



BAHIR DAR UNIVERSITY
FACULTY OF SOCIAL SCIENCE
DEPARTMENT OF GENDER AND DEVELOPMENT STUDIES

**FACTOR'S AFFECTING WOMEN'S PARTICIPATION IN
ENVIRONMENTAL RESOURCES MANAGEMENT: THE CASE OF
WOMBERMA WOREDA, WEST GOJJAM ZONE OF AMHARA
NATIONAL REGIONAL STATE, ETHIOPIA**

BY:

TIGIST TEMESGEN

JULY, 2020

BAHIR DAR,ETHIOPIA

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Factor's Affecting Women's Participation in Environmental Resources Management: The Case of Womberma Woreda, West Gojjam Zone of Amhara National Regional State,

By

Tigist Temesgen

A Thesis Submitted to the Faculty of Social Science, Department of Gender and Development Studies in Partial Fulfillments of the Requirements for the Awards of Master's Degree in Gender and Development Studies.

Advisor

Sewmehone Demissie (Ph.D)

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Bahir Dar, Ethiopia

Declaration

This is to certify that the thesis entitled Factor's affecting Women's Participation in Environmental Resources Management: The Case of Womberma Woreda, West Gojjam Zone of Amhara National Regional State, Ethiopia, submitted in partial fulfillment of the requirements for the degree of Master of Arts in Gender and Development studies, Bahir Dar University, is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during the course of this investigation have been duly acknowledged.

Name of the candidate

Signature

Date

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FACULTY OF SOCIAL SCIENCE
DEPARTMENT OF GENDER AND DEVELOPMENT STUDIES

Thesis Approval

The thesis entitled “Factor’s affecting Women’s Participation In Environmental Resources Management: The Case of Womberma Woreda, West Gojjam Zone of Amhara National Regional State, Ethiopia” by Tigist Temesgen is approved for the degree of Master of Arts in Gender and Development Studies.

Advisor’s name

Signature

Date

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DEPARTMENT OF GENDER AND DEVELOPMENT STUDIES

Approval of thesis for defense result

As members of the the board of examiners, we examined this thesis entitled “Factor's Affecting Women’s Participation In Environmental Resources Management: The case of Womberma Woreda, West Gojjam Zone of Amhara National Regional State ” by *Tigist Temesgen*. We hereby certify that the thesis is accepted for fulfilling the requirements for the award of the degree of Master of Arts in Gender and Development studies.

Board of Examiners

External examiner name

Signature

Date

Internal examiner name

Signature

Date

Chair person’s name

Signature

Date

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Abbreviation and Acronyms

AWRM	Agricultural Water Resources Management
ERM	Environmental resources management
FAO	Food and Agricultural organization
FGD	Focus Group Discussion
FHH	Female-Headed Household
KII	Key Informant interview
MHH	Male Headed Household
NGO	Non-Government organization
SO	Social Organization
SPSS	Statistical Package For Social Sciences
TUL	Total Livestock Unit
UN	United Nation
UNDP	United Nation Development Program
USAID	United State of America International Development
UNESCO	United Nation Economic,Social and Cultural organization
WB	World Bank
WED	Women,Environment and Development
WEO	World Energy Outlook
WCYA	Women Children and Youths Affair

Abstract

This study aimed to assess factors that affected women's participation in environmental management in Womberma woreda, Amhara National Regional State. The study used mixed research approach. Concurrent parallel research design was employed for data collection and data analysis. The survey questionnaires were used to collect data from 210 sample women selected using simple random sampling technique from two kebeles of the study area. Both primary and secondary data sources were used for the study. Survey questionnaire, key informants interview, and focus group discussion were data collection instruments. Data were analyzed using descriptive and inferential statistics. The binary logistics regression model was employed to analyze the factors that affected women's participation in ERM in the study area. The result of the binary logistics regression model showed that age was significant and positively and negatively associated with the probability of women's participation. Women in male-headed households were found to have high probability of participation than women in female-headed households. Education level of household head was found statistically significant which showed that literate household heads also had greater participation than illiterate household heads. Land size, engagement in on-farm activity, and access to training were statistically significant predicted variables for the dependent variable- women's participation in ERM, While family size, livestock size, and off-farm activity engagement were found insignificant predictors for the dependant variable. The study also indicated that domestic work, ignorance, social status, men's control of resources and lack of income were major constraints for fair participation of women in ERM to participate in tree planting and cleaning the environment. Finally, the study recommended that the intervention of government and other stakeholder organizations is required in the area to create empowered and actively engaged women who are responsible for the proper management of the different scarce resources.

Keywords: *Environmental resource management, women's participation, Wombermaworeda.*

CHAPTER ONE

1.INTRODUCTION

1.1 Background of the study

Basic survival needs like food, water, air are required for the entire life and life-based activities have their roots in the environment which includes nature and its resources. A living organism cannot prolong without the genuine protection of the environment. The environment is the source of the life system. The quality of environmental resources like water, air, and forests affect the production process and the relations of production in a profound manner. Pieces of evidence suggest that the degradation of the environment puts pressure on the livelihoods and quality of life of marginalized sections of population; especially, women and the poorer sections of the society (Jahan, 2008). In doing so, the protection and improvement of the human environment is a major issue which affects the well-being of people and economic development throughout the world; it is the urgent desire of the peoples of the whole world and the duty of all governments (Mozhi, 2012)

Globally, women are under-represented in natural resources management and they are also disproportionately affected by poor environmental resources management because of gender power relations that deny women access to resources such as land (UN, 2013). Women play the primary role of natural resources management as they are the major land users. But it has been found that land ownership, access and control of land resources hinder women from proper participation in its management. While women perform much of the productive work on the land, their contribution has largely remained unrecognized (Ame, & Gunner, 2005).

Throughout the developing world, women are significantly involved in the use and management of natural resources. Women are always underrepresented in natural resources decision-making and program. A study conducted by women and population division of FAO in 2001 revealed that in developing countries women provide 70 % of agricultural labour, 60 up to 80% labour for household food production, 100 % labour for processing the basic food stuffs, 80% for food storage and transport to and from village, 90% for water and fuelwood collection for household,

in most cases did not own the land as well as protecting environment in which they carried out these developing activities (Huyen, 2005).

In many developing countries, environmental problems, such as deforestation, soil erosion, and the expansion of desert areas are aggravated. These problems have severely threatened the sustainable development of these countries and have caused great concern at all levels from the general public to national governments and international agencies (Lancaster, 2008). Similarly, In Ethiopia, because of population growth coupled with changing climate conditions over the past several decades, environmental degradation has drastically affected the natural resources and socio-economic infrastructure of the country. In the rural setting, massive deforestation and de-vegetation takes place cultivable land to accommodate the increasing rural population. Many regions in Ethiopia are affected by deforestation and a high degree of desertification. Green house effect, warming (rising of atmospheric temperature), loss of biodiversity, air, water soil pollution, soil degradation, reduction of surface water and freshwater problem, an increasing number of crop failures, wind and ice damage to crops, erosion, industrial pollution, hazardous chemicals and pesticides, coastal and marine pollution and general climate change, etc. are major environmental problems of Ethiopia (Godfery, 2002).

In Ethiopia women, participation in agriculture though they are engaged in many of routine tasks activity is generally very low. Women face major obstacles in joining and being active members of typically male-dominated activity. Due to prevailing gender norms and relations women have a lower socio-economic status E.g land, compared to their male counter parts which limits their opportunities to access and control over resources. Freedom of women is constrained by men's control over their mobility, by socio-cultural expectations that they are primarily responsible for all domestic work and concerning this by their uneven work burdens. Their restricted access to control over and ownership of land, credit, and information, as compared to men, disadvantage them from meeting conditions of leadership (FAO, 2011, WorldBank, 2004).

According to Aster (2003), traditionally the Ethiopian women are primarily 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 a long kilometer to collect fuelwood and dust for a long period 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 (Arne, 2005).

Women's direct contact with the environment has produced their deep-knowledge about the environment. Thus, women have served as agriculturalists, water resources managers, and traditional scientists among others. Women are not only Knowledgeable about the environment, they are also protective and caring (Akwa, 2008). Since women being primarily responsible for household management interact more intensively with both the natural and built environment more than men. Consequently, they are more likely to suffer from a degraded home, neighborhood, and city environment and to shoulder more of the burden that goes with living in poor housing and communities with inadequate residential and health infrastructure since they spend more time at home and its immediate vicinity.

In the study area, environmental management efforts were ongoing from various sections of societies. In all these efforts women are one of the stakeholders. Therefore, there is the need to understand the various ways of women's participation and the challenge they encounter for informed to maximize the role of women in environmental management as they are major user/beneficiary from the output of the effort.

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 underprivileged people and the majority of these are women (Franks, 2007). Women contributed to agricultural production. Women produce 80% of basic foodstuffs in sub-Saharan African and the Caribbean countries. 50- 90% of the labor force are engaged in rice cultivation in Asia. In the Adamawa State of Nigeria, about 60% of women are involved in farming. The recent concern of the world is to bring sustainable development that integrates the utilization of natural environment (Mukundi, 2015).

The loss of women's participation in environmental resource management due to urban expansion is the most serious problem in developing countries because food demand and population balance is at risk and the expansion consumes the most productive agricultural land. In Ethiopia, land degradation, low and declining agricultural productivity, and poverty are severe and interrelated each other. Since the donors and the government have supported the community to promote soil conservation and environmental rehabilitation in Ethiopia, natural resources management requires the participation of the communities, especially members whose socio-economic activities have the biggest impact on resources.

In this regard, different investigations and published research works have been conducted so far across different parts of the world. For instance, (Steele, 2010), conducted a study on what environment is, the causes and consequence of environmental problem, the possible steps to solve environmental problem, the role of education in solving the environmental problem, and the importance of ecological literacy. But, this study failed to see the participation of women in ERM and specific gender roles and gender division of labor in planting tree and cleaning the environment. It also focused on only causes and consequences of the environmental issue. Further more, it did not incorporate women's participation in ERM in different dimensions and their factors specifically. Therefore, this study focused on factors affecting women's participation in ERM in different dimensions.

There are researches conducted by (Ellis, 2000; Kellert *et al.*, 2000; Dauma, *et al.*, 2002; Blaikie, 2006; Arora-Jonsson, 2013; Dankelman *et al.*, Akoyoko, 2014) about division of labor in rural communities' and its direct contact with natural resource management. In this regard, the participation in environmental resources management is pillar to human being (Cook, 2000; Wondolleck and Yaffee, 2000; Fischer and young, 2007). However, these studies did not provide information about the participation of women in environmental resources management. These studies also overlooked gender dimensions because women and men farmers are experiencing factors and participation in a different ways. Hence, this study focused on the degree of women's participation in different dimensions and factors affecting participation in ERM.

Agarwal, (2002) has conducted a study on gender and environment Debate: it deals with women relation with the environment from the new concept of feminist environmentalism. Here the

study criticizes the conventional ecofeminist theories. Yet, the study did not provide information on the women's context of the abilities; particularly the participation of women in environmental resource management. Hirute, (2000) also investigated the link between resource degradation and the predicament of rural women in northern wello. She concluded that forest depletion changes the energy use pattern from firewood, which further leads to deterioration of soil fertility and land productivity. But the researcher did not address the factors that determine the participation of women's environmental resources management. Kibemo, (2011) conducted on farmers' perception of soil erosion and their use of structural soil conservation measures. His study concerned the factors that influence farmers use of structural soil conservation measures and evaluate their perception. This research doesn't have more information on the factors that affecting women's participation in environmental resources management and their ability and status to participate in environmental resources management.

Besides, (Aye, 2018) conducted the role of rural women in environmental management in Myanmar society. She has seen the role of rural women in environmental management. The result of the study showed that, socio-cultural barriers, the triple household level responsibilities that affect the role of women with regard to environmental protection and conservation. His study focused on the role of women environmental management and environmental management policy in Myanmar side only. But the researcher a little information about factors that determining rural women's participation in environmental resources management in different dimensions. Therefore, this study focused factors that affecting women's participation in environmental resources management in different dimensions and to evaluate women's participation status in ERM.

As far as the writer's experience is a concerned, there is little information about factors that determining women's Participation in Environmental Resource Management: In the Case of Womberma Woreda, West Gojjam Zone of Amhara National Regional State. Based on this research gap, this study entitled "Factors affecting women's Participation in Environmental Resource Management: In the Case of Womberma Woreda, West Gojjam Zone of Amhara Regional State" This research differs from other previous researcher work in terms of time, concept, and geographically. The main purpose of this study, the researcher was contributed the knowledge on the implication of participation women's ability to define and prioritize their

factors through the decision-making process actively engage in all activities of environmental resource management such as planted trees and the cleaned environment in the surrounded area of Womberma Woreda .

1.3. The Objective of the study

1.3.1. General objective of the study

The general objective of the study was to assess factor's that affecting women's participation in environmental management in the case of Womberma Woreda, West Gojjam Zone of Amhara National Regional State.

1.3.2. Specific objective of the study

The specific objective of this study includes;

- ❖ To examine the level of women's participation in environmental resources management in the study area.
- ❖ To identify factors that determine women's participation in environmental resources management.
- ❖ To identify the challenges of women's faced in environmental resources management

1.4. Research questions

1. What is the level of women's participation in environmental resources management?
2. What are factors that determine women's participation in environmental resources management ?
3. What is the major challenges of women's faced in environmental resources management.

1.5. Significance of the study

The aim of the study was to contribute to the recognition of the problems and helps to design and propose appropriate development intervention mechanisms and it created awareness for the society, government, and researchers about factors that affecting women's participation for environmental resource management with special emphasis in the surrounded of Womberma woreda. This research also will have a great significance for Womberma woreda Women Affair office and Agriculture office to give high emphasis to women's participation on environmental resource management. Likewise, it will served as a source for the government to find possible solutions for those practical problems point out in the research so that it could effectively realize the role of women's participation in environmental resource management. The outputs of this study might contribute to theoretical understanding in relation to women's involvement in various activities in ERM such as planting tree and cleaning environment .Finally, it will help as baseline information for conducting further research studies in a similar area.

1.6. Scope of the study

This study is limited in terms of geography, target group, and issue. The scope of this study would delimit only to assess the factors that deterring women's participation ERM in Wombrema Woreda of Amhara National Regional State. Accordingly, this study was geographically delimited only the ERM in the study area. In addition, the types of ERM activities, challenges of women faced to participate in environmental resources management activities and status and extent of women's participation in ERM were the scope of the content in the study area. Concerning the target group, the study was delimited to women both in male-headed and female headed- households in order to examine their status and for generalizing women were included as the scope of the content in the study area. In addition, this research was delimited only within the following three general factors that determine women's participation in environmental resources management. These were demographic factors, socio-economic factors, institutional factors.

1.7. Limitation of the Study

In this study, the limitations were faced by the researcher throughout the process of doing this research. As the first limitation, the researcher faced difficulties to conduct focus group discussions because of the unwillingness of discussants to take part in focus group discussions. The second limitation, this study also did not address all rural *kebeles*, those are found in Womberma woreda regarding the participation of women ERM rather than concentrated on two *kebeles only* due to the scarcity of time and resources. Regarding the limitations of this study, this study was not exhaustively discussed and supported by extensive literature due to a lack of researches and articles studied on this topic under study. So that this present findings were not supported more by other related researches.

1.8. Operational definitions

- **Environment;** is the totality of all materials whether in their natural state or modified or changed by humans, their external spaces and the interactions which affect their quality or quantity and the welfare of human or other living beings.
- **Participation;** refers to the involvement of women in environmental resources management like, planting tree and cleaning environment programmed.
- **Attendance:** the action or state of going regularly to or being present at a place or event of planting tree and cleaning environment.
- **Triple role:** productive role, reproductive role and community roles particularly for women in environmental resources management.
- **Protection:** Improved natural resource management can contribute to protecting women from gender-based violence linked to natural resource use.
- **Cleaning environment:** is void of any form of pollution and its effect. Hence, it can be an environment that have clean air, water and clean energy. Basically, it is a healthy and safe environment.
- **Social life:** may refer to an individual's interpersonal relationships with people within their immediate surroundings or the general public
- **Environmental management;** is defined as the management of human interaction with and impact on the environment. It also concerned with the links between human social, cultural and economic systems with the natural world.

- **Planting tree** ; is the process of transplanting tree seedlings,generally for forestry, land scaping purpose....Tree planting contribute to their environment over long periods of time by providing oxygen,improving air quality, climate change, conserving water, preserving soil and supporting wildlife.

1.9. Organization of the Thesis

This paper was organized into five chapters. The first chapter is all about the background, statement of the problem, research objective, research questions, significance of the study, the scope of the study, limitation of the study, defines important terms used in the study and organization of the study.The second chapter deal with a review of literature that shows the experience of other countries, findings of different authors and gives a general overview of women's participation in environmental resources management. The third chapter covered the research methodology description of the study area, research approach, research design, sources of the data, sampling techniques,sample size, data collection instrument, data analysis, It also presents the issue of reliability and validity of the research outcome as well as ethical considerations in the entire process of the research work. The fourth chapter provided the Major findings and discussion. Three major themes wasmerged from interviews and focus group discussion and the use of scientific data analysis procedures was present in this chapter. Finally,chapter five contains a summary of the findings/results and provides major conclusions and recommendations derived from the research findings.

CHAPTER TWO

2.REVIEW OF RELATED LITERATURE

2.1 The Concept and Definition of Environmental Resource Management

Environment is a complex concept, it refers to the entire external influences, natural and manmade 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 are interwoven, interconnected, and interdependent and everything for the survival of life emanated from these complex whole of the environment (Aster, 2003).

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-thirds of the forest resource would disappear by a respectively years mostly because of the clearance of land for production.

Environment protection or protection of the natural environment is necessary for the existence of living organisms, including human. Environment protection can be defined as “a set of activities which aim to prevent or mitigate threats, damages, and pollution of the environment, reduce the consequences of existing damage, attempt to recreate a pre-pollution state of affairs” (BME, 2013).

2.2 Women and the Environment

The relationship between people and the environment is not gender-neutral became clear in the mid1980s. Some organizations, focusing on the day-to-day lives of communities, argued that the position and concerns of women were invisible 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, 2006).

Fuelwood is the forest commodity produced in large quantities and is the principal component of rural domestic energy in India and many other developing countries. It is an alarming fact that today in the 21st century there are still billions of people who rely on wood for cooking food. According to the International Energy Agency (IEA), there are currently about 2.7 billion people in the developing countries who rely for cooking primarily on wood, tree leaves, etc. Used inefficient devices like 3-stone fire (inefficient cook stove), mud stoves, brick stoves with no operating chimney, or hoods. Out of 2.7 billion people, 82% live in rural areas. In India, the number of people relying on the traditional use of biomass for cooking is 855 million in 2009 (765 million in rural areas and 90 million in urban areas).

