Yes B. No

2.1.8 If the answer for question no 2.1.8 is" yes" how long does it take you to fetch water from particular sources?

A) <1 hour B) 1-2 hour C) 2 hour-3 hours

D) 3 hours- 4hours E) 4-6 hours

2.1.9 How many 'jerrican' of water your household consume per day?.....

2.1.10. How do you transport water?

A) Carry (yourself) B) Carry (family member)

C) Transport by Donkey D) Other (specify).....

2.1.11 If you are the one who carry water, do you think you have encountered any health problem as result of fetching water? A) Yes B) No

2.1.12 If yes, please explain.....

2.1.13 How do you rate the place where you fetch water and the way to get there and back home in terms of security?

A. Very good B. It depends on the time

C. Good D. Dangerous E. Other (specify).....

2.1.14 If your answer is either 'it depends on the time 'or 'dangerous', please explain

2.1.15 Are you exposed to any dangers when fetching water?

A. Yes B. No

2.1.16 If yes, explain.....

2.1.17 Can you get water at any time of the day? A. Yes B. No

2.1.18 If not, explain.....

2.1.19 What do you rate about the availability of water?

A. Always sufficient B. Sufficient in the past C. Insufficient most of the time D. Insufficient at all times E. other (specify).....

2.1.20 If the availability is insufficient, what do you think the reason could be?

A. Shortage of rainfall B. Poor Quality C. Sources are too far D. Long queue E. Other (Specify)

2.1.21 If the problem is long queue, how long does it take you to get turns?.....

2.1.22 In the past time where is the washing of clothes carried out in your household?

A. At Home B. At the water point C. In both places D. Other (Specify).....

2.1.23 In the present time where is the washing of clothes carried out in your household?

A. At Home B. At the water point C. At both places D. Other (Specify).....

2.1.24 In the past time where is the watering of animals carried out in your household?

A. At Home B. At the water points C. In both places D. others (Specify)...

2.1.25 In the present time where is the watering of animals carried out in your household?

A. At Home B. At the water points C. In both places D. others (Specify)...

2.1.26 What are your three major coping mechanisms during water scarcity?

A. Travel longer distance B. More efficient utilization of water

C. Serve uncooked meal D. Changing to food items, which require less water

E. Washing clothes at the water points

F. Reduce number of cooking G. Other (Specify), _____

2.1.27 What are the average distance traveled in search for water in the present time?

A. 2-8 B. 9-15 C. 16-22 D. 23^{+} E. Other(specify).....

2.1.28 What forms of assistance you need from the government or NGOs for your Problems? .....

2.1.29. What do you think should be done to over come the Problem you face?.....

2.2 Forest Resources

2.2.1. Do you have easy access to forest resources (Fruits, edible roots and leafs, medicinal plants and fuel wood in the present time compared to the past?

A. Yes B. No

2.2.2. If the answer for Q no.2.2.1 is no, why not?

A. The forest is prohibited B. Difficult location

C. Scarcity of forest resource because of massive deforestation

D. Other (Specify),_____.

2.2.3. If your answer for Q no 2.2.2 is 'scarcity of forest resources because of massive deforestation' what do you think the reason of deforestation in your area ?

A. Expansion for agricultural land B. For Settlement area C. Wild fire

D. For fuel wood E. Use for construction materials F. All

G. Others (specify).....

2.2.4. Who is responsible for deforestation? A. Men B. Women C. Both men and women D. Government E. Other (specify).....

2.2.5. For what purpose do you use forest resources (Fruits, edible roots and leafs, medicinal plants, fuel wood, etc?

A. Fuel wood B. Food C. Animal feed D. Income generating activities

E. Medicine F. House construction G. All H) Other (Specify).....

2.1.6 Have you ever collected food items (leaf, fruit, roots) from the forest?

A. Yes B. No

2.1.7 If the answer for question no 2.2.6.is "yes" when it takes place?

A. In the past time B. In the present time

C. Until now D. Others (Specify).....

2.2.8. If the answer for Q. no. 2.2.6 is "yes", for what purpose?

A. For house hold consumption B. For sale C. Other (specify) ----------

2.2.9. If the answer for Q. no.2.2.6 is "yes", who in your household often collect?

A. Husband B. Wife C. Daughters D. Wife and children

E. Other (Specify), ----------

2.2.10. If your household have cattle, who often collect animal feed?

A. Husband B. Wife C. Daughters D, Sons E. Wife and Children

F. All G. Other (specify)---

2.2.11. What are your household's sources of animal feed in the past years?

A. Communal Grazing B. Crop residue

C. Cut and carry grass or fodder plants D. Household own grazing land

E. Around the backyard F. Weeding plant G. All

2.2.12. What are your household's sources of animal feed in the present time?

A. Communal Grazing B. Around the backyard

C. Household own grazing land D. Cut and carry grass or fodder plants

E. Crop residue F. Weeding plant G. All

2.2.13.What are the three major source of fuel for your household in the past years?

