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THE ROLE OF INDIGENOUS KNOWLEDGE PRACTICE IN FOREST MANAGEMENT: THE CASE OF KAARRA BADDESSAA FOREST PRIORITY AREA IN NADHII GIBEEWOREDA, JIMA ZONE

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THE ROLE OF INDIGENOUS KNOWLEDGE PRACTICE IN FOREST MANAGEMENT: THE CASE OF KAARRA BADDESSAA FOREST IN NADHII GIBEE WOREDA, JIMA ZONE

A THESIS SUBMITTED TO THE COLLEGE OF SOCIAL SCIENCES AND HUMANITIES, DEPARTMENT OF SOCIOLOGY FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR A MASTER OF ARTS DEGREE IN SOCIOLOGY

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JIMMA, ETHIOPIA

Declaration

Zerihun Belihu, Hereby declaring that the thesis titled "The role of indigenous knowledge practice in forest management: the case of Kaarra Baddessaa forest priority in Nadhi Gibe woreda" is my original work and was submitted for the award of the Degree Master of Art in sociology at Jimma University, and that this has not been presented for the award of any other Degree, Master's, or other similar titles at any other university or institution, and that all source of material used for the study is presented in the indigenous source

Zerihun Belihu _____ _____

Researcher Signature Date

Approval

The Role of Indigenous Knowledge Practice in Forest Management: The Case of Kaarra Baddessaa Forest in Nadhii Gibee Woreda, Jima Zone

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Zerihun Belihu Signature: _____ Date: _____

Approved by Board of Examiners

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List of abbreviations and Acronyms

CBO Community Based Organization

CSA Central statistical Agency

CCFM Canadian ouncil Forest ManCagement

FAO Food and Agricultural Organization

FARM Forest Agricultural Resource Management

FR Forest Management

IUCN International Union for Conservation of Nature

MNRDEP Minister of Natural Resource and Development of Environmental protection

NGO Non-Governmental Organization

NTFP None-Timber Forest Product

PA Peasant Association

PFM Participatory Forest Management

SFM Sustainable Forest Management

SIDA Sweden International Development Agency

SOS Save our soul

SNNPR Southern Nation Nationality people Republic

UNWCED United Nations World Commission Environmental

UNDP United Nations Development Program

TEK Traditional Ecological Knowledge

Abstract

The practice of Indigenous Knowledge in forest management is vital to sustain for forest management. The main purpose of this study is to investigate indigenous knowledge practice in forest management in Nadhi Gibe woreda and the major challenges hampering the indigenous knowledge practice in forest management in the study area. To achieve this, the study employed a cross-sectional design through qualitative and quantitative research approaches to collect relevant information and data. Data was obtained through the survey, FGD, in-depth interviews, key informants, and field observation based on the purposive sampling technique to get genuine and reliable information from local elders, religious leader's .woreda environmental forest protection and climate change authority, local farmers, forest and wildlife enterprise and kebele administration. The data generated was analyzed by using quantitative and qualitative techniques such as summarize, categorization, and thematic. Finding Show that awareness on forest management comes from the communities perception on forest utilization ,care and respect for the existing indigenous knowledge practices which have great contribution for the forest management, local administration were not caring, respect, appreciate and sustaining an indigenous knowledge practices im forest management is well understood in traditional way due to failure of local administration, failure of youngsters and increase of population size. It is recommended that the Indigenous knowledge practice and appropriate policy should be commensurate with forest management

Keywords; indigenous knowledge, forest management, kaarra badessaa forest

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

According to a study by Warren and Salmon (1993), Cited by Ogunjimi (2018), indigenous knowledge refers to local knowledge that is unique to a given culture or society. Rajasekaran (1993) defines Indigenous knowledge as a systematic body of information that local people have accumulated through the accumulation of experiences, informal experiments, and intimate knowledge

The fact that people have existed for generations since the beginning of time is possibly a simple reason why indigenous knowledge could be easily dismissed. But, this knowledge is fundamental, providing a fertile ground for the development of modern civilization, including applied education, economics, politics, religion, science, and technologies. Another important aspect of Indigenous knowledge is sustainability, which is founded on a holistic understanding of the human-nature interaction. Sustainability is a solution to the world's current environmental concerns. Environmental conservation may be made more meaningful, efficient, and effective if local knowledge and cultures are recognized and supported. Old-style customs that have been passed down through the generation may also provide clues to developing climate - friendly activities (Berkes 2012).

Karithi (2015) observes that understanding, things that influence the community in forest management could also be critical to forest managers and decision-makers. The local community's participation is important to the event and implementation of long-term forest management strategies that are sensitive to individual communities. Indigenous knowledge professionals' practices in the management of protected forests may change based on their socioeconomic and demographic origins.

In Africa, the indigenous knowledge system has traditionally been applied in harmony with the natural and spiritual world. This traditional practice has ingeniously been designed to address local ecological limitations by maintaining a sustainable utilization and protection of commonly stated natural resource spatially forest (Lalonde, 1991).

In Ethiopia, local forest users are separated from forest use. As a result, according to the protectionist viewpoint, the local people did not get what they expected from the local forest.