This number is higher than previously estimated in WEO (World Energy Outlook) in 2008 due to perhaps an increase in population, rising liquid fuel cost, and global economic recession, which may have driven many people back to using traditional biomass. As per the 2011 Census, almost 85% of rural households in India were dependent on traditional biomass fuels for their cooking energy requirements. As per the NSSO Reports (55th, 61st, and 66th Rounds), there has been an increase in biomass fuel use in terms of absolute quantity consumed over the past decade among rural households. This phenomenon is unlikely to change significantly even in the long term as many of these countries, though struggling to advance, are still the bottom of the development ladder. The share of the population relying on traditional use of biomass is highest in Sub-Saharan Africa and India.

The scarcity of fuelwood has increased the time burden especially of women, who are traditionally responsible for collecting fuelwood for domestic purposes in many parts of developing countries. With the increase in the scarcity of fuelwood, women and girls have to walk many miles to get ahead load of fuelwood every day. As we know that collecting fuelwood is a time consuming and exhausting task. Women's time burden for the collection of fuelwood tends to increase in cases where men migrate to urban centers in the research of employment. Also, women can suffer serious long-term physical damage from strenuous work without sufficient recuperation. This risk, as well as the hazard of falls from trees, insect bites, or human assault, etc. rises steeply the further from home women have to walk. Fuelwood scarcity places major demands on women and children's time, limiting their opportunities to obtain an education and undertake income-generating activities. An increase in the fuelwood collection time may

force girls to drop out of schools to assist their mothers in households and other chores, thus hindering their education. Fuelwood scarcity adversely affected women's income-generating activities like sewing, handicrafts, etc. and direct impact on women's health-rates of maternal death, impact on their participation in important activities like family planning programs, health, and nutrition programs, participation in creating new laws and public policies. They have concerns with the risk associated stealing fuelwood (e.g. breaking their legs while running, financial penalties, etc.) from private forests since they did not have access to community forests. Fuelwood scarcity also affects their cooking habits; women do not boil water enough, cook food items with low nutritional value that require less cooking time. This, in turn, affects family health Adedayo (2010).

According to Aster (2003), traditionally the Ethiopian women are primarily 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 a long kilometer to collect fuelwood and dust for a long period 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 (Arne, 2005).

Women and the environment are closely bounded and the intimate relationship between women and nature. Ecofeminism also analyses the problems of racism, class, colonization, heterosexist and other oppression interconnect women's oppression and environmental degradation. Ecofeminism is ecological, feminist, and multicultural in character (Warren, 2001) Studies assert that women are prominent actors and contributors to environmental rehabilitation and conservation. Women through their role as farmers and collectors of water and fire-woods have a close connection with their local environment and women children as well as marginalized sections are the prime victims of environmental degradation especially at times of natural disasters (Akwa, 2008).

2.3. Rural Women and Natural Resources

Scholarly work on rural women's lives and the environment in particular locations and periods has flourished in recent years, yet theories of rural society and feminist scholarship incorporate only fragments of this work (Sachs, 2006). 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 beat 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. According to Aster (2003), in all rural parts, the link between women and the environment is strong concerning the following critical resources i.e., water, forest, and land.

2.3.1 Participation

The term participation, however, has no common definition. It is interpreted differently by different organizations and individuals. Cooke & Kothari (2001) defines participation as a process through which stakeholders' influence and share control over development initiatives, decisions, and resources that affect their lives (Chambers, 2005). says that, participation is used to describe an empowering process which enables local people to do their analysis, to take command, to gain in confidence, and to make their decisions. De Beer & Swanepoel, (2008) stated that participation as a collective activity in that a group of people sharing mutual interests, a sentiment or concern, act together and in performance. They assert that this collective action will lead to minor successes that will boost the poor's confidence to tackle much bigger problems.

In the context of this study, participation refers to the ability of women to define and prioritize their factors/challenges and actively engage in all activities in ERM decision-making processes that enrich their lives. Most development theorists, however agree that participation is a process by which people, especially the disadvantaged people, influence decisions that affects them though they disagree about how this influence should be applied and how strong it should be (Brett E, 2003).

2.3.2 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 as well as in environmental resource management. They search for potable water supply and satisfy the water need the family, domestic animals, and also in many cases, agriculture. Yet, they are excluded from planning, implementation, and maintenance of water supply projects (Aster, 2003). The increase in the global degradation of ecosystems, the excessive consumption of water, continuation, 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.

Many sources indicate that women are the most affected by the water crisis and environmental resource management. 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 and environmental degradation was primarily affected the capacity of women in the most rural areas. According to (UNESCO, 2003) women use vegetation and forests for medicinal purposes for food and fuel, as well as for income generation and these ecosystems rely on healthy water supply. Thus, as the environment deteriorates, women's livelihoods become increasingly vulnerable.

Agricultural water resource management is using water in a way that provides crops and animals the amount of water they need, enhances productivity, and conserves natural resources for the benefit of downstream users and ecosystem services (USAID, 2015). Accordingly, there is a range of regulatory arrangements in environmental resource management designed to minimize negative outcomes and resolve conflicts over competing demands for environmental protection resources management (Sarah, 2015). Agricultural lands in the context of Ethiopia, patriarchal ideology and the traditional gender division of labor 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 in other developing countries, women in Ethiopia play

avital role both as water supplier and water managers. Therefore, in the water-scarce areas, women suffer severe consequences because of their impact on the dynamic of social relations, work pattern, and health (Nigist, 2007).

2.3.3 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 the regular clean water supply and help to protect. The role of women in forest resources management is very important. Collection of forest products to meet subsistence requirements and also to augment family's income is generally the responsibility of women. Awareness about trees, shrubs and grasses is higher amongst women than in men because women devote more time than men to collect forest produce to meet family needs. About one-third of poor women are directly involved in forestry or forestry related works in the unorganized sector (Nanavaty, 1996).

The women have to spend major part of their time and have to walk long distances daily to collect fuel wood and, fodder other from forests. Women are concerned with biodiversity conservation and multiple products-based management which ensures fuelwood, fodder, water and other (Singh, 2001). In developing countries, men and women play different roles in forestry and agro forestry systems, women are frequently disadvantaged for a range of interrelated cultural, social, economic and institutional reasons – in their access to and control over forest resources, and in the economic opportunities available to them. Many women have highly specialized knowledge of trees and forests in terms of biological diversity, sustainable management and use for various purposes, and conservation practices. Women are aware of the food and medicinal values of forest products, which are particularly important during food crises.

Policies and practices empowering women in the forest sector yield significant benefits to nutrition and the sustainable management of forests. Facilitating women's participation in forest user groups, improving their access to modern sources of energy, and enhancing their access to processing techniques and markets have been found to make a major difference in the livelihoods of forest-dependent people and their societies. Also, women often have substantial knowledge regarding the identification and preparation of nutritious forest foods to enhance the nutrition and

health of their households (FAO, 2012). Fuelwood collection requires physical effort and time, and the resulting time poverty for girls and women restricts their ability to engage in education, paid work or other productive activities. In addition, women may face serious health problems from carrying heavy loads of fuelwood and from cooking over smoky fires. Approximately 3 billion people worldwide rely primarily on wood for cooking, residential heating and hot water (WHO, 2006). In many places, particularly in Africa, it is women who are the main collectors of fuelwood (Sunderland et al., 2014). They may have to walk many hours, sometimes under highly dangerous conditions, especially where accessibility of resources near the home is affected.

2.4 Theoretical perspectives on the role of women in environmental protection and management

Perceptions of women and natural environment connections 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 continues to be elusive for many policymakers. 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. Different relevant schools of feminist thought and activism relate to the analysis of women and the environment

2.4.1 The Theoretical Framework of WED.(Women, Environment and Development WED)

In the early 1980s the women, environment, and development(WED) were heavily propagated by the non-governmental organization (NGOs) and that portrayed women as having a strong affinity for the environment (Ray, 2007).These ecofeminist scholars posited that women are by their biology, more closely linked to nature thinking that gave risen to images of women as Earth As much, women were seen not only as more likely to be harmed by the environment's degradation but also as more likely to be responsible for it scare and conservation. Regarding whether women's and men's relationships with nature differ have increasingly become a concern of feminist scholars. One outcome of this debate may be to question the extent to which women are more likely to be concerned about and capable than men in solving environmental problems. Three issues that lie at the heart of the theoretical discussion on women and the environment are

what is women's relationship with nature? what are the connections between the domination of women and the domination of nature? What role do women play in solving ecological problems? (Sachs, 2006). Women's access to and control over resources is a crucial factor in discussions on women's connections to the environment. Access to property, land, and water rights, particularly in agricultural systems, critically shapes people's relations with natural resources. State policies and local practices define women's and men's differential access to land and water. State-sponsored irrigation schemes are notorious for overlooking women's concerns. Further, they often increase women's involvement in agricultural decision-making (Sachs, 2006).

Although women are closer to nature tends to lean towards essentialist notions, it is also true that their first-hand practical knowledge on environmental issues and sustainability cannot be underscored enough. Too often, policies were formulated without consulting the women who continue to be an integral factors in environmental resource management despite their invisibility in public policy. Finally, the frameworks are used to assess women's participation in different determinant, socio-cultural, socio-economic and institutional factors that affect women participation in ERM, challenges of women participation in terms of ERM that is, are women participate in ERM?

2.4.2 Ecofeminism, Origin, and Development

The relation between humans and nature led to the emergence of many theories as a theory of Deep Ecology, Eco theology, and Ecofeminism. The intimate relationship between women and nature paved the way to the emergence of the theory of ecofeminism. Women and the environment are closely bounded. The assertion of the relation between women and earth are highlighted by the naming of Earth as Mother Earth and Earth Goddess. Ecofeminism emerged in the West as a product of peace, feminist, and ecology movements of the late 1970s and early 1980s Rao, (2012).

The word ecofeminism is first used by Francois d'Eaubonne in her book *Le Feminism out la Mort* (feminism or death) published in 1974. For d'Eaubonne the term ecofeminism was meant to describe ' how the human race could be saved by women initiating an ecological revolution, as a way to counter the oppression of women that is the same as the oppression and destruction of nature'. From the origin itself, ecofeminism has included political activism as well as theoretical

works in philosophy, literature, and language and science and technology. It also spread to a variety of cultural works such as poetry, art, essays, or novels. Ecofeminism developed and popularized by various thinkers like Karren (2000) .

According to Karren, (2000) ecofeminism is a field bridging ecological ethics and feminism that seeks to explore the conceptual connections between environmental degradation and sexist oppression. Ecofeminism derives from the philosophy of feminism grounded in women's affinity with the forces of nature, as opposed to men's urge to control and manipulate nature UNRISD,(1994). The early ecofeminism emphasis pre-patriarchal culture in the Mediterranean and old European world, which gave importance to fertile Goddesses and other nature symbols as feminine and thus reassert the woman nature relation. With the replacement of organic character with mechanistic character, as a result of Enlightenment and Industrial Revolution, which breeds the Patriarchy, result in the domination of male over female and nature. Later Earth Goddess was replaced by Sky God which was the symbol of patriarchy especially in the middle ages Pratibha, (2015).

Ecofeminism as an academic discourse did not develop until the mid to late 1980s. The theory of ecofeminism upholds that the oppression of women and the domination of nature are interconnected phenomena. The conceptual binaries and ideological hierarchies as higher-ranking categories and lower-ranking categories(e.g. man over woman, culture over nature, white over black heterosexism over queer) are the tools used to reaffirm oppression and exploitation Fed,(2014). According to Plumwood, (2003) "the opposition between reason and nature, where reason is seen as masculine and nature as feminine, lurks behind all dualisms". They also demand a dignified position for women and environmental justice. Ecofeminism concerns with the issues like classism, racism, market exploitation, which in turn result in environmental degradation and exploitation of unprivileged class. Issues of pollution, deforestation, toxic waste dumps, agricultural development, and sustainability animal rights.

The whole argument of ecofeminist reach to the point that women and environment are closely related and degradation of the environment is the same as the degradation of women as well as there exist connections between environmental degradation and sexist oppression. It supports and respects women's' effort to conserve the environment. Ecofeminism is based on the idea that

important knowledge about ecology and women must be deconstructed from the old understanding of male domination. Ecofeminist theories also draw a link between how the problem of development affects gender and the environment Schultz, (2001). Vandana Shiva (1988) argues development, science-technology, which is patriarchal and are problematic which affects women's' right in the environment. Women are more affected by the degradation of land. The privatization of the forests and rivers and the construction of dams make the lives of village women more difficult. Most ecofeminists point to colonization and subsequent subjugation of the "third world" people as the reason for the change in values regarding nature and women (Shoba, 2013). with the project of development, the oldest forms of oppression, gender subordination, and patriarchy have taken on new and more violent forms of oppression Kaur, (2003). Thus, women and children are mostly affected by male development.

2.4.3 Tenets of ecofeminism

Ecofeminism holds an eco-centrist position that all human must understand their interdependence on earth Berg, (2009). Human considers himself as superior to nature and holds the strong belief that everything in nature for them to exploit with complete authority. This anthropocentrism of people led to the degradation of nature, in turn, result in natural calamities and extinction of many species. Ecofeminist asserts that human is not superior to earth and human has not the right to dominate nature by overexploitation of natural resources. Ecofeminism links environment domination and oppression with the oppression of man over women by patriarchy. Karren J. Warren relates environmental degradation and sexist oppression to find out the conceptual connection between ecology and feminism. The whole idea of feminist oppression revolves around western patriarchy Therbon, (2004).

The patriarchal binary places women/nature in same category against men/culture. In other words, pollution of plant and oppression of women are caused by the same set of tradition Mattes, (1990). Under ecofeminism, all forms of oppression illuminating that the oppression of nature and women are related. This leads to a multi-layered analysis of environmental exploitation in the context of many kinds of discrimination. Ecofeminism is inclusive. It includes issues of women in different backgrounds and experiences to enable women to work together across race, class, and national lines Berg, (2009). One of the most important premises of ecofeminism is that all forms of domination are interconnected, and not only those of women and

nature but also the unjustified dominations of people of color, ethnic minorities, children and animals: that is, the groups traditionally labeled as the other Warren,(2001). They represent the unrepresented i. e, women, nature, people of the third world, and non-humans. According to ecofeminists, environmental problems affect everyone, but more vulnerable is the voiceless. So, it is important to include those unrepresented in environmental decision making.

According to Bina Agarwal (2001) describes four main overlying precepts in ecofeminism. The first principle is that ecofeminists find out the commonalities between gender oppression and environmental degradation mainly caused by male Western dominance. The second principle states that men are more related to culture and that women are related to the environment. Women are more related to nature as women and nature placed in an inferior positions in conceptual binaries. Thirdly, oppression of women, and the oppression of nature have occurred simultaneously and thus women have a responsibility to cease male domination over both. Fourthly, ecofeminism seeks to combine feminism and ecological thought, as they both work towards egalitarian, non-hierarchical structures as cited in Manion, (2002). Thus, the whole theory of ecofeminism revolves around the ideas of women nature interconnection which based on the domination of nature and exploitation of women and wants to the deconstruction western patriarchal conceptual binaries.

2.4.4 Classification of ecofeminism

Ecofeminist scholar Carolyn Merchant (2005) has classified ecofeminist theory into liberal, radical, or socialist ecofeminism. There is also social/ cultural/ spiritual ecofeminism apart from this classification.

Social ecofeminism: According to Plumwood (2002), Social Ecofeminism rooted in history going back to the time of the Greeks to the in fertilization of both women and nature. It concentrates on the fact that the historical socialization of women and nature as subjugated as cited in Twine, (2001). Social ecofeminism advocates the liberation of women through overturning economic and social hierarchies that turn all diversity of race, gender, and class within its discourse Manion, (2002). According to Tong “by deemphasizing the connections between women and the earth, social ecofeminists subsequently dilute the initial power of ecofeminism as a movement to reclaim the earth as an extension of the biology of women.

Traditionally-feminine characteristics do have value separate from traditionally-masculine-characteristics, which should use in society to make the world a more peaceful, nurturing place instead of being viewed as limiting” (Ibid).

Cultural/ radical ecofeminism: Cultural/Radical ecofeminist ‘naturalize’ woman’s role with nature Twine, (2001). They maintain that because of historical constructs that place men in a position of authority over women and the environment, women, particularly in the south, Mies, (2003). As Warren (2001) states that “cultural ecofeminism reclaims women-nature connections as liberating and empowering expressions of women’s’ capabilities to care for nature”. The cultural/radical ecofeminists are more closely engaged with environmental issues Twine, (2001). They ecofeminists believe that women have a biological and spiritual link with the non-human world as a result women are ‘closer to nature’ than men. Radical ecofeminists believe that women’s oppression is rooted in women’s reproductive roles and the sex/gender system. Radical ecofeminist want to eradicate the patriarchal dualism and this can be done through embracing that which has been devalued Berman, (2003). Ecofeminists with a radical bent analyzed environmental problems from within their critique of patriarchy and offered alternatives that could liberate both women and nature Merchant, (2005).

Spiritual ecofeminism: This variant of ecofeminism emphasis the role of women as life-givers and consider them as engendered to closer connections with the earth, as cited in Manion, (2002). According to Starhawk—a Spiritual Ecofeminist—the three most important concepts of earth-based spiritualities are the immanence of the Goddess in the living world; interconnection of mind, body, and nature; and a compassionate lifestyle Tong, (1998). Spiritual ecofeminism emphasis the reproductive forces of women and their bodies Yilmaz, (2010). Spiritual ecofeminists have been criticized for trying to replace politics with religion and subsequently engaging in a spiritual activity instead of “serious” thought about how to improve the state of the world.

2.5 Environmental degradation

Deterioration of the natural environment is a major threat facing by human beings. The overexploitation and extinction of natural resources make life miserable on earth. When natural resources like water, soil, and biodiversity are depleted, living organisms including human

existence is under threat. Any problem to the environment caused by human and non-human activity is called environment degradation Tellegen&Wolsink, (2013).

Environmental degradation is the process by which our environment i.e., air, water, and land, progressively contaminated, over-exploited, and destroyed Gosh, (2015). Environmental degradation can be defined as the deterioration of the environment through depletion of resources such as air, water, and soil; the destruction of ecosystems and the extinction of wildlife. It is described as any change or disturbance to the environment which is dangerous or undesirable Johnson, (2007). The main grounds of environmental degradation are environmentally harmful activities of human beings like deforestation, pollution, soil erosion, loss of biodiversity, and land and, (2013). 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 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 with their extraordinary skills and traditional knowledge women have proved to use and manage water, forest, land, and other natural resources. 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 grows of many grassroots success stories of women fighting to conserve local resources. This then led to women being view as major local assets to be gentle in the interests of better environmental management.