A. Trees B. Bushes C. Agricultural residuals,

D. Animal dung E. Kerosene F. Other (specify) _____.

2.2.14.What are the three major source of fuel for your household in the present time?

A. Trees B. Bushes C. Agricultural residuals

D. Animal dung E. Kerosene F. Other (specify)-------

2.2.15. For what purpose does your household need fuel other than Cooking and heating?

A. Lighting B. Sale C. Small Scale Industries,

D. Other (Specify) _____

2.2.16. Who often collect fuelwood in your household?

A, Husband B. Wife C. Sons D. Daughters E. Wife and children,

F. Other (Specify), ----------

2.2.17. What are the average time spent for fuelwood collection in the past years?

A. Less than one hour B .1-2 hours C. 2-3 hours D. Three hours,

E. 3-4 hours F. More than six hours G. Other (specify).....

2.2.18. What are the average time spent for fuelwood collection in the present years?

A. Less than one hour B .1-2 hours C. 2-3 hours D. 3-4 hours

E. 4-6 hours F. More than six hours G. Other(specify.....

2.2.19. How many times is fuelwood collected in your household/ week?

A. Once a week B. 2-3 times week C.4-5 times a week

D. Every day E. Other (specify) ----------

2.2.20. What are the average distance traveled in search of fuel wood in the present time? A.2-8 kms B. 9-15 kms C.16-22 kms D. 23^{+} E. Other (specify) -

2.2.21 Are you encountered any problem when fetching water? If yes please explain.....

2.2.22. What are the coping mechanism of the household when there are scarcity of fuel wood?

2.2.23. What do you think should be done to overcome the problem of deforestation?

A. Use alternative energy source B. Under taking afforestation campaign

C. Planting tree when cutting D. Other (specify).....

2.2.24 Are you prepared to move to a different place if the government provided you with an alternative location)

A) Yes B) No

2.2.25 Have you ever been approached by government or non-government extension worker to discuss your problems related to deforestation?

A. Yes B. No, If your answer is 'yes' when and whom?.....

2.2.26 What kind of intervention do you think is urgently needed to minimize the problem?.....

Thank you And Good bye!

Appendix(D

Focus Group Discussion Interview Guide for members of Women Association and members of Women *Idir*

A study on rural women and Environmental Degradation (Deforestation and degradation of water resources).

Hello! Thank you for taking your time to talk to us .We are ----------(the moderator) and ----------(note taker). We are working on a research for Addis Ababa University, Institutes of gender studies in partial fulfillment of a master's degree in gender studies.

We are here to learn from you about the impacts of environmental degradation on rural women. I hope the study will come with findings that are helpful to better understand and deal with problems related to the degradation of water resource and deforestation. Thus, your genuine and honest response is crucial for the success of this study. We would like to explain to you some of the ground rules for the discussion.

1.The discussion will last about ----------to----------

2.Everything you say remains confidential.

3.Your name will not be used when reporting the findings.

4.Your participation is voluntary

5.A tape recorder will be used only to facilitate the recording.

Before we start the discussion, just like we did, would you introduce yourself in accordance with the following questions?

Name of Moderator----------
Name of Note taker----------
Date----------
Total time taken----------Minutes / hours
Code number of tape-recorded ---------

FGD Discussants Characteristics of the Group

No	Serial number	Age	Sex	Religion	Educational background
1					
2					
3					
4					
5					
6					
7					
8					

Discussion on the problem that women's face because of environmental degradation

Probes. 1.Is there any environmental degradation in your area?
2. Is there any problem in your locality that arose due to environmental degradation?
3. Who is responsible for the degradation of the environment?
4. Do you think that you are vulnerable to environmental degradation by being women? How?
5. Who in the household is responsible for fetching and handling water?
6. Who is responsible for collecting fuelwood?
7. Where do you get water and fuel?
8. Do you get water and fuel all the time?
9. What problems do women face when they go for fuelwood and water fetching?
10. What is your opinion concerning the role of women in your area?
11. What are your coping mechanisms for the problem you face?
12. What do you think should be done to reduce the problem?