2.6 Women participation in Agricultural Water Users Associations and decision-making

It is real that a large number of women are involved in irrigated agriculture. However, the participation of women in WUA is very low. Thus, irrigation farming is perceived as occupation for men only, and for that matter women are not seen as stakeholders Zwarteveen, (2005). However, in Indonesia also revealed that water users' associations are not able to function properly because of the lack of women in the association Zwarteveen, (2006). As a result, the interest of women cannot be represented and it can lead to poor performance in the management

of agricultural water. Broadly as the facts revealed, women are increasingly being seen as active agents of change and the dynamic promoters of social transformations that can alter the life of all members in society. However, the manner in which decisions and choices on water resources are handled can have great implications on women who use the technologies to get water and are the end-users of water resources in the households Rydhagen, (2002).

Gender sensitivity which involves women's participation in agricultural water management is important. According to the UNDP, (2006) the cause of the water crisis globally, is believed to be far from a scarcity problem. Instead, it was as a result of poverty, inequality, unequal power relations, and defective water management policies evident in most third world countries. Policy constraints and gender inequalities in water management have resulted in low sustainability of the conventional communal water supplies, leaving more people in the rural areas with no access to safe water for domestic and non-domestic use Sutton, (2008).

In most societies, women have the primary responsibility for the management of household water supply, sanitation, and health. Water necessity is not only for drinking but also for food production and preparation, care of domestic animals, personal hygiene, cleaning, washing, and for productive use. Because of their dependence on water resources, women have accumulated considerable knowledge about water resources, including location, quality, and storage methods. There has been a growing body of evidence that just demonstrates the value and importance of an integrated approach to water management. The role that women play in the entire process of water management cannot be overemphasized. The gender roles of women make them key custodians of domestic water supply and they should be seen as important agents in its management. Women give life and take care of families and water is a necessity to human health, economic and social development of communities and nations around the world, GWA, (2006).

According to Opare, (2005) the inability of women to rise to leadership positions is as a result of the cultural belief that reduces women to subordinates and men as the dominant group. Hence leadership roles are ascribed to men who are even younger over older women because they are men. Furthermore, Barrie, (1982) asserts women's subordination is associated with a specific household ideology which excludes women from gaining access to resources such as income and political autonomy. This makes women economically dependent on their husbands. The various beliefs the place of a woman is associated with the domestic sphere where they take care of

children and that reproductive work is a women's sole worlds is used to reinforce women's subordination. The World Bank report states that such Water Users Association have been effective, in increasing farmers' productivity, improving accountability and performance and improving the financial sustainability of ERM systems in developing countries World Bank, (2004). Despite this, the new system of water management is not without challenges. This includes poor representation of women in the management of such associations and the schemes Agarwa, (2001). While the new system of irrigation management encourages participatory irrigation, management based on gender lines among others, and the approach perceived as an opportunity for a more equitable access to use and management of water, they have often excluded women in management position World Bank, (2004).

2.7. Evaluating dimension of women's participation in ERM

Participation can be viewed from either a planner centered or a people-centered window. In the planning phase, participation by people increases their investment in the success of a project. From this level, participation is seen as a device to achieve efficiency. In contrast, when discussed from a people-centered perspective, participation help satisfaction of local needs and also serves as a tool for empowerment, especially for women. However, it is very important to measure women participation based on participation indexes. These dimensions are planning and implementation and three of them are described below.

2.7.1 Planning

Gender-transformative planning techniques acknowledge and make visible women's experiences, and activities, needs, and responsibilities associated with domestic and other productive work. They also respond to the consequences of having a female sexualized body in public space, and the temporal dimension of everyday life, that looks beyond the productive life and responds to the different times when domestic and other productive work are developed Moser, and Levy, (2006). These issues are enormously important in rural, playing out via policies about basic services and how these are prioritized, how daily mobility systems are structured that was, how, when, for what reason, and with whom people move throughout space, or how safety was perceived in the public space. Participation as a tool of empowerment, which can be used in processes by which organized groups in the rural and individuals within their

identity and articulate their interests, negotiate change with others, and transform rural community life and their role within it Beall, (2006).

It is essential to include a gender perspective in participatory processes to be able to respond to the diversity of people and practices and break hierarchies. Participatory planning processes need to be gender-transformative Kabeer, (2004), responding to women's needs according to their realities, but without limiting women to the care role, and without reproducing gender stereotypes; transformative in the sense of promoting women's ability to challenge these roles and stereotypes. View of planning from a gender perspective considers that women are experts about the places where they live and about the resources where they use like water. Planning must take, as its starting point, the experience of people at the community and neighborhood level, who live in, use the spaces and resources; it focuses on and wants to develop (Fenster, 2005). In general, gender-inclusive planning prioritizes a model of packed together rural women in the ERM planning stage to present their interest including others to balance decision making between men and women.

2.7.2. Implementation

Implementation is also seen as a learning process thereby, promoting a continuous, even endless participation process. In such a scenario, the implementers through continuous searching processes always find improved goals and functions and more reliable management techniques and technologies (Liebenstein, and Maital, 2004). The effective participation of women's groups in the implementation process could facilitate development as an outcome. Conversely, the non-participation of the community especially women in the implementation process may undermine the collaborative effort of managing scarce resource like ERM. Implementation as an evolutionary process is when deciding on goals and finding the means to enhance the outcomes takes place in a dynamic environment with ever-changing circumstances rather than in a static environment (Majone & Wildavsky, 2008). put these changing circumstances into a better perspective, namely, at each point, we must cope with new circumstances that allow us to actualize different potentials in whatever policy ideas we are implementing. The different potentials in my view seem to suggest the promotion of a broader participatory union even far beyond the women. In this particular resource management implementation, the WUC could be

potential partners regarding women participation in ERM. The indeterminate environment, in this case, could be the complex social structures and value systems, which define the position of women in the rural Womberma District community. To implement a policy in such an environment may require some degree of tact, flexibility, and adaptation in design and planning as a mechanism to make women as a participant during implementation. In this connection, where, when, and how adaptation should take place are of crucial importance for the inclusion of women in ERM as an outcome.

2.7.3 Monitoring

Monitoring refers to the process of keeping track of progress and reviewing whether the ERM implementation was progressing according to plan. To conduct any kind of monitoring, it would start with a monitoring plan. Accordingly, monitoring must be participatory; as the community members must be the direct beneficiaries of the resources, can play an active role in monitoring (Meera, 2006). For these reasons including women in monitoring is very important as planned, implemented together. Thus, maintaining the record at the direct beneficiaries' level, analyze progress, and use the information to make decisions about plan implementation must be inclusive. Therefore, all monitoring activities are geared towards producing reports for the community. While timely reporting to the community was important, monitoring plays a key role within a beneficiary and it was most effective when used by participants who are stakeholders of the resource and implementers to review progress and make day-to-day decisions.

2.8. Factors affecting women's participation in ERM

There are different types of factors that affect women's participation in ERM, that are categorized into , socio-cultural , socio-economic factors and institutional factors.

2.8.1. Socio-cultural factors

The socio-cultural environment was described as an environment consisting of everything that is not contained within the economic system Felicia, (2013). A socio-cultural system is made up of a collection of activities and relationships through which people engage in their personal and private lives which include population features, demographic, religion, and associates. These environmentally relevant patterns of behavior lead to the creation of different cultural values in different societies, some of which influence the decision to create a new environment. Therefore,

culture, as distinct from political, social, technological, or economic contexts, has relevance for participation behavior (Shane, 2003). Therefore, there are socio-cultural factors that affect women's participation in ERM in the study area. These socio-cultural factors like community attitude toward women participation, women participation acceptance by the community, looking women as incapable in decision making and culturally women are not favored to involve in management are common in the community. Attractions refer to cultural conceptions about what are desirable goals or ends and what are appropriate standards for judging actions. They constitute standards by which people evaluate goals and actions (Rokeach, 2004). Also, values or attraction refer to convictions about what is right and wrong (Robbins S. & Coulter, 2007).

There is a widespread agreement in the literature regarding five features of the conceptual definition of values: A value is a (1) belief (2) about desirable and states or modes of conduct, that (3) transcends specific situations, (4) guides selection or evaluation of behavior, people, and events, and (5) are ordered by importance relative to other values to form a system of value priorities. Attitudes are evaluative statements either favorable or unfavorable concerning objects, people, or events. They reflect how an individual feels about something (Robbins and Coulter, 2007). However, there are major agents of social factors are family, peers, school and the media, reference groups, roles and status (Phil, 2010). Reference groups are groups that serve as direct or indirect points of comparison or reference in the forming of a person's behavior.

For example, some people admire business people, musicians, politicians' models, and so on. In most cases reference groups contain our heroes and women for instance will tend to be when they see their referents. Also, the family constitutes the most influential primary reference group that shapes an individual's behavior. Families shape many of an individual's basic values and attitudes including views and religion, politics, education and one's attitudes towards material possession. Also, families can inspire certain values and beliefs into their children, and until they become adults, these continue to influence their decision processes. Moreover, as the culture is learned behavior, formal and informal education plays an important role in transforming cultural values from one generation to another. Thus, the education system assists to foster support and encourage those interested in knowing what it is like to be a participant (Alwis & Senathiraja, 2003).

Therefore, cultural factors influence the participation of women in ERM broadly in the different community context; and the choice of participation to be undertaken. In Ethiopia, the conviction of the community what is right and what is wrong for positive cognition toward women's participation is very low. Thus, like practices in the community not adjusted with an actual updated policy that promoting women participation in ERM. Besides the practice of socio-cultural factors like attitude toward women participation the role they play and the contribution that they offer not valued properly.

Besides, culturally women are not favored to assign as a leader in management was another factor that discourages women the motivation and limit the participation of women. Further, the community perceived that women are incapable to make such management decisions. This is one of the potential socio-culture hot issues through Ethiopia nation nationalities. Thus, still, the documented policy not properly implemented, especially in rural areas and as a result, the past practice that the community internalized as a culture still not changed in rural areas. These all the above factors affect the participation of women in ERM. Despite their contributions to the well-being of their family and community affairs, women are facing multiple forms of deprivation. Gender-based discrimination, lack of protection of basic human rights, violence lack of access to productive resources, education and training, basic health services, and employment are widespread (NCTPE, 2003).

2.8.2 Socio-economic factors

Different factors affect women's participation in different issues in the rural areas those are socio-cultural, socio-economic, and institutional factors. The socio-economic factors like household head, marital status of household head, educational status of household head, and family size of household head, livestock sizes of the household, landholding size, and engagement of household farm activity. Women's independence in participation is positively and negatively associated with the above mentioned factors at rural level. Illiterate rural women have less autonomy in participation in society. Education increase women's confidence to participate in any management process as well as in ERM. Women's participation is related to their mobility. But it is a common scenario of today that women's movement has locked in patriarchal society because of having low educational status. According to Bbaale, E. & Mpuga, (2011) the

importance of education for women has been accepted worldwide, as it improves their earning ability and participation. Education also plays in economic terms for women, by allowing them to go out of their houses and work in different sectors of the country. Female education has also been claimed to alter household power relations making women more confident and giving them greater control of various dimensions of their lives. Education is recognized as a major instrument in empowering women. Education may help a woman to gain a better understanding of her rights and responsibilities, and make her more confident about her possibilities, including the possibility of participation. (Acharya, Y. 2008 & Maitra, P. 2004) argued that female education is likely to increase the bargaining power of the wife and reduce the power imbalance within the family. Also, the higher the education level of women, the stronger is the effect of education on participation.

2.8.3 Institutional factors

In addition, one of the greatest constraints that affects rural women is access to training. Access to training can also provide rural women with choice to spend more on agricultural production (Admas & Vogel, R. 1990). Having training access is one of the major ways to empower rural women that help them to buy agricultural activity. Thus as the women actively engage in agriculture they tend to use ERM. According to Warren (1993) women are largely excluded from training access and extension programs, it should be noted that they possess a wide range of knowledge about the use and conservation of natural resources. For example, in Sierra Leone women could name 31 different uses for trees while men could name eight (8). Men and women possess different knowledge about natural resources and forest genetics. Women do the majority of work in agriculture at the global level, but men, for the most part, still own the land, control women's access to resources, participate in different trainings and make agricultural decisions like by agricultural technologies in patriarchal social systems. It has also been pointed out that it legitimated the subordination of women Fink (1992). The training of rural women is very important, especially with the agricultural practices that are tailored to local conditions and that use natural resources in a sustainable manner, with a view to achieving economic development without degrading the environment. Women are not perceived as farmers even when they do most of the farm work. As a result, access to training and information on new technologies are almost exclusively directed to men, even when women are increasingly responsible for farm activity (Kelkar, 2011).

2.9 Challenges of women participation in ERM

In most parts of Ethiopia, rural women are intimately involved in most aspects of agricultural production activities including planting tree. However, various constraints in relation to economic, cultural norms and practices limit women's participation in environmental resources management (Sambrook, 2004 cited in Dawit *et al.*, 2012).

There are different aspects of social problem/challenges in which women participation environmental resources management such as Ignorance, Social status, Culture ,Laxity/dilettante, Resource controlled by men and Domestic work. The characteristics of the social challenges are social in their result and they affect all sectionsof society,and the responsibility for social challenges is social means it requires acollectiveapproach for their solution. Social challenges in its nature occur in all societies(Ahuja, P. 2002). Types of social challenges for example social conditions are asymptom of social challengesand the blamed system in which they live in as well (Eitzen, 2009). The focus is on how the society operates and who benefits and whodoesn't benefit under existing social arrangements. Some of the system biases like the wayhowour society's resources distributed, some categories of people suffer due to the wayof management, and some are suffered because of the way health care is delivered.

Another social challenge is like the local institutional deviance for example water use association at a rural level is a term used to describe a situation when the institutions of society serve a selected few generally powerful people (Eitzen, B. 2009). Inother word, the local institution leaders favor some sort of selected people in thecommunity may raise other deviance of individually, in the group as well as institutionally. However, deviance exists when society and its formal organizations are not meeting the needs of individuals. Hence, this became one of the social challenges in the community.

Thus, it is very difficult for women to manage this type of problem which occurred due tosocial challenges. This may affect women's participation in ERM. Therefore, the causes of social challenge might be individual, cultural, and structural. In general, the fact is that the environment surrounding our society is rapidly changing,not to mention the climate change, aging population, energy problems, or food crisis, and due to the evolution of our lifestyle, social condition and

institutions are evolving. Thus ,they face to social challenges ever more urgent and complex. The limited resources and increasing pressure on cost control, it is crucial that new knowledge and talent be deployed and developed as efficiently as possible. We need to contemplate how to overcome social challenges by using knowledge and skills wisely. However, social challenges are resisting conventional approaches to solve them. They need to search for innovative measures of tackling these challenges which affect women participation in ERM in the study area.

2.10. Conceptual Frameworks of the study

A conceptual framework represents the researcher's synthesis of literature on how to explain a phenomenon. In other words, the conceptual framework is the researcher's understanding of how the particular variables in the study connect with each other. Thus, it identifies the variables required in the research investigation. The conceptual framework in this study thus assumes that the level of participation is directly influenced by the key factors or variables, and presumes relationships among them that bases of the concepts of women participation (planting trees, and cleaning environment,) and the evidence from literatures the framework below conceptualize how different factors affect women participation in environmental resource management. These variables are socio cultural factors which incorporate women are incapable to make decision and culturally women are not favored to involve in management are explicit variables of women participation in environmental resource management.

The demography factors which are age, marital status, family size, educational status of women, household headed, institutional factors, access to training and also socio-economic factor ,landholding, livestock, access to training and Engagement of household farm activity of women participation in environmental resource management like planting tree and clearing environment .Besides, social challenges like workload, public meeting, attendance, discussion, suggestion and decision making are challenging the participation of women in environmental resource management like planting trees and cleaning environment .

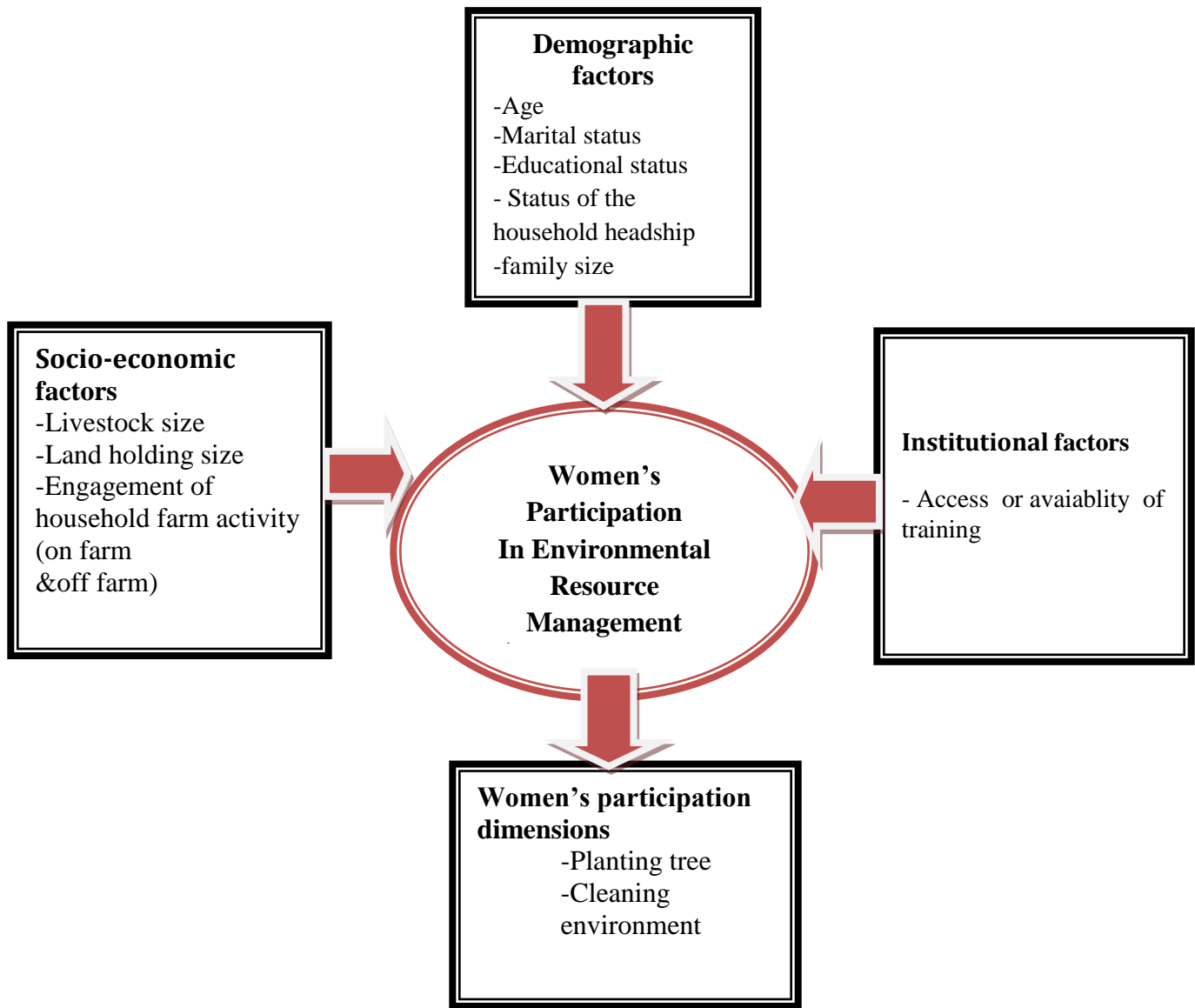


Figure 2.1: Conceptual framework of the study

Source: own constructed from literature review (2020)

CHAPTER THREE

RESEARCH METHODOLOGY

3. Description of the study area

3.1. Location and Topography of the study area

Geographically, Womberma is located in between 11° and 12° north latitude, and 37° and 38° east longitude. It is found at a road distance of 165 kms far from Bihar Dar city, the capital of Amhara National Regional State, and 417 kms away from the north west of Addis Ababa. Womberma is one of the *woredas* under western part of Amhara National Regional state of Ethiopia. It is bordered by West Gojjam(WombermaWoredainformation and Communication Affair).