Appendix -E

This Interview is prepared to generate data on the problems that are affecting women's as a result of environmental degradation. Participation in this interview is voluntary and your honest participation will greatly assist in meeting the goals of his study .The information you provide will be kept strictly confidential. Thus, you are kindly requested to give your frank response.

Thank You!!

C. Key Informant Interviews Guide Questions

1. For how long you are living in this area?
2. What are the major environmental problems that occur in this area?
3. What changes do you observe between the past years and now in relation to natural resource availability? Which resource has become scarce?
4. What are the causes of resource diminishing?
5. What is your opinion concerning the roles of rural women in your area?
6. How far is the water point from your residence?
7. Is there any danger to women when accessing water and fuelwood?
8. What problems do women face when they go for water fuelwood and water fetching?
9. Is there any change observed in women's personal life style due to environmental degradation? For example change of occupation?
10. What are the coping mechanisms of the household when there is shortage of water and fuel wood?
11. In your opinion what measures could bring about change on this difficult situation?

Note. *For each question probing words like why, how etc will be used to get detailed information*

Thank you And Good bye!

Appendix-F

This Interview is prepared to generate data on the problems that are affecting women's as a result of environmental degradation. Participation in this interview is voluntary and your honest participation will greatly assist in meeting the goals of his study .The information you provide will be kept strictly confidential. Thus, you are kindly requested to give your frank response.

Thank You!!

D. Interview Guide Question for relevant Government Institutions

I. Interview Questions prepared to Women's Affairs representative of the woreda/ kebele

1) Could you briefly enumerate the objectives of your institution?
2) Is there any environmental degradation in your area?
3) What type of environmental degradation common in your area?
4) What factors contribute to the degradation of the environment?
5) Is there any problem that face women due to environmental degradation?
6) Do you think that the consequence of environmental degradation serious on women?
7) Is your institution aware of the needs of these women? If yes, please what your institution has already done & what is intended to alleviate such problems in the future?
8) Is there any general policy being designed to improve the situation of these women?
9) What do you think should be done to reduce the problem of women?
10) Do you have any suggestion to any possible collaborating institution on alleviating the problem of these women?

Note. *For each question probing words like why, how etc will be used to get detailed information.*

Thank you And Good bye!

II. Interview guide questions with woreda /kebele Environmental Authority Officials

1. What type of environmental degradation is common in this area?
2. What are the impacts of resource degradation on men, women, children and the community as a whole?
3. What is the role of women and men in the use and conservation of the environment?
4. What is the involvement of women in this regard?
5. Who is more vulnerable for degradation of resources men/women? How?

6. What are the major problems that concern women in this area?
7. How do you rate the availability and quality of drinking water in the area comparing with the past?
8. What are some of the efforts made by your institution to over come the problem of rural women?
10. Is there any afforestation and water conservation practices, who participate?
11. What are your views regarding solutions to the problem of deforestation and water resource degradation in your area?

Note. *For each question probing words like why, how etc will be used to get detailed information*

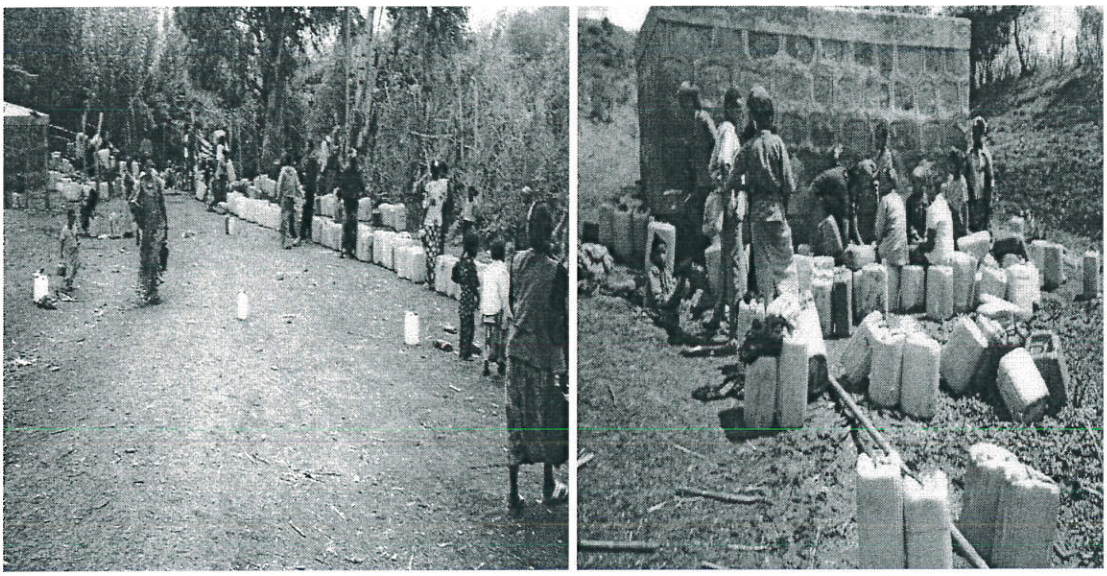
III. ***Interview guide questions with Woreda/ kebele officials***