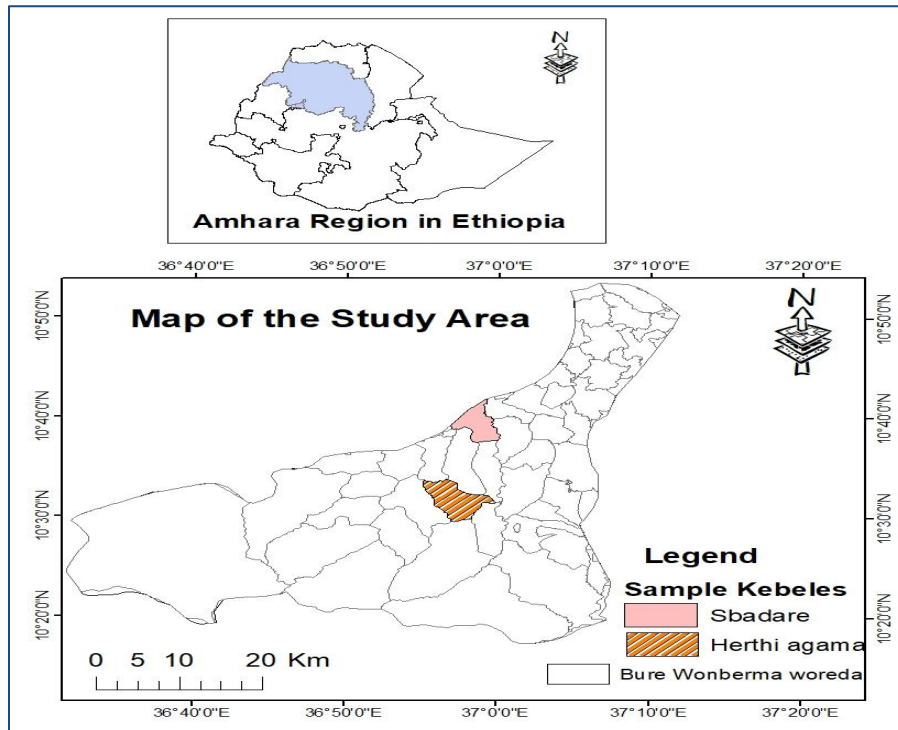


Figure 3.1 Location map of the study area

3.1.1 Landscape and Agro-ecology

The woreda covers a total land area of 135,675 sq. km of which 39020 comprise cultivable land, 44263 covered by forest , 22282 covered by bushes, 18969 covered by grazing and ,11141 water bodies, Topographically, 45% of the *woreda* is mountainous, 35% hilly, 15% plain and 5% is valley. Its altitude ranges from 1500 m-2125 m above sea level. According to Womberma woreda information communication Affair has two agro-ecological zones with 32% *kolla*, 68% and *WoyinaDega*. Moreover, the average annual rainfall ranges from 600 mm to 1400 mm and the annual average minimum and maximum temperature are 20⁰c and 33⁰c respectively (Wombermaworedainformation and Communication office,)

3.1.2. Demography and socio–economic Characteristics of Womberma woreda

The human population of the woreda 130214 out of the total population 64459 are male and 65755 are female. The woreda has 22 Keble (2 urban and 20 rural Keble. The majority of the inhabitants practiced Ethiopian Orthodox Tewahido Christianity, with 92.% reported that as their religion, 7.6 % of the populations are Muslim, 0.28% of the population are protestant , and 0.01% are catholic. In the District, agriculture remains to be the dominant economic sector. Crop production is the major agricultural activity in the District with the largest share. In this regard, different annual crops like wheat, pepper , maize, barley and potatoes are dominant crop production. While from the livestock Cattle, Sheep, poultry and Goats were the dominant animales.

3.2. Research Methodology

This section discussed the approach the researcher followed in doing the research. It is well-articulated in the research methodological literature that the choice of a research approach is influenced by several factors including the researcher's world view, which, in turn, is dictated by the nature of the research problem.

3.2.1 Research Approach

The study employed a mixed research method which is a combination and systematic integration of quantitative and qualitative approach . The reasons why mixed resaerch approach was applied

for this study were in order to avoid the drawbacks of each individual paradigm, they are a compliment to each other and they are allowed for a more complete analysis of a research problem. Using qualitative data in addition to quantitative data is helpful to include all the necessary information, which is crucial to the study. Because, if it is the research conducted by using only quantitative methods, those variables that need to be discussed qualitatively may be missed. For this reason, the researcher was interested to use mixed research design which includes both qualitative and quantitative research methods.

According to (Creswell, 2003) Mixed research approach is used to offset biases and compliments to strengthen different methods. Thus mixed research method is better to employ this study so as to provide better understanding of the research problem of the study. Because multiple data collection instrument was used; the study was more reliable and ultimately more useful in answering the research questions. In this approach, diverse information on what factors affecting women's participation in environmental resource management to participate in the planting tree, and cleaning environment were collected and generated. In addition, the fact that the mixed research approach minimizes some of the limitations of using a single method because quantitative or qualitative research methods are not sufficient to address the complex technological phenomena when they are treated separately. Qualitative methods suffer from the limitations of generalizing the results beyond the specific research area and go through subjectivity during data collection and analysis. The quantitative method on the other hand always fails to capture an in-depth understanding of issues (Creswell 2003).

3.2.2. Research design

In order to attain the research objective of the study was conducted within the confines concurrent mixed method design. There are certain rationales why the researcher was used concurrent mixed method research design. Firstly, it gives equal priority to both quantitative and qualitative data. To mean that the researcher valued both quantitative and qualitative data and see them as approximately equal sources of information of this study. Secondly, it enables the researcher to compare the results of quantitative and qualitative analyses to determine if the two databases yield similar or dissimilar results. Thirdly, this design enables the researcher to gather information that uses the best features of both quantitative and qualitative data collection

methods. In this regard, Creswell also argues that, convergent parallel/ concurrent mixed method approach is a design in mixed methods in which researcher collects both quantitative and qualitative data concurrently, analyzes them separately, and then compares the results to see if the findings confirm or disconfirm each other (Creswell, 2017). Hence, this study was used concurrent parallel research design to describe the factors that determining women's participation in environmental resources management .

3.2.3 Sampling techniques

The rationale why Womberma Woreda selected as a focus area for this study is because of the following reason: The first reason through observation and experience of the researcher with the study site, particularly with women's participation in environmental resources management such as planting tree and cleaning environment. The second, the researcher was willing to assess factors that affecting women's participation in environmental resources management in special reference. Because different researchers and academicians are not concerned the issue and there is no much enough study on the area. Thus, the researcher is interested to conduct a research on the area entitled as “ factors that determining women's participation in environmental resources management”.

Consequently, women from both male headed and female headed household were used as the primary component of the analysis. In this study, the list of male headed and female-headed households was obtained from the selected two kebeles. The researcher has employed multi-stage sampling in order to select sample women. In the first stage the researcher was used purposive sampling techniques in order to select the study area, Womberma woreda. In the second stage, Stratified random sampling technique was employed to select rural kebeles; This is because the rural kebele of Womberma woreda is already categorized in two agro-ecologic zone of woyina dega and kola. Then, from these strata, *Byita* and *Sebadar kebeles* were selected randomly from *Woyina Dega*, and *Kolla* agro-ecological zones respectively. In the third stage, stratified random sampling technique was employed to select male-headed and female-headed households from each kebele's considering there was a woman in the male-headed household. After this, proportional stratified random sampling technique was used in accordance to the size of the Kebele. Then each Kebele list of male headed and female headed household was used as sample

frame. Finally simple random sampling techniques were applied to select sample women from the two kebele's.

Whereas, In this study, the participants for qualitative information were selected using purposive sampling. For participants in a focus group discussion that is experienced in ERM and the age more than 18 years in inclusion criteria. Therefore, the participants in focus group discussions were selected purposively in each agro- ecology in such a way because the researcher intended to hold one group discussion on each of the selected *kebeles*.

Accordingly, four key informants and 18 focus group discussants with two groups 6 members in one group, and 12 members in the remaining groups were taken to get acquired results respectively. Similarly, purposive sampling was employed to select key informant interviewees: since it needs to select the individuals who know about the issues and specific experts about the needed information. Hence, the key informant interviewees were from Agriculture Experts, Environmental Protection office, and Women, Youth and Children Affairs officials of Womberma *woreda* as a source of relevant data for this study. Therefore, purposive sampling technique was appropriate to use in this study for the qualitative part.

3.2.3.1. Sample size determination

In quantitative research there are a number of strategies in determining a sample size including using a census for small population, imitating a sample size of similar studies, using published tables and using formula to calculate a sample size. Whereas, in qualitative research is not possible because the sample are not statistically representative of the population. The number of samples for the qualitative purpose in this study is determined by selecting the respondents purposively who are knowledgeable as well as experienced people. In this study for the quantitative data collection purpose, the sample frame of the research is the total population of that women participates in environment resource management in the surrounding of Womberma district. Despite of this, the total participation of women was 955 out of these 210-sample size was selected. In this study was used a sample size determination given by Kothari (2004). formula as shown below.

$$n = \frac{z^2 \cdot p(1-p) \cdot N}{e^2 (N-1) + z^2 \cdot p(1-p)}$$

Where,

n= is the representative sample size

z =the value of standard vitiate at given confidence level

e = is the desired level of precision or acceptable error

p=is the estimated variability/proportion of the population of attribute present in the population (50% =0.5)

1=designates the probability of the event occurring q =1-p

N= size of population

Therefore ,

$$\begin{aligned} n &= \frac{(1.96)^2 \times (0.5 \times 0.5) \times 995}{(0.06)^2 (995-1) + (1.96)^2 \times 0.5(1-0.5)} \\ &= \frac{3.8416 \times 0.25 \times 995}{(0.0036) (994) + 3.8416 \times 0.25} \\ &= \frac{955.598}{4.54388} \\ &= \underline{210} \end{aligned}$$

Based on the above formula the researcher takes the conservative value of p,(p=0.5) confidence level is 95% and plus or minus $\pm 6\%$ were precision levels is desired by looking the expected criteria.

Therefore, the required sample sizes of this study were 210 women. But, the question is how can these individuals be selected? This sample size allotted to the two *kebeles* was based on proportionate sampling method. Though with this method each *kebeles* was fairly represented,

proportional allocations of the sample have been made based on the size. This sample size was allotted to two *kebeles* using proportionate stratified sampling formula.

Through this formula, each Kebeles was fairly represented as follows:

1. A sample size of Sebadar Kebele = $465 \times 210 / 955 = 102$ women
2. A sample size of byita Kebele = $490 \times 210 / 955 = 108$ women

As already mentioned above, among the target population of 955 (women farmers in male-headed and female-headed household), the researcher took 210 respondents as calculated based on the above formula. Lastly, the required sample households were selected using simple random sampling techniques within each kebele.

Table 3.1: Summary of Sampling Technique of the Quantitative Component

Sample kebeles	Stratum	Number of household in each keblles			Number of sample women taken from each Keble
		Male headed	Female headed	Total	Total
<i>Sebadar</i>	<i>Woyinadega</i>	356	109	465	$465 \times 210 / 955 = 102$
<i>Byita</i>	<i>Kola</i>	358	132	490	$490 \times 210 / 955 = 108$
<i>Total</i>		500	455	955	210

3.2.4. Data sources

The sources of data to this research was used primary and secondary sources to obtain necessary information for this study. Hence, primary sources include survey respondents, key informants and focus group discussion participants. While, secondary data sources such as books, journals relevant books, documents, journals, articles, and related research works. In line with this, Kothari (2004) indicated that using secondary data that are collecting and analyze by someone else or to written sources enable to interpret or record primary data.

3.2.5 Data collection instruments

The researcher used questionnaires, key informant interview and focus group discussion as a major data collection instrument. The rationality and ways how each instrument was discussed below with some justifications?

3.2.5.1. Questionnaires

The primary data were collected from all women's participation in environmental resource management household through structured questionnaires. The researcher was prepared both open ended and closed ended questionnaires on the basis of the objectives of the study. Questionnaire is a data collection instrument consists of a series of question and other prompts for the purpose of gathering information from respondents (Galton, 2012). And also (Kothari, 2004) briefly noted that structure questions, the questions are presented with exactly the same wording and in the same order to all respondents. The resort is taken to this sort of standardization to ensure that all respondents reply to the same set of question. The form of question maybe either closed (the types of yes or no) or open ended (i.e,inviting free response). But should be stated in advance and not constructed during questioning Kothari, (2004).

Hence, pilot test was carried out on 20 randomly selected women to ensure the validity, to avoid vague or ambiguous questions and to easily understand by the respondents. This helped to refine the questions. The researcher assigned 4 enumerators based on knowing their residence, place and local community and experiences; The survey questionnaires was prepared in English language and translated in to Amharic because respondents' local language is Amharic. The enumerators was selected on the base of fluency in speaking Amharic as will. Before starting the actual survey, the enumerators first trained by the researcher about how to present and explain each question to respondents. The survey questionnaires covered a wide range of information which included women's participation in planted trees and cleaned environment. A total 210 were administered via gone in to respondents homestead and all were returned for further analysis.

3.2.5.2 Focus Group Discussion (FGD)

Focus group discussion allow deeper examination of complex issue than other form of survey research because when people hear others talk it often generates responses or ideas that did not think before (Bhattacharjee, 2012). Moreover, it is more appropriate when group interaction are capable of producing detail data and new thoughts and illustrating conflict views of respondents (Bloor, 2000).

So as to get detail information that can consolidate the survey questioner, focus group discussion was implemented. FGD is one of the crucial research tools for data gathering process for this study. Among other, FGD is a valuable research tool which provides insights on how people think and provide a deeper understanding of the phenomena being studying. Besides, it helps to gain more in –depth information to supplement with surveys questionnaires. Most importantly, FGD is to supplement and confirm information to check the validity of data generate.

In this study one FGD were conduct within at minimum six in number the group contains or at maximum eight-twelve numbers of participant of discussants was used. The first group were selected from Womberma District in *Sebadar kebele* from Women Assosation and the second group were discussants taken eight-twelve numbers of discussants were selected from *Byita Kebele*. Likewise, the numbers of the discussants was participated in the FGDs. Since, check list was prepared to guide the open-ended discussion with the identified FGD members. The data were collected from the focus groups in qualitative and general which reflected the challenges/factors of women’s participation in environment resource management to particpate planted tree, and cleaned environment. Therefore, the researcher was used two focus group discussants.

3.2.5.3 Key informant Interview

To get relevant data for this study, the researcher conducted a key informant interview with four concerned individuals. At this point, there were rationales why the researcher used this data gathering tool. Among these, it can provide vital information directly from knowledgeable or professional people. Furthermore, this type of data gathering tool is flexible to explore new ideas as well as issues was not anticipate during planning. In addition to this, it resembles conversation among acquaintance allowing free flow of ideas and information.

In line with this, USIA(2011) stipulated that key informant interviews involve interviewing knowledgeable individuals who are likely to provide the required information, ideas, and insights on a particular subject. However, such individuals must be identified carefully. Attempts to explore facts on the ground make it a rational approach to include key informant interviews by involving a selected group of individuals who are likely to provide needed information, ideas, and insights on the proposed research. Taking the above concepts into account, interviewees were conducted among key informants that allow the researcher addressed the challenges/factors of women's participation in planting tree and cleaning environment.

The key informant interview may be an expert or knowledgeable person with first hand information about concerned issues (Melesse, 2014). The time and place for the key informant interview was decided by the key informants themselves and the majority of interviews were held in the place they selected. To this end, key informant interview for the purpose of this study were conducted with an expert who work in the office,community leaders, professionals, or residents who have firsthand knowledge about the community.

3.2.6.Data Analysis techniques

Here, data-analysis techniques were used on the nature of the data and the type of research questions that are addressed. However, both quantitative and qualitative data analysis techniques were employed and a combination of data analysis methods were required and carried out for this study. The quantitative data analysis is a process of tabulating, interpreting and summarizing empirical and numerical data for the purpose of describing or generalizing the population from the sample. Accordingly, descriptive and inferential statistics were used to analyze the quantitative data. In relation to this, Yong (2011) noted that descriptive statistics is a tool in any research that describes a setting or events in numerical terms for the sake of quantifying data in order to organize, summarize or easily understand the information. Hence, for quantitative method up on completion of the data collection, the data was coded ,edited and entered in to SPSS (statistical package for social scientists) Version 20 and then the data was analyzed through descriptive statistics and inferential statistics, such as percentages, frequencies, standard deviations. Whereas, binary logistic regression model was used to examine the factors that determine the participation of women in ERM; because it is a powerful statistical tool as it

allows us to determine the effect of independent variables on the dependent variable while holding any number of other independent variables constant. In relation to this, 'Binary logistic regression is a form of regression that is used when the dependent variable is dichotomy or dummy and the independents are of any type Dattalo, (2008). Similarly, Orme (2009) describe binary logistic regression as a popular method for modeling relationships between dichotomous dependent variable and multiple independent variables.

On the other hand, summarizing what was heard during the discussions into words, phrases or patterns were the major tasks that accomplished in the qualitative data analysis. Hence, the information that collected through KIs interviews and focus group discussions in relation to the factors that affecting women's participation in environmental resources management were documented and analyzed textually to complement the statistical results from the structured questionnaire. Hence, the information that collected through key informant interview and FGD discussions were analyzed. In other words, the qualitative data were analyzed by identifying key themes and issues in each context. In case of thematic data analysis, the data were organized randomly on certain themes in relation to the objective of the research. Finally, triangulation took place between the quantitative and qualitative data in order to make the analysis more comprehensive and valuable.

3.2.7. Descriptions of Variables and Working Hypothesis

Dependent variable(Explained variable)

Participation in ERM activity: The predicted or outcome variable of the study is participation of women in ERM activity. The nature of dependent variable is dichotomous or dummy variable. The dependent variable (women's participation) has two values. The values 1 represents if women's participated in ERM activity and 0, otherwise.