1. Is there natural resource degradation in the area? If yes what?
2. What are the major resources that are degraded?
3. What resources are in short supplies?
4. What do you think is the major causes of natural resource degradation?
5. What resource conservation activities are carried out in your area?
6. What should be done in the future to alleviate the problem of environmental degradation?

Note. *For each question probing words like why, how etc will be used to get detailed information*

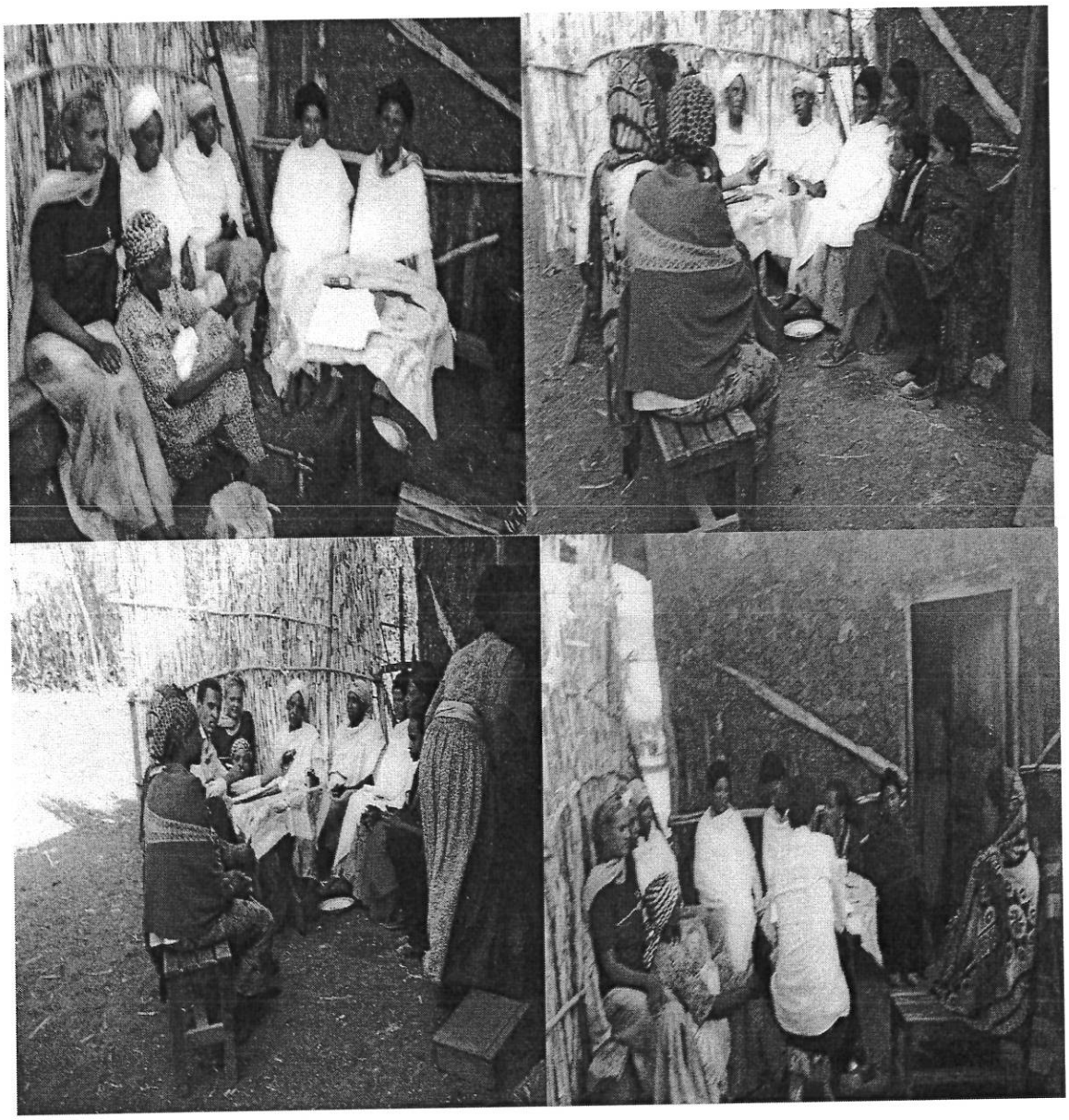
Thank you And Good bye!

Appendix- G Photo plates

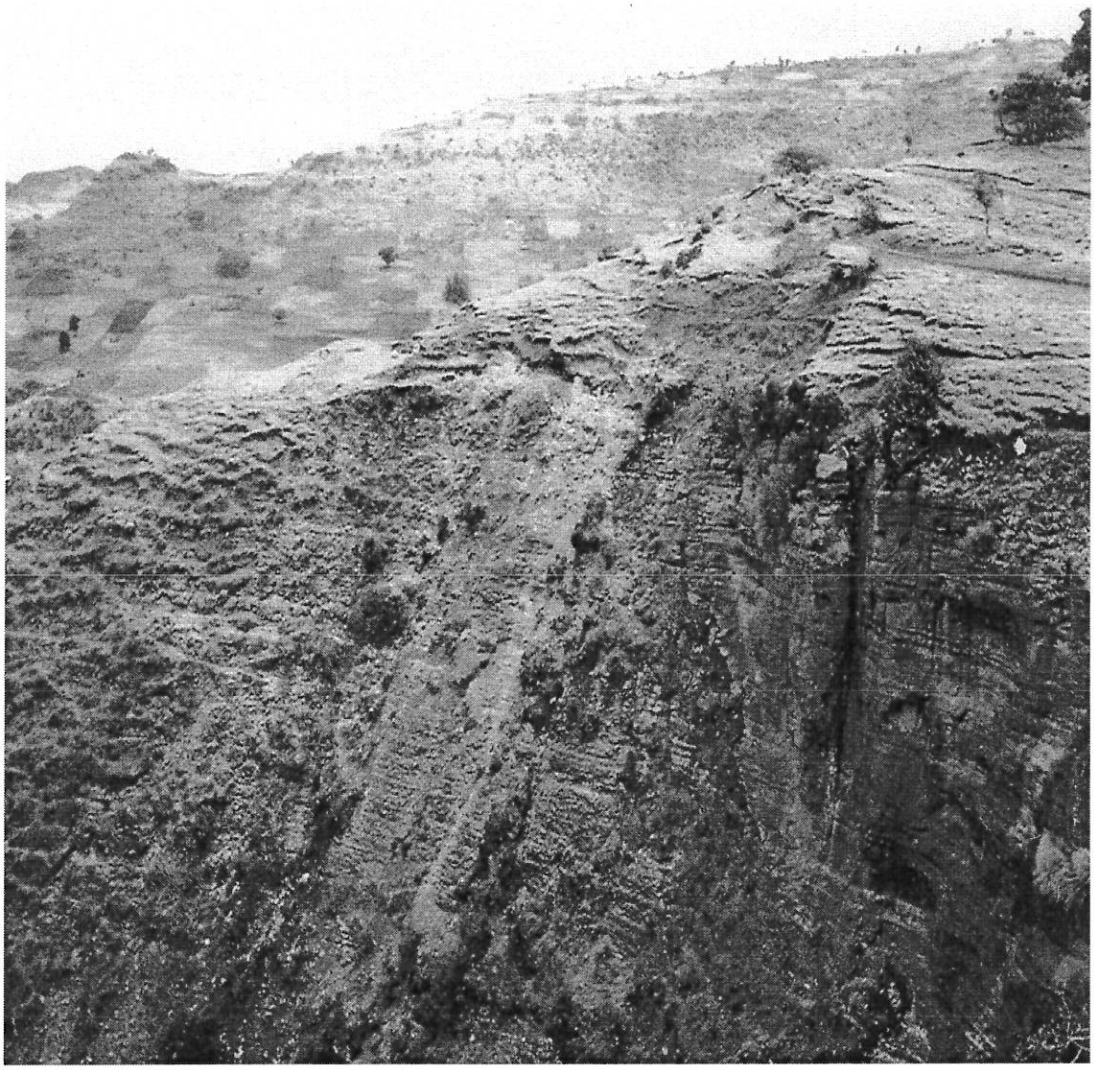


Picture 1. Women and children waiting queue at the stream

Picture 2. Woman carrying water on their back

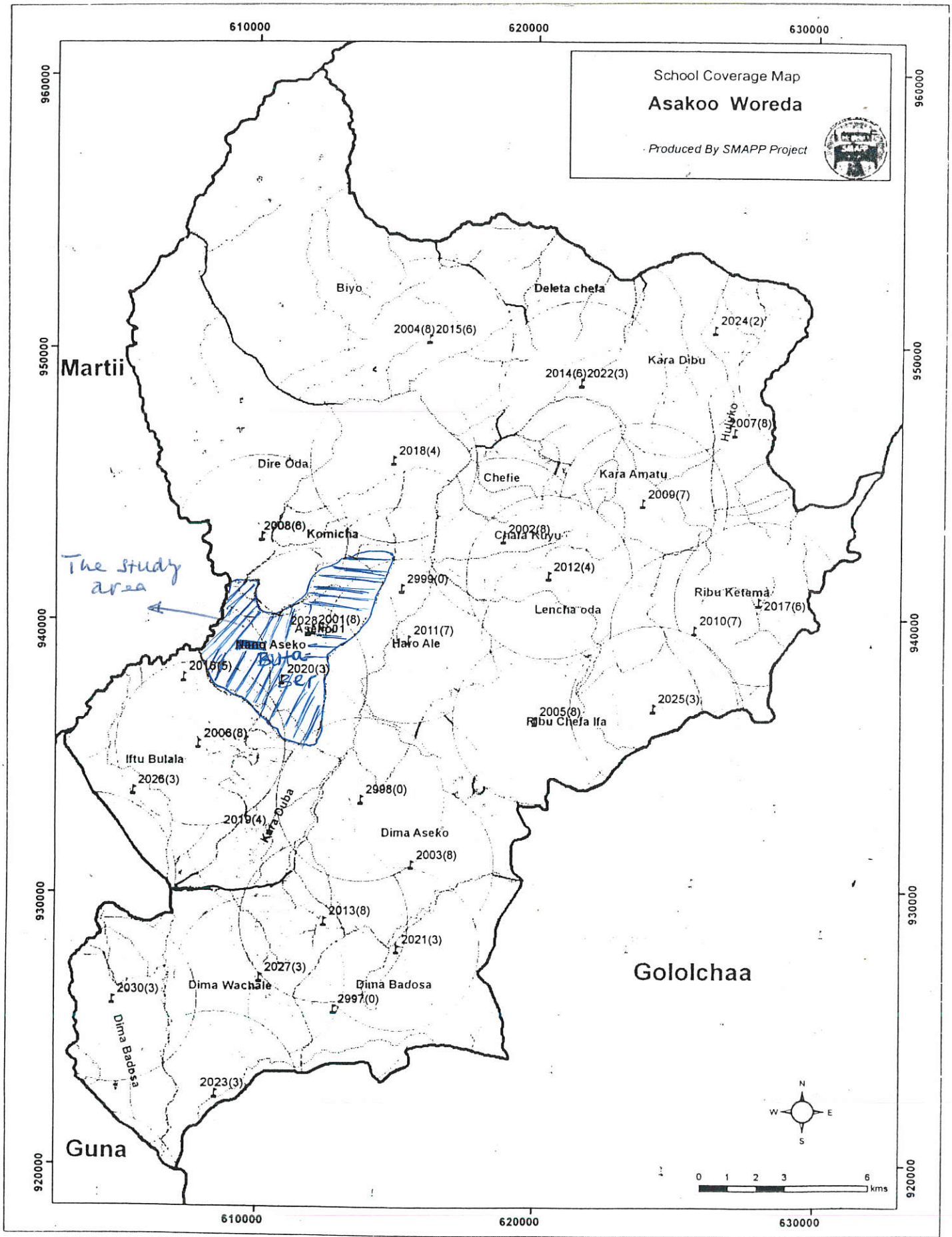


Pictures 3. FGDs Discussants



Picture 4. Degraded Aseko Gara

Appendix-H



School

- Unidentified in EMIS
- Primary 1st cycle
- Primary 2nd cycle
- Secondary

School Lable x (y)
x - School Code
(Refer to School Information Matrix)
y - Maximum Grade

Administration

- Wereda Education office
- Woreda

Kebele
- without School

Others

Road
- Asphalt
- Gravel

Water
- River
- Lake