Independent Variables and Working Hypothesis

Predictors or explanatory variables are the variables that influence the predicted or dependent variable. In this study, the independent variables were assumed that determine the participation of women in ERM activities. Accordingly, based on the review of diverse literature and related

research findings and the researcher's piece of information on women's participation in environment resource management in planting tree and cleaning environment which were expected to be connected with Women participation, 10 potential explanatory variables were considered in this study. Each variable was described in detail regarding their attributes with the dependent variable.

1. **Age of Women (AGE):** the age of Women's participation in environmental resource management was considered because in rural society decisions and activities are mostly done by a household head. This variable was hypothesized that the household with an older head have been higher family size and access to land acquisition, and would have a capacity to accomplish the involvement of women in plant tree and cleaning environment activities. Therefore, age of household head in the household affect women's participation positively and negatively.
2. **Marital Status:** constitutes four marital status categories and stipulates whether respondents are unmarried, married, divorced, or widowed. It is hypothesized that type of marital status was positive or negative affects Women's participation in ERM activity.
3. **EducationLevel:** it is a categorical variable in grades and number of years in school or colleges. Women's level of education positively and significantly affects the Women's probability of adopting new technologies. Women's participation with more education are mostly aware of adoption of a conducive environment through plant tree and cleaning environment. Therefore, it was hypothesized that Women's household members of participation with greater levels of education tend to have higher incomes from plant tree and high production
4. **Family Size:** it is a continuous variable which indicate the number of persons living in the house of the family. It is expected that as the size of the household increases the participation of women decreases. It was assumed that a family with large household member women expose for triple burden down/ domestic work was need more labor and continuous follow up. Therefore, it was expected that there is a negative relationship between the participation of women and family size.

5. **Land Size:** this variable corresponds to the total area owned and cultivated by household. Women's farmers who have relatively large farm size would be more initiated to involve in plant tree and vice versa. Hence, it was expected that land size has a positive relationship with the dependent variable.
6. **Household Headed:** It is a dummy variable of either male-headed household or female headed-household. this variable corresponds to the participation of women in environmental resource management. So, female-headed household have been better accesses and control their property as well as decision making on the given resource. It was assumed that household headed has positive relationship with the dependent variable.
7. **Family Livestock Size:** it was one of the most important means of production in agriculture but for environmental resource management has been great impact and due to this case women's participation were expected to relate negatively. As the number of animals increase, women participation was expected to decrease. This assures those animals increases, plant tree, highly cultivated. Hence, a negative relationship between family livestock size and women's participation was expected.
8. **Access to Training:** it is dummy variable measured as 1 if farmers got specific training access and 0 otherwise, farmers may obtain information from different sources and may learn also from DA through extension program. However, unless they can obtain required skill through training, they may face problem to understand. So those farmers who got training on improved technology are more willing than those who didn't get training. Therefore, a positive relationship was assumed between training access and the participation women .
9. **On Farm :** this variable highly affected women's participation in plant tree, cleaning environment and highly extended animal husbandry. It was expected negative relationship between women participation and on- farm.
10. **Off-Farm:** this variable also affected women participation due to labor on other farm women's work, casual takeout has been great influence dependent variable.

Table 3.2 Descriptions of Explanatory Variables Used in Binary Logistic Regression Model

Variables	Variable Description	Variable Code
Age of women	Categorical Variable, 1 if a woman has age 20-29, 2= between 30-39, 3=40-49, 4=50-59, and 5=>60 years of age	Agecat
Marital status	Categorical variable: 1 if a woman is Unmarried, 2=if Married, 3=if Divorced, and 4=if widowed	Maristat
Family size	Categorical variable: 1 if woman household has 1-5 family size, 2=if 6 up to 8, 3= if woman has >8 family size	Famsize
Educational level	Categorical variable: 1 if a woman is illiterate, 2=if a women can read and write, 3=if a woman has primary education (1-8) , and 4 =if secondary education or above (9-12)	Edulevel
Status of the household	Dummy Variable: 1 if woman household is male headed, and 2=if female headed	Stathhd
Landholding size	Categorical Variable: 1 if women household have cultivated land size of <2 hectare, 2=if >3 hectare	Landsize
Livestock size	Continuous variable	Livestock size
Access to training	Dummy Variable: 1 yes and 0=if not traning	Accesstraining
On –farm	Dummy Variable: 1 yes and 0=if not	On farm
Off-farm	Dummy variable: 1 yes and 0=if not	Offfarm

3.2.8. Issues of validity and reliability

A data collection instrument's reliability is interpreted as the consistency with which it measures the target attribute and concerns a measure of accuracy. In order to ensure reliability of the instrument in this study, the majority of the variables adopted from the research conducted by (Mesifin, 2012). Additionally, a pilot study is conducted for some new variables recommended by Mesifin. Cronbach alpha is used to test reliability. This involved testing the actual tool on a small sample taken from the general population. A week before execution of the study, the actual questionnaire was administered to 20 female 18-65 years of age in the study area, in order to ensure the questions were clear. After analyzing this, questions which were not clear were rephrased to ensure that appropriate responses would be obtained in the future. On the other hand, validity of an instrument concerns the extent to which the research measures what it asserts to measure without bias or distortion. To test the validity of the instrument, a copy of the questionnaire was submitted to the known researcher to examine whether the number and type of items in the questionnaire measured the concept or construct of interest (content validity).

Generally, questions in the tool were developed based on findings from previous studies and the literature reviewed.

3.2.9.Ethical consideration

Research ethics is one important aspect that needs to be included in a particular research. As a result, the researcher was taken into account the issue of research ethics in the study. To be ethical, the following points were considered. Firstly, the researcher wasask permission letter from the department of gender and development studies and introducing him/her to all participants. Secondly, the researcher describe the purpose of the study by using local language that enables every participant to understand and aware them that all data which wascollected from participants used only for the purpose of research. Thirdly, the researcher guaranteed the right to participate voluntarily and the right to withdraw at any a time they want. Fourthly, the researcher was tell them that the anonymity of participants and confidentiality of the information were maintained throughout the study and report written by using false names and Fifthly, the researcher was inform them that all data was kept in a safe way of handling. Finally, the researcher was also explaining to the participants that the information they give by and their identities were kept in a safe way of handling.

CHAPTER FOUR

4 .RESULTS AND DISCUSSIONS

Basically, this chapter dealt with data analysis, interpretation, and discussion results obtained from questionnaires, focus group discussions and key informants interview. A total of 210 questionnaires were distributed, and the whole questionnaires were completed for the analysis. The result was presented by descriptive and inferential statistical tools and qualitative analysis technique. Descriptive statistical parameters such as mean, standard deviation, frequency and percentage were used for the quantitative data. While binary logistic regression was used to see the influence of each independent variable over the dependent variable. Accordingly, the first part of the analysis presented women's socio-demographic, socio-economic, and institutional factors that affected women's participation in ERM. The second section provided detailed analytical elaboration on the level of women participation in ERM.

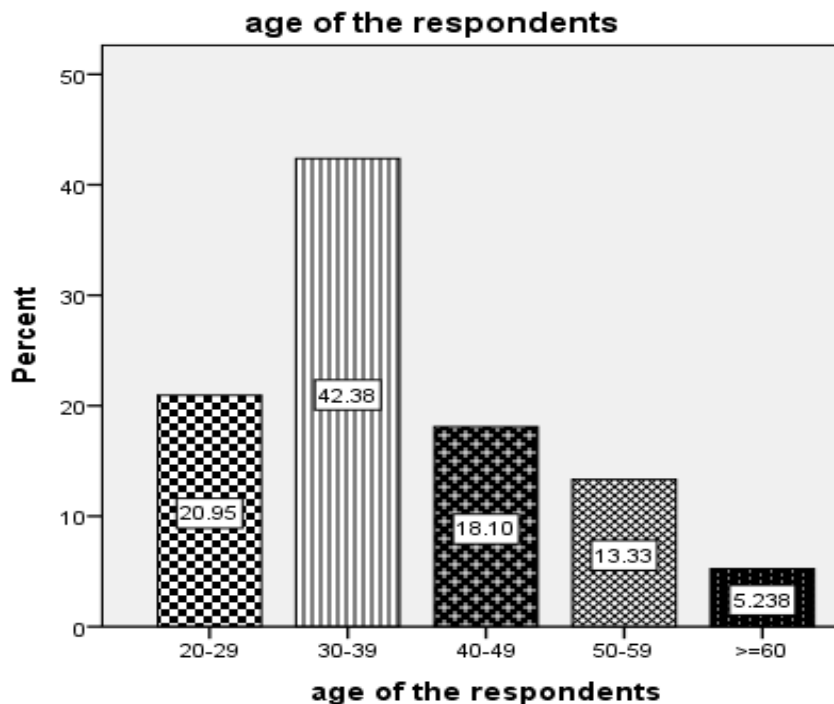
4.1. Demographic Characteristics of Respondents

4.1.1 Age of the Respondents

The age distribution of the respondents is important for determining the ability to participate in the practice of environmental resources management activities. As it is indicated in fig 4.1, there were five age groups for women headed households. From the total respondents, about (21.0%) of respondents were between 20-29 years, (42.4%) of respondents were between 31-40 years, (18.1%) were between 41-50 years, (13.3%) were between 51-60 and (5.2%) were above 61 years. From this, we can conclude that most of the respondents participated in environmental resource management were in the age group between 31-40 years. The data from discussants also confirmed that most of the participants who were in the age group of youth were relatively more participant in ERM activities than older age groups. On the other hand, it was reported by the key informants that women's participation below the age of 31 had good experience in accomplishing environmental resource management activities like planting trees and cleaning the environment. Because youth age groups had better energy and speed that could help to manage the resources than older age groups. Furthermore, the key informants explained that women who were between 51-60 and above 60 years had limited participation in environmental resource

management activities. This findings linked with empirical studies done by Getaneh (2011) hepointed out that the age of women household influences whether the household benefits from the experience of an older person or has to base its decisions on the risk taking attitude of a younger farmer. However, a study by Hossain et al.,(2013) showed that age was a significant and negative variable for ERM work decisions.

Figure 4.1: Distribution of respondents’ response based on their age characteristics



Sources: Survey result, 2020

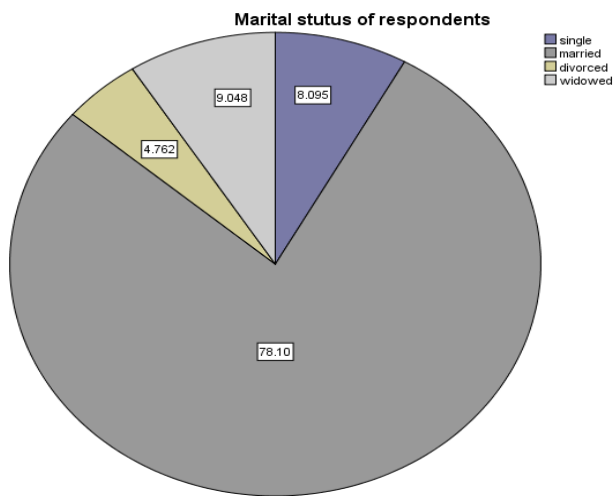
4.1.2. Marital Status of the Respondents

As it is shown in the survey result in figure 4.2 below, the marital status of the respondents influenced the participation of women in ERM activity. It is clear that unmarried, married, divorced and widowed women have no equal participation in ERM activity. In this case, the survey results showed that majority of the respondents (78.1%) were married, while small numbers of the respondents (4.8%) were divorced. The rest (9.0%) of the respondents were widowed and 8.1% of respondents were unmarried.

From the result, it can be concluded that majority of the respondents were married. Where as few respondents were widowed, divorced and unmarried respectively. The key informant interviewees stated that from marital status category, married women had more probability to participate in ERM activities such as planting tree and cleaning environment because of their elder children help thier mothers in household chores. In addition, married women had great probability in participating in ERM activities because women who live with their husband are respected more than divorced and widowed women.

On the other hand, the FGD participants and KIIs said that single, widowed and divorced women had less participation in environmental resources management activities because sometimes they were busier in both domestic chores and farming activities respectively. The result related with IFAD (2011) report also explained that in rural areas of the developing world, women play a major role in management households and make major contributions to agricultural activities. The work load also make women use their full potential. Married women have also higher probability in using inputs & technologies in agricultural activities than widowed and divorced women. Similar with the above result, Nigussie(2014) clearly showed that the marital status of married women owned more productive resources such as land, labor and other agricultural inputs as compared to the marital status of widowed and divorced women.

Figure 4.2: Distribution of respondents' response based on their marital status



Sources: Survey result, 2020

4.1.3 Educational Status of the Respondents

As the survey result in table 4.1 showed that almost half of the respondents (49.5%) were able to read and write. Whereas, about (22.9%) of the respondents were illiterate. On the other hand, (21.4 %) had primary education (1-8) and the small number of respondents (6.2%) had secondary education or above. From the result, we can conclude that majority of the respondents were able to read and write, and they faced difficulty to engage in ERM. Thus, women who had primary and secondary education or above had involved in ERM activities such as planting trees and cleaning the environment. The result also implied that illiteracy constrained women's probability of being involved in ERM activity, while better literacy could increase the probability of participation in ERM activity. The result also showed that women who had primary education and secondary education or above had more probability of participation in ERM than who were illiterate.

The result was also supported by the FGD discussants as follows:

Focus group discussants reported that women's capacity to adopt technologies was by their low literacy level implying the need for promoting functional literacy for women in the planted trees. Better literacy seemed to have helped the respondents to wisely allocate the existing environmental resource management materials and benefit from it. Despite this, the respondents widely used to allocate the existing resources, as well as benefit from resource training, was the important for women.

This result linked with a study by Biruk and Gebre-Egziabher (2018) showed that education could improve the working habit of the respondents and increased the technology reception (adoption) rate of the farmers for better enhancement in agricultural production. Therefore, educated women were more likely to participate in environmental resources management. Similarly, a study by Mecharla (2002) pointed out that education was a potentially important determinant of rural ERM activity. Education improves an individual's prospects for different farming activity as well as increases the ability to allocate time to efficiently. However, in early development phases, many rural ERM activities required only low levels of schooling.

4.1.4. Respondents' Household Head Status

The survey result demonstrated that majority of the respondents (65.8%) were women in the male-headed household. While, (34.2%) were women in the female-headed household. From the result, it can be inferred that majority of the respondents were women in the male-headed households. The FGD participants and KIIs argued that women in male-headed households were more participant in environmental resources management such as planting tree and cleaning the environment. This was because men were close to information, and they could access improved agricultural inputs easily than women farmers. However, female-headed household's participation was limited in environmental resource management due to the influences of different barriers within the family and in the community. Sometimes, female-headed households were also busier in both domestic work and farming activities.

On the contrary, the FGD discussants explained it as follows:

Focus group discussants said that when the number of female-headed households increased, the bargaining power and participation in all levels decreased. On the other hand, every property was controlled by men in which women had no power in decision making.

Table 4.1 Educational and Household Headship of the Respondents

Demographic Factors	Category	Frequency	Percent(%)
Educational Level	Illiteracy	48	22.9
	Read and Write	104	49.5
	Educated 1-8	45	21.4
	Educated 9-12 and above	13	6.2
	Total		100
Household headship	Male headed	138	65.8
	Female headed	72	34.2
	Total		100

Sources: survey result, 2020

From empirical evidence, for instance, Opera(2005), the inability of women to rise to leadership positions is a result of the cultural belief that reduces women to subordinates and men as the dominant group. Hence, leadership roles are ascribed to men who are even younger over older women because they are men. Furthermore, it asserts women's subordination is associated with a

specific household ideology which excludes women from gaining access to resources such as income and political autonomy. This makes women economically dependent on their husbands. The various beliefs the place of a woman is associated with the domestic sphere where they take care of children and the reproductive work is a women's sole worlds is used to reinforce women's subordination.

There was a study conducted on the experiences of women in male-dominated professions and environments in South Africa (Martin, & Barnard, A. 2013). The main findings of the study indicated that:

The central theme about women in male-dominated professions and environments were the types of challenges inherited in their work settings. The main challenges were discrimination and bias, physical and health-related difficulties, negative self-perceptions resulting from working in male-dominated environments, lack of leading the household activities, and work/life balance.

From the above finding, we could conclude that many women in a male-dominated profession were faced full of gender-related problems. According to Aster (2003) in all rural areas, the link between women and the environment was strong concerning the critical resources like planting trees and cleaning the environment.

4.2.Land Size and Related Characteristics

4.2.1. Family Size and Land Size of the Respondent

Concerning the family size of the household, the survey result showed that the majority of the households (51.9%) had sex up to eight members, and (29%) of the respondents had the family size one up to five. Where as, (19.1%) the respondents had above eight household members. (See table 4.2). From this result, it was possible to conclude that, majority of the respondents had at least six members in the household.

The data from participants and informants' interview verified that many of women households had larger family size and higher probability of participation than those who had less family size. Because, the increasing members of family in the household made women less responsible for domestic works. Nevertheless, as focus group discussion participants verified,

women who had fewer family members and absence of female children in the household were unable to engage or participate in ERM. From the result, it can be possible to argue that the labour family size were assumed to have a pillar relation to improve women's participation in ERM. This was linked with a study by Tizita (2017) which indicated that family size in adult equivalents indicates the sample household average family labor force for agricultural activity,

As shown in Table 4.2, the majority of respondents (59.5%) had greater than three hectares. While, few respondents had less than two hectares. From the result, it can be inferred that majority of women respondents had owned more than three hectares for cultivation. The size of the land was similar to produce different types of crops. As the rural community livelihood depended on farming, large farm plot size was one of the properties that helped them to produce different types of crops for use and market place. Land ownership provides the most secure tenure and enables the owner for land benefits. Therefore, being woman owner of land increases the extent of participation in environmental resources management.

As it was reported by key informants and focus group discussants, female-headed and male-headed households who owned a large number of farm plot sizes in the cluster formation were more benefited than other groups. The researcher observed that the condition of land size was important for women household who used land grabbing. In addition to this, a household was involved in many clusters due to the existence of many plots in a cluster.

This finding corresponded with empirical studies by Villabon (2012) clearly found that the increasing the size of the operational plot area also increased agricultural productivity. The same arguments by Nahusenya (2015) also found out that land in hectare had a significant relationship with women's participation in which those who owned larger land in hectare had higher participation in agricultural activity. Thus, land holding size was very important to for rural women to increase agricultural productivity.

Table 4.2 Distribution of family size and land size of the respondent

Variable	category	Frequency	Percent (%)
Family size	1-5	61	29.0
	6-8	109	51.9
	>8	40	19.1
	Total	210	100
Land size	<2	85	40.5
	>3	125	59.5
	Total	210	100

Sources: survey result, 2020

4.2.2. Family Livestock and Farm Activities in the Study Area

As mentioned below in table 4.3, the number of livestock ownership in household was with a minimum of two and a maximum of thirty seven in number. Large number of livestock requires large grazing area and large labors in order to take care for each type of livestock. Thus, farmers with more cattle can not invest more time to participate in ERM and women farmers, too. Regarding to family livestock size, oxen and bull are very important for agriculture production in most parts of Ethiopia including the study area. Of the total of family livestock size, total livestock unit (TUL) of ox and bull were 2.99 (SD= 1.542), 2.03 (SD=1.367) respectively.

According to focus group discussants, those who had more than one oxen produced more agriculture production than those who had no ox or single ox. On the contrary, those who had cows were also benefited. They used them for a daily balanced diet and source of income by selling milk and butter. Therefore, when the number of livestock is increased, environmental degradation can be very high due to the high cultivation of land. Furthermore, as the number of animals increase, women's participation is expected to decrease. This assures those animals increase, plant tree, highly cultivated.

Table 4.3 Distribution of the respondents of family livestock size

	N	Minimum	Maximum	Mean	Std.Deviation
Family livestock size	210	2.00	37.00	21.266	7.58779

Table 4.4 Distribution of farm activity

Variables	Categories	Frequency	Percentage (%)
On-farm	Yes	185	88.1
	No	25	11.9
	Total	210	100
Off-farm	Yes	102	48.5
	No	108	51.5
	Total	210	100
Non-farm	Yes	133	63.3
	No	77	36.7
	Total	210	100

Source: survey result,2020

In this section, farm activities such as on-farm, off-farm, and non-farm work played potential benefits to the agricultural sector in the study area. As a result, in (table 4.4) from the majority of respondents (88.1%) who had participated in on farm activities, while the few (11.9%) of respondents were do not have participated in on-farm activity. Moreover, the majority of (48.5%) respondents were participated in off-farm activity. So,as this, (63.3%) of women respondents participated in non-farm activity respectively. Thus, non,/off-farm activities would play an important role to diversify the sources of female household headed and male household headed livelihood, women headed households involved in a wide array of non/off-farm activities to drive income paraller to other agricultural activities. So, the households earn non-farm income,the income they have get other agricultural activities mainly from charcoal production, petty business and selling wood, daily labor and catikala takeout.

As per the information obtained from focus group discussants, it was usual for farm households to invest income from off-farm work in farm as non-farm operations and vice versa. Income from working in off- farm could be on-farm, and off-farm work played complementary roles with potential benefits to the farm which was contributed by women. Similarly, it was common for farm households to invest income from off-farm work in farm operations and vice versa. Income from working off the farm could be facilitated the acquisition of farm inputs or the adoption of new technologies. Thus, backward and forward linkages which existed between the two sectors as well as on-farm in the study area facilitated the acquisition of farm inputs or the adoption of new technologies, while income from farming could be invested in commerce. This result related to the study of Sudhakara and Nega (2013) from the traditional experience and existing reality of the rural households and their members, one way to get out of poverty, in part, is largely determined by their ability to get access to non-farm income opportunities. In this regard, households engaged in off/non-farm activities are better endowed with additional income to contributed by women. Increasing access to non-farm employment has been identified as an important approach to reducing household vulnerability (Christiansen and Subbarao, 2005).

4.3 Institutional Characterstices of the Respondents'

4.3.1 Access to training

As presented in table 4.5, less than half of respondents (30.5%) had access to training, while the remaining (69.5%) of the respondents hadn't access to agricultural related training. From the result, it can be conclude that majority of the respondents' had not access to training. FGD participants said that the vitality of training to involve in ERM participants' but, nothing is new about traning no one of responsible concerned bodies came to them to provide awareness about skill-based activites in related agricultural activites. The focus group discussants also stated that the absence of access to training is the main problem to participate in environmental resources management activites. Informants also believed that there is a problem of absence of access to training and explained that efforts would made to solve the problems through awareness creation to women. The result also showed that those women's who took traning was found more participate in ERM than women's who did not take traning since access to training was important factors for women to involve in environmental resources management activites.

The result was strengthened by Fink (1992) women do the majority of work in agriculture at the global level, elder men, for the most part, still own the land, control women’s labor, participate in different trainings and make agricultural decisions like by agricultural technologies in patriarchal social systems. It has also been pointed out that it legitimated the subordination of women. The training of rural women is very important, especially with the adoption of modern agricultural techniques that are tailored to local conditions and that use natural resources in a sustainable manner, with a view to achieving economic development without degrading the environment. Women are not perceived as ‘farmers’ even when they do most of the farm work. As a result, agricultural extension and information on new technologies are almost exclusively directed to men, even when women are increasingly responsible for farm work (Kelkar, 2011).

Table 4.5 : Percentage distribution on training access

Variables Discription	Category	Frequency	Percentage (%)
Training access	Yes	64	30.5
	No	146	69.5

Source: survey result,2020

4.3.2 The Family Members to Participate in Social Organization

Concerning family members' profiles, almost all (96.2%) of respondent’s family members participated in the social organization.

At focuses group discussants explained, there was a strong social life among women.They also had great opportunities to participate in all levels and benefited from all tasks. So, the participation of women in community activities like iddir helped them to share their sadness and happiness.

As the evidence showed, iddir was one of the indigenous informal institutions in Ethiopia which was established voluntarily by the community members who involved in self-help and other social activities. Iddir also has financial, material and emotional support during the bereavement period because it is established by a group of persons united by ties in families, friendship, neighborhood or belonging to the same job (Pankhurst & Mariam, 2000).

Eqqub is serving as a traditional saving institution to improve income and investment in productive assets and it solves the financial constraint of the members which is not accessible for formal institutions. Eqqub provides the sum amount of money for the members without interest and without any need of collateral. Hence, Eqqub can replace the function of banks (Frankenberger et al., 2007). The survey result also showed that 23.8% of respondents were participating in eqqub, which was the least participation.

in fact, as studies showed, women played a major role in reproductive activities in terms of time in the production of goods destined for the household consumption which, in turn, increased their human, social, and cultural wellbeing. Moreover, increasing women's participation would strengthen the effectiveness of local organizations and improve natural resource management. However, the need to improve women's marketing skills cannot be over emphasized.

Table 4.6 The distribution of family members to participate in social organization

	Category	Frequency	Percent (%)
Social organization	No	8	2.8
	Yes	202	96.2
	Total	210	100
Iddir	No	15	7.1
	Yes	195	92.9
	Total	210	100
Wonfel/wonbera	No	129	61.4
	Yes	81	38.6
	Total	210	100
Mehaber/senbetie	No	54	25.7
	Yes	156	74.3
	Total	210	100
Eqqub	No	160	76.2
	Yes	50	23.8
	Total	210	100

Source: survey result,2020

4.4 Women's Participation in Planting Tree in the Study Area

The survey result showed that the majority (84.8%) of the respondents were participating in planting trees, while few (15.2%) of the respondents replied that they didn't participate in the process of planting trees. Moreover, the majority (81.9 %) of the respondents were participating

in planting eucalyptus tree. 64.0% and 73.3% of women respondents participated in seedling and planting buckthorn respectively. On the other hand, 21.4% women respondents also participated in planting other plants such as wanza, woyira, grawa and bissana. The major occupation of the women in the area is agriculture. This means that the women are highly dependent on the eucalyptus tree, and encouraged to establish small private plantations around their homes usually various species of Eucalyptus followed by buckthorn.

Focus group discussions revealed that in the study area, the communities are encouraged to plant mainly eucalyptus trees. So, the community plant program provides technical and financial support in the establishment of nurseries and the planting of seedlings. The soil conservation unit is involved with terracing and other soil protection schemes. The community works directly with farmers who provide labor tree planting in home gardens and woodlots. Planting tree in home gardens and woodlots was on poor quality sites.

Moreover, planting of single species and mixtures of species on micro-sites, such as steep slopes and rocky and marshy sites within farm lands are increased. The main objectives of this practice is to produce fuelwood and construction poles for the community. Similarly, trees which are replanted around homesteads can serve as windbreaks and shelter belts for humans and food and shelter for animals. In addition, food supply and cash income could be obtained by planting fruits around homesteads.

According to key informants, women's participation in environmental resource management especially in planting tree was high in a given period of time. But they focused on eucalyptus tree which is very expensive although it was not the interest of the sector because this tree is not decomposed easily with soil. Its root also needs under ground water up to fifty meters. In addition, it is easily exposed for drought.

As a result, as Women Affairs and Environmental Protection Authority representatives, we created awareness to women about the importance of trees, and how to monitor the planted areas. It was successful with motivational integrity of women association although it was not sufficient. However, it was very challenging because their husbands were not volunteer to participate in far areas or degraded land.

From focus group discussions, one woman said that:

My concern on plant tree was highly integrated with my daughter and son “ህፃን በህፃንነቱ ካልተቀጣጠለ፣ ልጁን በሌላው ሁኔታ ይጠቅማል” and always plant any tree for a number of years through my life and I always teach for my family’s members to plant tree. I blame that the responsibility bodies who was announce the day of afforestation the land and then we participated it but for after one month and around that eaten by animals. Imagine that, if one woman to birth the child and then she through it? No, like to this, plant it needs ‘mindful’ as well as protected from animals. But the communities do not accept this reality, rather it ‘mystifies’.

Different scholars showed that in the context of Ethiopia, patriarchal ideology and traditional gender division of labour determine the social position of women that forces them to undertake productive, reproductive, community management roles. Therefore, in the study area, women suffered a lot from the consequences because of its impact on the dynamic of social relations, work pattern and health (Nigist, 2007). As the major finding in table 4.6 showed that there was great interconnection between women and planting tree.

According to, Cultural/ radical ecofeminism: Cultural/Radical ecofeminist ‘naturalize’ woman’s role with nature (Twine, 2001). They maintain historically constructs that place men in a position of authority over women and the environment, women, particularly in the south, (Mies, 2003). According to Warren (2001) cited by Twine (2001) states that “cultural ecofeminism reclaims women-nature connections as liberating and empowering expressions of women’s capabilities to care for nature”. The cultural/radical ecofeminists are more closely engaged with environmental issues.

Moreover, with the major result related to Warren (2001) states that cultural ecofeminism reclaims women-nature connections as liberating and empowering expressions of women’s capabilities to care for nature. The above scholars told as, there was a relationship between women and environment.

Table 4.7 Distribution of Participation of Women in Plant Tree

Category		Frequency	Percent (%)
Women	Yes	178	84.8
	No	32	15.2
	Total	210	100
Seedling	Yes	136	64.8
	No	74	35.2
	Total	210	100
Eucalyptus	Yes	172	81.9
	No	38	18.1
	Total	210	100
Buckthorn	Yes	154	73.3
	No	56	26.7
	Total	210	100
Other plant	Yes	45	21.4
	No	165	78.6
	Total	210	100.

Source: survey result, 2020

4.4.1 Place of Planting Tree Women Involving in the Study Area

As the survey indicated in table 4.8, the majority (82.9%) of women were participating in planting trees around home backyard, half of (50.5%) were in terraces and (46.7%) were on bare land. From the result, it can be concluded that majority of the respondents were participating in planting tree near to their home.

According to focus group discussions and key informants, most of the time women spent their time to plant trees around their home backyard, which is the nearest place for them. Since women have a lot of roles, they prefer planting trees in the area which is closest to them. All the daily routines like preparing food, washing cloth, and feeding calf and sheep were the responsibilities of women. If they fail to do all these, their husbands insult them. Therefore, the women didn't participate in big planting tree programs due to all these tasks.

As one woman explained her feeling from focus group of discussions:

Concerning to planting trees, I was participating in very nearest area. When I went far from my destination, I could conflict with my husband because preparing food, keeping animals and feeding them were my responsibilities.

From the above expression, we could understand that most of the time she selected nearest areas because of her responsibilities in the house like preparation of food, protecting animals and feeding them and conflicts from her husband.

Table 4.8 Distribution of place women involved planting tree

Category		Frequency	Percent (%)
Terrace	Yes	106	50.5
	No	104	49.5
	Total	210	100
Home backyard	Yes	174	82.9
	No	36	17.1
	Total	210	100
bare land	Yes	98	46.7
	No	112	53.3
	Total	210	100.

Source: survey result, 2020

4.4.2 Levels and Forms of Women's Participation in Planting Tree

As the survey result showed that among the respondents, in planting tree (43.3%), digging to plant (40%), weeding (39%) and watering (38.1%) were medium in participation. 47.6% of the respondents protected the plant from animals which had great value for environmental resource management. On the other hand, the evaluation in all levels of women participation, 51.4% of the respondents had medium participation in planting tree. According to table 4.6, (84.8%) of the respondents were more involved but when focused on the level of women's participation in planting tree were medium.

As focus group discussants explained, individuals with small landholding participated in lower levels of participation such as attendance and discussion, whereas larger landholders participated more in suggestion and decision making. In other words, when land holding increased per hectare, participation in suggestion and decision making also increased.

Table 4.9 The Distribution of respondents of participation and level decision making in planting tree

	Category		Frequency Percent (%)	
	Planting tree	High	84	40.0
	Medium	91	43.3	
	Low	8	3.8	
	Not at all	27	12.9	
	Total	210	100	
Hoe plant tree	High	42	20.0	
	Medium	84	40.0	
	Low	14	6.7	
	Not at all	70	33.3	
	Total	210	100	
Weeding plant tree	High	48	22.9	
	medium	82	39.0	
	Low	25	11.9	
	Not at all	55	26.2	
	Total	210	100	
Drop water for plant tree	High	62	29.5	
	Medium	80	38.1	
	Low	34	16.2	
	Not at all	34	16.2	
	Total	210	100	
Protecting plant from animals	High	100	47.6	
	Medium	50	23.8	
	Low	21	10.0	
	Not at all	39	18.6	
	Total	210	100	

Evaluation of level and forms women's participation			
	Category	Frequency	Percent (%)
Level of participation	High	33	15.8
	Medium	108	51.4
	low	14	6.7
	Not at all	55	26.1
	Total	210	100

Source: survey result,2020

4.5 The Challenges of Women Participation in Environmental Resource Management in the Study Area

According to the survey, 16.1% of the respondents replied that culture influenced them for recognition and representation in natural resources management decisions. Other challenges respondents faced were strengthening of women leadership structures for effective natural resource management and male dominance in natural resource ownership and control. Indicated by 77.1% and 22.8% of the respondents were not control the resources. Regard to laxity/dilettante, 95.2% of the respondents were not seen the field, but only 4.8% of the respondents were exposed for these challenges. On the contrary, 21.4%, of the respondents faced domestic work.

Focus group discussants revealed that there was male dominance in natural resources ownership. As a result, women were not heirs due to cultural factors, whereas wives or daughters didn't inherit their family resources especially land. Natural resources which were owned and controlled by family were handed over through the family line. Non-heirs had no means of owning family land and trees. Women in the study area were also challenged in the use of natural resources. The gender based nature of their cultural rights limited the extent to these land. They used lands for cultivating crops or rear some domestic animals. Their rights were limited by wrong cultural perceptions and taboos that women can own or do since women cannot rear cattle and sheep.

Regard to constraints for women's participation, a key informant and focus group discussants stated that women didn't have fair and equal participation in planting tree as they got married early. They gave birth consecutively in short years interval which made it difficult to plant trees in far areas. Gender roles and division of labour were also major constraints to participate in social activities since they spent their time in domestic tasks. One participant from the first focus group discussion held on Woyina Dega, agro-ecological zone expressed the challenges women faced to participate in ERM as follows:

"I was active participant in almost all tasks of environmental resource management before I gave birth. At that time, the community was not appreciating me rather gave me a nick name 'Wondawond'.

From the above story, we could understand that she became less participant since she gave birth and the community had wrong perception. This was also true for the works of (Sambrook, 2007) cited in (Dawit Tsegaye, 2012) which stated that in most parts of Ethiopia, rural women were intimately involved in most agricultural production activities including planting trees, which is an intensive farming practice. However, various constraints in relation to economic, cultural norms and practices limited women’s participation in planting trees.

Table 4.10 Distribution of the respondents of challenges of women in plant tree

Category		Frequency	Percent (%)
Low/non participation	Yes	70	33.3
	No	140	66.7
	Total	210	100
Culture	Yes	34	16.1
	No	176	83.9
	Total	210	100
Resource controlled by men	Yes	162	77.1
	No	48	22.9
	Total	210	100
Laxity/dilettante	Yes	10	4.8
	No	200	95.2
	Total	210	100
Domestic work	Yes	165	78.6
	No	45	21.4
	Total	210	100
Ignorance	Yes	85	40.5
	No	125	59.5
	Total	210	100
Social status	Yes	87	41.4
	no	123	58.6
	Total	210	100
Lack of Income	Yes	142	67.7
	No	68	32.3
	Total	210	100

Source: survey result, 2020

In addition, the major challenges for women participation in planting tree were domestic works and ignorance. 78.6% and 40.5% of the respondents were exposed for domestic works and ignorance respectively. In addition to this, societal perception was an obstacle for women’s daily activities. In many countries, one of the major constraints for women participation has been lack of income in the rural development. In other worlds, user’s involvement in every phase of

environmental resource management development and contribution in the construction, operation, and maintenances are very important for the sustainability of the schemes. With regard to the participation of women in planting tree, the findings revealed that 67.7% of respondents faced lack of income.

One of FGD discussants stated her experiences by saying:

Throughout my life, I was very happy to participate in planting tree, but the societies' ignorance demotivated me as they gave me nick name 'masculinity'. During that time, I failed to participate and raise supportive ideas for the program.

From the above explanation, we can conclude that even though most of the women had an interest to participate in planting tree, the societies' attitude was an obstacle for them. So, this showed that the society in the study area didn't allow women to participate in planting trees because the society perceived that women couldn't have the ability to plant trees. This research finding is also consistent with Robbins and Coulter, (2007) that attitudes are evaluative statements either favourable or unfavourable about objects, people or events. They reflect how an individual feels about something. However, there are other major agents of social factors such as family, the peers, the school and the media, reference groups, roles and statuses.

4.6 Women's Participation in Cleaning Environment

The finding corroborated available evidences of cleaning environment (Scheretenleib, 2002), define sanitation as an intervention to reduce people's exposure to diseases by providing a clean environment in which to live and with measures to break the cycle of disease. This usually includes hygienic management to control human and animal waste, refuse and polluted water. It also involves both behaviors and facilities which work together to form a hygienic environment (World Bank, 2002). Concerning about women's participation in cleaning the environment, 86.6% of the respondents cleaned their environment. Whereas 17.1% of the respondents cleaned their environment individually, 9.5% with mehaber, 11.9% with local community, 19.0% by iddir association, and 31.0% were individually and with mehaber. However, 11.4% of respondents never participated in cleaning the environment.

One of the FGD discussants explained this fact as:

As I told you, cleaning the environment is more advantages for our health especially for women and girls because we always touch cooking objects. Most of the time, we cleaned the environment in group because the environment belongs to all. Since women are closer to the environment, they engage in cleaning the especially in terms of garbage disposal.

From the above statement, we can understand that women’s direct contact with the environment made them knowledgeable about the environment. Thus, women have served as environmental resources manager, and traditional scientists. This result corresponded with a study by Akwa,(2008) stated that women are not only knowledgeable about the environment, but also protective and caring. So, women have indigenous knowledge about environments due to naturally networking with earth. At times, women also suffer from water pollution from untreated sewage, which has a lot of health hazards (Akwa, 2009).

Table 4.11 Distribution of respondents of women’s participation in cleaning environment

Category		Frequency	Percent (%)
Cleaning environment	No	28	13
	Yes	182	86.6
	Total	210	100
	With individual	36	17.1
	With mehaiber	20	9.5
	With local	25	11.9
	Iddir association	40	19.0
	With individual and Mehaber	65	31.0
	Never participate	24	11.4
	Total	210	100

Source: survey result,2020

4.6.1 Levels and forms of Women's Participation in Cleaning Environment

Liquid waste disposal includes human waste, storm water or flood water, sludge, industrial wastewater from and other forms of waste water from different sources. The mixture of human waste with wastewater is known as sewage. Sludge is domestic wastewater originated from the toilet. It results from food preparation, personal wash, utensils wash and cloth wash. Liquid waste management focuses on finding a way to dispose of the waste in a way that is safe for humans and the environment. Therefore, the level of women participation is measured as high, medium, low and not at all with the lenses of digging the land, collecting papers, plastics, liquid waste and toilet.

As focus group discussants explained, the frequency of cleaning the environment was daily, weekly and occasionally. The major activities of environmental cleaning were sweeping, weeding and cleaning drainage, collecting papers, plastics and soon.

Similar to focus group discussants, one key informant also pointed out that.

As I told you, diseases are spreaded from person to person by germs. Most of the time, health problems from poor sanitation can be prevented only if people change their personal habits, or "behaviors," about staying clean. But this idea often leads to failure because it does not consider the barriers that people face in their daily lives, such as poverty or lack of access to clean environment, not properly use toilet or water. So, when people can't change their behavior, they can be blamed for their own poor health.

From the above narration, we could understand that women could take care of solid waste disposal in the households and in the society. Women preferred green and plane environment and friendly products which would benefit for environmental protection. As a result, the level of women participation was medium. This idea also supported by an empirical study, such as Gaag, (2004) the relationship between women and the environment has also been acknowledged. Their responsibilities as environmental managers made women both victims and contributors for environmental degradation and pollution. This then made women being view as major local assets for the interest of better environmental management.

Table 4.12The distribution of respondents levels of participation in cleaning environment

Category		Frequency	Percent (%)
Digging land	High	57	27.1
	Medium	98	46.7
	Low	25	11.9
	Not at all	30	14.3
	Total	210	100
Collecting papers, plastics	High	78	37.1
	Medium	79	37.6
	Low	20	9.5
	Not at all	33	15.8
	Total	210	100
Liquid waste disposal	High	92	43.8
	Medium	63	30.0
	Low	20	9.5
	Not at all	35	16.7
	Total	210	100
Toilet	High	109	51.9
	Medium	62	29.0
	Low	10	5.2
	Not at all	29	13.8
	Total	210	100

Source: survey result, 2020

4.6.2 Women’s participation in Attending Meeting and Cleaning Environment

The majority (80.9%) of the respondents were attending the meeting and cleaning their environment for better environmental protection. On the other hand, 32.4% of the respondents were participating in cleaning the environment in home, local and far areas.

One of FGD discussants explained that:

Throughout my life, I preferred a clean environment. So, when I attended the meeting, I only wanted to discuss on the issue of creating clean environment. I also wanted to be given tasks rather than suggestion. Even, I appreciated those who raised good idea about the environment because I was very much concerned about the public.

On the other hand, another focus group discussant also explained as;

From my experience, I wanted to discuss, suggest and make decision in evry issue concerning about the environment ,but the meeting facilitatorsand chairperson/chairman didn'tgive the chance for women .

From the above narration ,we can conclude that most of women attendants attended the meeting although they didn't give different suggestion and decision on different issues. On the other hand,when ever women participated in the meeting, they were not given the chance to suggest by the leader of the meeting. Due to this , they couldn't give suggestion and make a decision on different issues.

Table 4.13The distribution respondents of women attending meeting about cleaning environment

Category		Frequency	Percent (%)
Attend meeting	Yes	170	80.9
	No	40	19.1
	Total	210	100
Place of cleaning	In home	33	15.7
	Local/ nearest to home	49	23.3
	Far area	10	4.8
	In home and local area	50	23.8
	In home, local and far area	68	32.4
	Total	210	100.

Source: survey result,2020

4.7 Inferential Statistics and Empirical Results

In the this study, women participation in ERM and the different factors affecting their activities were analyzed using Chi-square test and binary logistic regression analysis techniques. The results and discussions were presented and interpreted in the following sections.

4.7.1Association Between Women's Participation in ERM and Independent Variables

This section presented the findings on the relationship between dependent and independent variables to examine whether there is an association or not. The dependent variable is factors affecting women's participation in environmental resourse management (ERM) activities, which

is a dummy/dichotomous variable: 0 = if ‘woman’ Not Participated’ and 1 = if ‘woman Participated’. The independent variables are socio-demographic factors (age, marital status, educational level, status of the household heads and family size), socio-economic and institutional factors (farm land size, livestock size, on- farm, off- farm and access to training). Chi-Square test was carried out to investigate the existence of association between the dependent and predictor variables. As indicated in table 4.14 among the five socio-demographic variables; age, marital status, educational level and household headed were found statistically significant, whereas family size was found insignificant.

Table 4.14 Test of Association between participation of women in ERM and Socio-Demographic Factors

Variables	Pearson Chi-Square (X^2)	<i>Df</i>	<i>P</i> -Value
Age	11.57	4	0.021
Marital status	8.206	3	0.042
Family size	4.362	2	0.113
Educational level	5.366	3	0.047
Household headed	3.081	1	0.079

As it's shown in table 4.15 below, land use, on-farm and access to training were found significantly associated with dependent variable. On the other hand, off-farm was insignificantly associated with the dependent variable.

Table 4.15 Test Association between participation of women in ERM and socio –economic and institutional factors

Variables	Pearson Chi-square (X^2)	<i>Df</i>	<i>P</i> -value
Farm land size	2.713	1	.100
Access to training	0.805	1	.037
On- farm	1.356	1	.024
Off- farm	0.755	1	102

4.7.2.Determinant Variables of Women's Participation in ERM

The binary logistic regression model was employed to investigate the factors that significantly determine women's participation in ERM activities. As Hulsizer and Woolf(2009) noted, binary logistic regression has become the preferred tool for predicting dichotomous outcomes in the social sciences because it is more flexible than any other models. Hence, binary logistic regression model was employed to establish the relationship between dependent (participation of women in ERM) and independent variables. For the regression,10 explanatory variables were selected to explain the dependent variable. Among them, independent variables: age, marital status, educational status, household headship,land size, access to traning and engagement in on farm activity were found to be significant determinant factors influencing the dependent variable (women's participation in ERM) at 5% significance level.While,family size ,livestock size and off- farm activity were found insignificant.

Before applying the final logistic regression models with 8 covariates for the intended purpose, it was assessed and diagonosed in all possible models adequately. To know goodness of the model, it needs to examine the adequacy of the model before the estimated function becomes a permanent part of the decision-making apparatus as (Johnson and Wichern, 2007) stipulated. Once a model has been developed, it is necessary how effective the model is in describing or denoting that the predictor variablesselected have a combined effect on the outcome variable. This is referred to as goodness-of-fit. In this study, the Omnibus test was used to compute the fitness of predictor variables to the outcome variable. So,the Omnibus test of model coefficients had Chi-square value of 62.1 with 19 degrees of freedom and highly significant at $p < 0.005$ i.e.0.000,implies that the predictor variables selected had acombined effect in predicting the participation of women in ERM (AppendixVI). The final model,with 8 predictors,correctly predicted that 74.8% of women did not participate and 97.9% of women participated in ERM. The over all percentage of correct prediction of the model was 91%. In other words,the model predicted the all cases 91% correctly (AppendixVI).

In addition, the value of Hosmer and Lemeshow test statistic was 5.064 which was compared to the cut-off value from the Chi-square distribution with 8 degrees freedom.The P-value was 0.751,so we don't reject the null hypothesis which stated that there is no difference between the observed and predicted value (AppendixVI). Therefore,the model appeared to fit the data

reasonably well. Lastly, the Cox and Snell R^2 was 0.520 and Nagelkerke's R^2 was 0.742 which implied that the eight explanatory variables were explained by 74.2% of the total variation in the dependent variable (Appendix VI).

Table 4.16 Binary logistic regression model summary table

Predictors	β	S.E.	Wald	Sig.	Odds Ratio
Age (ref: >60)			14.201	0.007	
20-29	2.890	1.453	12.39	0.004*	17.9
30-39	3.161	1.074	8.672	0.003*	23.6
40-49	4.438	1.587	7.822	0.005*	84.5
50-59	2.485	1.094	5.158	0.023*	11.9
MaritalStatus (ref: Widowed)			12.354	0.006	
Single	2.939	1.329	4.888	0.027*	18.9
Married	3.386	1.018	11.051	0.001*	29.5
Divorced	1.067	1.552	0.472	0.492	2.9
Family size(ref: above 8)			9.115	0.21	
1-5	-23.14	5341.7	0.00	0.92	0.0
6-8	-19.79	5341.7	0.00	0.97	0.0
Education level (ref: 9-12&above)			11.578	0.009	
Illiterate	-3.040	1.767	9.342	0.002*	0.047
Read and Write	-2.015	1.356	4.579	0.032*	0.133
Educated 1-8	-1.346	1.268	1.127	0.288	0.260
Household headed (ref: Female headed)			11.021	0.001*	67.1
Livestock size	0.052	0.041	1.595	0.207	1.0
Land size (ref: >3)			8.255	0.004*	0.057
Access to training (ref: No)			5.196	0.023*	6.4
On Farm(ref: No)	2.703	1.21	4.991	0.025*	14.9
Off Farm(ref: No)	1.617	1.113	2.110	0.146	5
Constant	6.337	5341.753	0.000	0.999	565.1

Source: Survey data, 2020, *Significant at 0.05 , RC=reference category

Odds ratio: the probability of belonging to one group divided by the probability of not belonging to other group. an odds ratio >1 indicates that the likelihood of an event occurring is *more* likely, where an odds ratio <1 indicates that the likelihood of an event occurring is *less* likely for the response category than the reference category of an independent variable.

Wald: it tests the effect of individual predictor while controlling other predictors. When Wald increases, the higher significant the variable becomes.

Slope (B): used to show the direction of positive or negative relationship.

According to the binary logistic regression results, the first significant predictor that affected participation of women's in environmental resources management was age of the woman. The reference category for this variable was women above the age of 60. Women whose age lies between the age group 20-29 were 17.9 times more likely to participate in ERM than those women above the age of 60 years (i.e. $p - value = 0.004$, $odds ratio = 17.9$). Similarly, women in the age group between 31-40, 41-50 and 51-60 were, 84.5, 23.6 and 11.9 times more likely to involve in ERM activities respectively. Generally, it could be shown that age and participation of women in ERM were inversely related. So, aged women were less likely to engage themselves in environmental resources management activities. It is also logical in our country's context since ERM activities require human labour and labour is directly depend on age because youth age groups has better energy and speed that would help to manage the resources than old age groups. In addition, it was reported by the key informants that women's participation below 31 years of age experience in accomplishing environmental resource management activities like planting trees and cleaning the environment was given high care effectively. Because youth age groups has better energy and speed that would help to manage the resources rather than older age groups.

The second significant variable in the final model is marital status. The reference category of this predictor variable is the last category i.e. 'Widowed'. From the summary table, it can be shown that single women were 18.9 times more likely to involve in ERM than those in the widowed group (i.e. $p - value = 0.027$, $odds ratio = 18.9$). The difference might be unmarried women had relatively less work load than other categories so that they could get enough time to participate in ERM activities. In addition, married women were 29.5% times more likely to participate in ERM than those who were widowed (i.e. $p - value = 0.001$, $odds ratio = 29.5$). From both odds ratio of marital status, married women were highly associated with ERM activity as compared to other groups. This high proportion of married women suggest that they were more responsible in protecting and keeping the environment clean because their roles were mainly home keepers. In addition to this, since women were more responsible for domestic and household management, they could easily interact with the environment and keep it clean more than men. Furthermore, being married was given high value and respect by the community which maximizes the chance to participate in ERM activities freely. Similarly, Ximena P. (2013)

found that being married increase participation of women household to manage resource as well as to get position. As he argued, in most society, being married is respected to get position.

The third significant predictor which determined participation of women in ERM activities was educational level. Women who learnt from 9 to 12 years and above were used as the reference category. According to the analysis, women who were illiterate were 96.3% less likely to participate in ERM than those in the reference group (i.e. $p - value = 0.002$, $oddsratio = 0.047$). Similarly, women who can read and write had 87% lower chance to get involved in ERM activities (i.e. $p - value = 0.032$, $oddsratio = 0.133$). This implied that the level of education was directly associated with the response that as women become more educated, their likelihood of participating in ERM activities would also increase. In addition, the result implied that illiteracy constrained women's probability of being involved in ERM activity, while better literacy helped them to increase the probability of participation in ERM activity. The result also showed that women who had primary education and secondary education or above had more probability of participation in ERM than women who were illiterate. The result of this study was similar with the findings by (Acharya Y, 2008) found that upgraded educational status of household head was a significant factor in increasing women's participation.

Household headship was another predictor which significantly determined women's participation in ERM. Women who were not household headed were more likely to participate in ERM activities than those women who were household head. More specifically, women who were not household head had 67 times higher chance to participate in ERM than those who were household head (i.e. $p - value = 0.002$, $oddsratio = 67$). Thus, being female household head limited the degree of women's participation in ERM more than being male household head because women household head faced different barriers from the family and the community at large. Sometimes they have busier with both domestic work that means and with farming activities. This result was similar with other studies conducted by (Amlsent, 2011) that found a positive relationship between sex of the household head and women participation in water resource management.

According to the analysis, land size was directly related with women's participation in ERM activities (i.e. $p - value = 0.004$, $oddsratio = 0.057$). Therefore, large land size was associated with being involved in ERM activities for women in the target population. The analysis also

asserted that women who owned two or less than two hectares were about 94% less likely to participate in ERM than those who owned greater than three hectares. Women being owner of land increase the extent of participation in ERM activity such as plant tree and land. Hence, the size of land holding had statistically significant positive relationship to participate in ERM. This result is consistent with the works of Kassie *et al.*, (2017); which indicated the land holding size had positive and significant relationship. However, this finding was contrary to the previous studies of Yuanxiang (2017) which found out that size of land holding was insignificant factor of the participation of women in ERM activities. In addition, (Tagel, 2008) noted that land holding is the contributing factor for the spatial clustering and high production.

The other variable which significantly determined women's participation in ERM was participating in on-farm activities. As it is shown in the final model, women who were engaged in on-farm activities were 14.9 times more likely to participate in ERM than those who were not engaged in on-farm activities (i.e. p -value = 0.025, odds ratio = 14.9). Therefore, engagement of women on farm activity had significant and positive relationship. Implaying that women's engagement on farm activity more likely to increase ERM than women's without any engagement of on-farm activity.

Another influencing factor to women participation in ERM was the issue of access to training. Women who had no access to training had less probability to participate in ERM activity than those who had access to training. According to the final logistic regression model result, women who had access to training got 6.4 times more chance to participate in ERM activities than those who didn't have access to training (i.e. p -value = 0.023, odds ratio = 6.4). On the contrary, the lack of access to training constrained women's participation in environmental resources management decision. The result was statistically significant at $p < 0.05$. Hence, access to training services for women had significant relationship to ERM activity participation. The finding of this study was highly linked with the findings by (Kalikidan, 2016). Contrary to this a study by Mideksa (2015) showed that there was no significant relationship between access to training services and decision to participate in environmental resources management activities.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 CONCLUSIONS

Based on data analysis, interpretation and discussion, the following conclusions were made. The participation of women in environmental resource management was very important as one of the stakeholders. In the study area, the participation of women in ERM was stated well in policy documents. The participation of women in environment resource management was construct and universalize certainly appropriate. Women played multiple roles in the family, community, and in the protection and management of natural resources. Their multifaceted roles exposed them to different work loads. Furthermore, women's roles were directly affected by the state of the environment because women were the main users of resources like fuel wood, forest resources and other environmental resources more than men. The research finding showed that 84% and 86% of women respondents participated in planting tree and cleaning the environment respectively. However, the decision of participation made by women was very low.

The major constraints for women's participation in environmental resource management were socio-cultural factors which hindered rural women's participation in environmental resource management. Socio-cultural practices were enforced by cultural sayings which further constrained women's participation in ERM such as planting tree and cleaning the environment. However, cultural sayings sometimes formed the basis of social organized practices like iddir, senbetie, mehaber and eqqub. Social challenges like ignorance, domestic work, resource controlled by men, lack of income, lack of educational facilities made women busier and over loaded. Societal attitude within the community was also one of critical constraints for women's participation in environmental resource management (ERM).

In addition, the binary logistic regression model confirmed that the age of women, marital status, educational level, household headed, land size, engaging in on-farm activities and access to training were statistically significant factors for the dependant variable (i.e. women's participation in ERM). The results also indicated that family size, livestock size and engaging in off-farm activity were found to be statistically insignificant for the dependent variable.

Overall, it was concluded that the women's participation and involvement in environmental resource management, especially in planting tree and cleaning the environment were appreciable despite the limiting factors. Cognizant of this fact, it can also a head predict that the existing improvement of Ethiopian women to involve in environmental resources management would be written with policy document.

5.2 RECOMMENDATIONS

Based on the research findings of this study, the following recommendations were forwarded assuming that they could be important inputs for further intervention to government (policy makers) and non-government organization.

- The district and Women and Youth Affairs should provide awareness regularly for women on the importance of environment and its interconnection with women.
- Gender sensitive environmental resource management awareness program needs to be supported by the government as well as NGOs and donors.
- Women's views and opinions regarding to the environment, their needs, problems and priorities should be addressed in the national and regional agenda.
- Womberma district top management should encourage women's participation in environmental resource management in planting tree as well as cleaning the environment through different incentives and rewards.
- Women's participation in environmental resource management is with high extent and limited saying in decision making while they intensively provide their labor in working activities of planting tree and cleaning environment.
- Thus, so as to increase women's saying apart from their labor delivery, and to reduce unfair gendered division of tasks in reproductive role and community role, the local government shall work on awareness creation about the importance of involving women in prominent decisions /regarding environmental resource management and avoiding non-functional demarcation of roles.
- Future researchers need to see the determinant factors of women in environmental resource management in decision making. Since this research simply encompassed the participation of women in environmental resource management without considering the

negative impact of their wellbeing, researchers should aim at creating and evaluating policies that help to reduce the triple burden of women.

- Lastly, researchers need to see again the determinant factors of women in environmental resource management status by encompassing different districts of the region since this study focused on only Womberma woreda.

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Annex I
ባህርዳርዩኒቨርሲቲ

ማህበራዊሳይንስፋካሊት

ድህረ-ምረቃፕሮግራም

የስርዓተ-ጾታናላማትትምህርትክፍል

መጠየቅ

ይህ መጠየቅ የተዘጋጀው በስርዓተ-ጾታና ልማት ጥናት የሁለተኛ ድግሪ መመሪያ ጥናታዊ ጽሁፍ ለማካሄድ ሲሆን አላማው «የሰቶችን ተሳትፎ በአካባቢ እንክብካቤ በሆኑ ስራዎች በወንበርማ ወረዳ» በሚል ርዕስ መረጃ ለመብሰብ ነው የሚሰበሰበው መረጃ ለትምህርታዊ አላማ በጥናቱ ግኝት መሰረት ችግሮች ላይ ለሚመለከተው አካል ቀጣይ እርምጃዎች እንዲወስድ አስተያየት ለመስጠት ብቻ የሚውል ይሆናል። ጥያቄዎች የሚያተኩሩት ሴቶች በአካባቢያዊ እንክብካቤ ማለትም በዛፍ ተክላ እንዲሁም በአካባቢ ጽዳት ላይ ስለሚሰሩቸው ስራዎች እና አሁን ስላለው የሴቶች አካባቢያዊ እንክብካቤ በሆኑ ስራዎች ላይ ያሏቸው ውሳኔ ሰጭን ተሳትፏቸውን ስለሚወሰኑ ጉዳዮች ዙሪያ የተዘጋጁ ናቸው። የጥናቱው ጤታማነት የሚዋሰነው በዚህ በሚሰበሰበው መረጃና በእርስዎ በሚሰጡት መረጃ መስፈርት ነው። ስለሆነም የእርስዎ ድጋፍና ትብብር ይህንን መጠየቅ ለመመሙላት ወይም መረጃ ለመስጠት በእጅግ አስፈላጊ ነው። የጥናቱም ውጤትም ለፖሊሲ አዘገጃጀቶች፣ ለትምህርታዊ አላማ እና መንግስቱና መንግስታዊ ያልሆኑ ድርጅቶች ሊጠቅም ይችላል። መጠየቁን ለመሙላት ለመሳተፍም ምንም ችግር አይደርስብዎትም ምክንያቱም የጥናቱ ውጤት ለትምህርታዊ አላማ የሚውል ስለሆነ። ስለዚህም አባክዎት ሀሳብዎን በነፃነት እንዲያካፍሉ ትክክለኛ መረጃ እንዲሞሉ በአክብሮት እጥቃለሁ። ለዚህም በቅድሚያ እጅግ በጣም አመሰግናለሁ።

ማስገንዘቢያ

- ስምዎትን መፃፍ አያስፈልግም
- እባክዎ እያንዳንዱን ጥያቄ በትክክልና በአግባቡ ይሙሉ
- እባክዎ ሞልተው እንደጨረሱ በቶሎ ይመልሱ

ስለትብብርዎ እጅግ በጣም አመሰግናለሁ!!

አጠቃላይ መረጃ

የመረጃው ስብሰባ ስም-----ፊርማ-----ቀን-----ቀበሌ-----
 የመጠይቅ መለያ ቁጥር -----

ክፍል አንድ; የመረጃ ሰጭዎች ግላዊ መረጃ፤

ለሚከተሉት ጥያቄዎች ምላሽዎትን ይሙሉ ወይም መልሱን ያክቡ

1. የቤተሰብ መሪ ዕድሜ ስንት ነው-----
2. የቤተሰብ መሪ የጋብቻ ሁኔታ ሀ. ያላገባ/ ለ. ያገባ/ች ሐ. የተፋታ/ች መ. የሞተችበት/የሞተባት
3. የቤተሰብ ብዛት፡ሀ. ጠቅላላ ----- ለ. ወንድ----- ሐ. ሴት-----
4. የቤተሰብ መሪ የትምህርት ሁኔታ ሀ. ያልተማረ/ች ለ. ማንበብና መጻፍ የሚች/ የምትችል ሐ. አንደኛ ደረጃ (1-8) መ. ሁለተኛ ደረጃ (9-12) የተማረ/ች
5. የመሬቱ ይዘታ መጠን-----
6. የቤተሰብ የእንስሳት ሀብት መጠን

የቤተሰብ የእንስሳት እርባታ መጠን								
1	በሬ		5	በቆሎ		9	በግ	
2	ላም		6	ፈረስ		10	አህያ	
3	ጊደር		7	ጥጃ		11	ዶሮ	
4	ኮርማ/ወይፈ. ን		8	ፍየል		12	ሌሎች ይግለጹ	

7. የእርስዎ ዋና ዋና የኑሮ ምንጮች ምን ምን ናቸው (ብዙ ምላሽ ሊሆን ይችላል)

1. በግብርና ላይ
2. ከእርሻ መሬት ውጭ
3. ከግብርና ውጭ

8. የቤትዎ የመተዳደሪያ ምንጭ ምንድን ነው ሀ.ምርት ማምረት ለ ከብት-አርባታ ሐ. አነስተኛ ንግድ መ. ሌላካለግለፀ-----

ክፍል ሁለት: ይህ ክፍል የሴቶችን ተሳትፎ በአካባቢ እንክብካቤ ባሉ ስራዎች ላይ ተሳትፎ ሁኔታቸውን የሚወስኑ ጉዳዮች፣ አሁን ስላለው የሴቶች በአካባቢ እንክብካቤ ለሆኑ ስራዎች ማለትም በአካባቢ ጽዳት፣ እንዲሁም በዛፍ ተክላ ላይ ያላቸው የተሳትፎ ሁኔታ፣ ሴቶች በአካባቢያቸው ስለሚሰሩላቸው ስራዎች እና የቱን ያህል እንደሚሳተፉባቸው ለመገምገም የተዘጋጀ ጥያቄዎችን ያካተተ ነው። ከአማራጮች ውስጥ መልስዎን ይክብቡ ወይም ለእያንዳንዱ በተሰጠው ቦታ ላይ ይሙሉ።

9. ቤተሰቡን የሚመራው ማን ነው? ሀ. በወንድ የሚመራ (አባወራ) ለ. በሴት የሚመራ (እማወራ) ሐ. ሁሉም

10. የቤተሰቡ አባላት በማህበራዊ ተቋማት ላይ ይሳተፋል? ሀ. አዎ ለ. የለም
መልስዎ አዎ ከሆነ በየትኛው ተቋም ይሳተፋሉ ሀ. በዕድር ለ. በወንፈል ስራ ሐ. በማህበር/ሰንበቴ መ. በእቁብ

11. ወደ እርሻ ቦታዎ ለመሄድ ስንት ሰዓት ይፈጃል?

12. በአካባቢዎ/ በመንደርዎ የግብርና ማሰልጠኛ ተቋም አለ? ሀ . አዎ ለ. የለም

13. በአካባቢዎ በሚገኙ ማህበራዊ ድርጅት ውስጥ ይሳተፋሉ ሀ. አዎ ለ. የለም

14. ለጥያቄ ቁጥር 13 መልስዎ «አዎ» ከሆነ ለማህበራዊ ድርጅት ውስጥ እርስዎ ያለዎት ሃላፊነት ምን ያህል እንደሆነ ያመልክቱ ሀ. የኮሚቴው አባል ለ. ተራ-አባል

15. ቤተሰብዎ በእርሻ መራት /የመኖሪያ ቤት ዛፎችን ተክሏልን?
ሀ. አዎ ለ. የለም

16. አወ ከሆነ በእርሻ መራት/ የመኖሪያ ቤት ውስጥ የዛፍ ተክላ ተካፋይ ነዎት ?
ሀ. አዎ ለ. የለም

17. አዎን ከሆነ ምን ዓይነት ተክልተክለዋል ሀ. ችግኝ ለ. ባህርዛፍ ሐ. ስሚዛ መ. ሌላካለግለጽ-----

18. የተከሉት ተክል የት ነው ሀ. በእርሻ መሬት እርከን ላይ ለ.የቤት ንጋ ላይ ሐ.የተራቆቱ መሬት ላይ መ. ሌላ ካለይ ግለፁ-----

19. ከላይ ባለዎት ጥያቄ ቁጥር መሰረት ለሚከተሉት እንቅስቃሴዎች ላይ ተሳትፎዎትን እንዴት ያካሂዳሉ?

	ከፍተኛ	መካከለኛ	ዝቅተኛ	የለም
እጽዋት በመትከል				
እጽዋት በመኮትኮት				
በማረም ስራ				
ውሃ በማጠጣት				
እጽዋቱ እንስሳት እንዳይበላ መከላከል				

20. በአጠቃላይ በዛሬች ላይ ያለዎ ተሳትፎ ምን የህል ድርሻ ይሰጣሉ?

ሀ. ከፍተኛ ለ. መካከለኛ ሐ. ዝቅተኛ መ. የለም

21. እፅዋቱን በመትከል ያለዎ ተሳትፎ ዝቅተኛ የለም ከሆነ ምክንያቱ ምን ይመስለዎታል? ሀ. የባህል ተፅዕኖ ስላለለ. ውሳኔ በወንዶች ስለሚሰጥ ሐ. የምን አገባኝ ስሜት መ. ሴቶች ሁል ጉዜ የቤት ሰራተኛ ስለሆንን ሠ. ስለ ሚገለሉ ረ. ቸልተኝነት እና የገቢችግር

22. የደን ልማት በሚመለከተ የሴቶች ተሳትፎ አስፈላጊ ነው በለው ያስባሉ? ሀ. አዎ ለ. የለም

23. በአካባቢ ፅዳት ላይ ተሳትፈው ያውቃሉ? ሀ. አዎ ለ. የለም

24. በሚሳተፋባቸው የአካባቢ የፅዳት ተግባራት ላይ ስራዎን የሚሰሩት እንዴት ነው

ሀ. በግል ለ. በማህበር ሐ. በሠፈር መ. በእድር ሠ. በግል እና በማህበር ረ. በጭራሽ አልሰራም/ አልሳተፍም

25. የእርስዎ መልስ በጥያቄ ቁጥር “29” ላይ “አዎን” ከሆነ እባክዎትን የተሳትፎ ደረጃዎትን ንያስቀምጡ.

	ከፍተኛ	መካከለኛ	ዝቅተኛ	የለም
መሬት መቆፈር				
ወረቀት፣ ፔትሮል ወ.ዘ.ተ በመሰብሰብ				
ፈሳሽ ቆሻሻን በማስረግ				
በአግባቡ ሽንት ቤት በመጠቀም				
የተሰበሰበውን ቆሻሻ በማቃጠል				

26. እርስዎ የአካባቢ ዕዳትን በተመለከተ ስብሰባ ላይ ተሳትፈው ያውቃሉ

ሀ. አዎ ለ. የለም

27. በአካባቢዎ የአካባቢ ዕዳት የት ቦታዎች ላይ ይከናወናል

ሀ. በቤት ውስጥ ለ. ከሠፈር ወይም በቅርብ በሚገኝ ቦታ ሐ. ሩቅ ቦታ በመሄድ መ. በቤት ውስጥ እንዲሁም ከሠፈር ሠ. በቤት ውስጥ ከሠፈር እንዲሁም ሩቅ ቦታ በመሄድ

AnnexII
BAHIR DAR UNIVERSITY

Faculty of social science
Department of gender and developmental studies
Post - graduate program

Interview schedule

Dear respondents:

This questionnaire is prepared to collect data for thesis work that required for the fulfillment of Master's Degree in Gender and Development Studies and its purpose is to assess "Women's Participation in environmental resource management in Womberimaworeda". It is designed to generate data that can be used for academic purpose only and thereby to pose reasonable recommendations for the concerned bodies depending on the findings of the study. It consists of questions linked to 1)The status or extent of women's participation in environmental resource management activities such as cleaning environment and planting tree, 2) the factors that determine women's participation in environmental resource management activities in the study area. The concrete and successful accomplishment of this study is determined by the data obtained from you in the data collection process. Hence, the researcher requires your support and cooperation to gather relevant information for the study. The reliability and validity of the study depends on your response, therefore, please fill the questions carefully and correctly for the success of this research. Therefore, please feel free and share your rational views. By being participated to fill the questionnaire, no problem is followed on respondents since the result of the study will be used just for academic purpose.

Thank you in advance for your cooperation!!

General Directions:

- No need of writing your name
- Please respond each question correctly and clearly and return as soon as your finished

General Information:

Enumerator full name: _____ Signature _____
Date _____ Questionnaire Code _____
Kebele _____

Section -1:Personal Information or Demographic information.

From the given alternatives, circle your alternative answer or write your answer on given space.

1. Age of family headed (Years)_____
2. Marital Status of family 1=Single 2= Married 3= Divorced 4=Widowed
3. Number of family size Total _____ Male _____ Female _____
4. Level of education of household headed 1= Illiterate 2= Read and write 3=Primary (1-8) 4=Secondary (9- 12) or above
5. Land size_____
6. Family livestock size

TLU=Tropical Livestock Unit value of animals								
1	Ox		5	Horse		9	Sheep	
2	Cow		6	Mule		10	Donkey	
3	Heifer		7	Calf		11	Hen	
4	Bull		8	Goat		12	Others	

7. What is your major livelihood source :(multiple response possible)?

1. On- farm

2. Off-farm

3. Non-farm

8. Family source of income 1= crop production 2=animal husbandry 3=petty trade Appendix-

Section 2: Questions concerned to factors that determine the participation of women in environmental resource management activities such as cleaning environmental and planting tree, extent and status of women’s participation in environmental resource management activities that women undertakes in the study areas. Choose from the options given for each question and circle or write your answer.

9. Status of Household head 1= Male- headed 2= Female -headed

10. Does your family participate in the social organization?

1=Yes

2= No

If your response 'yes' from in which, 1=Eddir 2=Wonfel/wonbera 3= Mehaber/senbetie 4= Equb

11. Does you have agricultural organization in your community? 1= yes 2= no

12. Do you participation in your social organization? 1= yes 2=no

13. If your response for Question No, 13 is "Yes", please indicate to what is your position in your social organization?

1= committee member 2= Ordinary user

14. Does your family to plant tree in farm land/ around your home? 1= yes 2= no

15. If yes, in farm land/around your home, do you participate? 1= yes 2= no

16. If yes, what type of plant you grow? 1= seedling 2= eucalyptus 3=buckthorn 4= others

17. Where you plant tree? 1= terrace 2= home backyard 3= bare land

18. How do you rate your participation on the following activates?

	High	medium	Lower	Not at all
Planting tree				
Hoeing plant tree				
Weeding plant tree				
Drop water on planting tree				
Protecting plant tree from animals				

19. What is the level of women in environmental resource management in planting tree?

1= high 2=medium 3=low 4= none

20.If you plant tree, the level of your participation is low/ none, why?

21.What are the challenges of women participation in environmenta resources management

1= cultural influence 2= decided by men 3= laxity 4=domestic work 5= ignorance 6social status and lack of income

22. Do you think the women's participation is essential for environment protection?

1= yes 2= no

23. Are you participate in cleaning environment? 1=yes 2= no

24. How do you participate cleaning environment in your locality?

1= individual 2=association 3= locality 4=Eddir 5= individual and association 6= never participate

25 . If your answer is yes, in question ‘29’ please indicating the level of rate on the activities?

	High	Medium	Lower	Not at all
burrow the land				
collecting dust particles				
burning the dust particles				
liquid waste managing				

26. Do you have attended the meeting of women’s participation in cleaning environment program?

1= yes 2= no

27. in the environmental resource management activity that you have engaged, most of the time how do you work?

1= individual 2= within groups 3=within villages 4= Eddir association 5= within individual and groups 6=Not involved

Appendix-III

II. Guide Lines for Interviews

I. Interview Guideline for Key Informant interviews to selected official's environmental protection authority.

A. Guide line for responsibility Administrators environmental protection authority

1. Researcher introduction
2. What did you think about the activities women's participation resource management?
3. What are the environmental protection activities that are undertaken by women participate in your districts?
4. Does your district administration office provide support for those who are willing to involve and being involved in environmental resource management (please elaborate: concerning monitoring support, working place and provision of hand tools..... etc....)?
5. What are the major challenges that women faced in the participation of women's in environmental resource management (E.g. cleaning environmental and planting trees in your district? (Please elaborate: regarding societal outlook, discussion, suggestion and decision-making?
6. Your any suggestion to improve the situation?

B. Interview guideline for womberima District Women's Affair's representatives

1. Researcher introduction
2. How do you see the condition of women's participation in environmental resource management in the District context?
3. From your District context, what are their challenges that limit the participation of women in cleaning environment and planting trees?
4. What are the strategies that provided by your offices/institution for women's participation to enhance in environmental resource management?
5. Is there any effort made in your District to improve women's participation in incentives who involve in environmental resource management like planting trees etc?
6. Your any suggestion to improve the situation

Appendix-IV

Interview Guideline for Focus Group Discussants (FGD)

1. Researcher introduction
2. What are the dominant planting trees in your Districts? Why?
3. What are the environmental resource management activities that are undertaken by women in your District?
4. Discuss on issues of challenges that hinder your active participation while participating in environmental resource management activities (, cleaning environments, planting tree,
5. Discuss on the possibilities strategies that enable you to be active participant while undertaking environmental resource management activities?
6. Suggested solution from the participant.....

Thank You in Advance for Your Cooperation!!!

Appendix-V

Chi-Square (X²) result

Test of Association between participation of women in ERM and Socio-Demographic Factors and land use related factors.

Variables	Pearson Chi-Square (X^2)	Df	P-Value
Age	11.57	4	0.021
Marital status	8.206	3	0.042
Family size	4.362	2	0.113
Educational level	5.366	3	0.047
Household headed	3.081	1	0.079

Variables	Pearson Chi-square (X^2)	df	P-value
Farm land size	2.713	1	.010
Access to training	0.805	1	.037
On Farm	1.356	1	.024
Off Farm	0.755	1	102

Appendix-VI

Binary Logistic Regression Output

Omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step 1	Step	62.105	19	.000
	Block	62.105	19	.000
	Model	62.105	19	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	83.013 ^a	.560	.713

Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	5.064	8	.751

Classification Table^a

		Predicted		
		participation of women environmental resources management		Percentage Correct
Observed	participation of women ERM	No	Yes	
		Step 1		8
		4	183	97.9
	Overall Percentage			91.0

a. The cut value is .500