Forest management has an impact on both the resource and the people who rely on the forest for subsistence. Disasa,(2013). In conversations about sustainable development and biodiversity indigenous wisdom is becoming more mainstreaming (Lemessaa, 2014). As a result, traditional knowledge is more than a collection of information gained from local, and often remote, environments that lead individuals to believe and act in certain ways in reaction to a single local event. The long-standing use and management of natural resources by people who live in and around a forest area that is environmentally, socially, and culturally integrated are an example of indigenous knowledge practice in forest management. Ancient cultural customs are frequently neglected in today's modernizing society. Thorough investigation of indigenous knowledge and socio-cultural capital, as well as the potential of traditional practices in establishing forest management, must be conducted in the variability of environmental, social, and economic settings (Habtamu, 2016 cited in Tesfaye, 2017). This study then tries to investigate indigenous knowledge practice in forest management related to the role of local communities in forest management in the Woreda Nadhii Gibee in the Jimma Zone of the Oromia Region in Southwestern Ethiopia.

1.2. Statement of the Problem

In a study conducted by Sraku-Lartey (2014), most African governments and foreign development agencies are beginning to recognize the importance of indigenous knowledge in forest management. However, policymakers, forest managers, and scientific endeavors hesitate to offer local knowledge and its importance in forest management practice. Anthropogenic or man-made factors including population pressure, intensification of land and natural resource utilization, an extension of farms, overgrazing problems, and others have degraded and deteriorated forests and trees.

According to Disasa (2013), in his study entitled “the Significance of Indigenous Knowledge and Institutions in Forest Management: A Case of Gera Forest, in Southwestern Ethiopia”, the government has the responsibility for forest management and preservation. The findings of the study revealed that the perception of local people about ecological, economic and socio-cultural values of forest in the study area were remarkable. However, the state encourages western technology that has detrimental effects on the environment and the existing community. The places where the forest is protected from distraction are mainly in the country's south and

southwest, including the Jimma zone. According to Kitesa (2005), in his study entitled "Traditional forest management practice in Jimma Zone, South West Ethiopia" since communities in the area are recognized for their strong practical attachment to their natural forest, it is possible to say that indigenous knowledge and instruction play a key role in maintaining the natural forests in the mentioned area. The people pays due attention to the proper utilization of their natural resources due to indigenous knowledge and organizations. Different scholars have conducted their studies on forest management in different areas with different titles. For instance, Traditional Forest Management in the Jimma zone, southwest Ethiopia(Kitessa, 2007), The Significance of Indigenous Knowledge and Institutions in Forest Management: A Case of Gera Forest, in Southwestern , The Oromo Indigenous Knowledge and Practice in Forest management (Lemessa, 2014), Melaku, (2016), Oromo Indigenous Knowledge and Practices in Natural Resources Management: Land, Forest, and Water in focus (Melaku, 2016), Habtamu (2016), The role of women's participation in participatory forest management: The case of Belete-Gera regional forest priority area in Shebe Sombo of Jimma Zone(2016) respectively.

Ethiopian forest management methods have still not been developed to ensure the protection and preservation of our forest. Instead, it dis-empowered local populations in terms of natural resource ownership and utilization by undermining the normal forest resource-use relationship and management procedures (Gobeze et al., 2009 as cited in Habtamu, 2016). In a study conducted by Mohammed and Umar (2019), "Local Communities' Attitude toward Community-Based Forest Management: The Case of Jello Forest, West Hararghe Zone, and Oromia Regional State, Ethiopia," indigenous knowledge and practice play a significant role in forest management. However, the local community's overwhelming demand for natural resources, including grass and leaves for animal forage, wood for fuel, construction, and utilities, for forest agriculture and beekeeping, are just a few of the issues that are challenging the forest's existence. However, due to differences in socioeconomic, cultural, and physical factors, the role of indigenous knowledge practice in forest management identified by other areas will differ from the study area.

As a result, the purpose of this study were to examine the effectiveness of indigenous knowledge practices in forest management and to identify the factors affecting indigenous

knowledge practices in forest management in kaarra baddeessaa forest, Nadhii Gibee Woreda, Jima Zone, Oromia National Regional State, to address the study's subsequent objective of trying to continue and replace indigenous knowledge practices in forest management. Since, there is no study on the topic in this area. Most of the studies on this topic have been conducted in circumstances that are inconsistent with current .They do not have strong administrative knowledge and support, especially in the fields of indigenous knowledge practice in forestry management, to provide information to other researchers as well as clear policies and fill in the gaps.

1.3 Objective of the Study

1.3.1 General Objective

The overall objective of this study is to investigate the role of indigenous knowledge practice in forest management in Nadhii Gibee Woreda, in Jimma Zone, Oromia National Regional State.

1.3.2: Specific

The specific objectives of the study included:

- *Identify* indigenous knowledge practice awareness concerning the benefits of forest management
- Identify the existing indigenous knowledge practice in forest management in the study area.
- Examine the contribution of indigenous knowledge and practice in forest management.

Examine challenges in indigenous knowledge practice in forest management

1.5 Significance of the Study

The study reveals some of the important aspects of Indigenous knowledge practice in forest management, as well as the use of this knowledge in forest management. It explains how indigenous knowledge practice can help with forest management. It also emphasizes the importance of paying more attention to this issue in the future. It exposes information about the awareness of indigenous knowledge in forest management. The finding of this study also indigenous knowledge practice provides information in formulating policy and forest management creativity for policymakers. It serves as a starting point for further investigation into the subject by another researcher.

1.6. Scope of the Study

The study focuses on the role of indigenous knowledge practices in forest management and the case of the Tiro Abalti forest priority area in Nadhii Gibe, in Jima Zone, Oromia National Regional State. To the extent of the researcher's knowledge, no research was done on the role of indigenous knowledge practices in forest management in this study area. As a result, the researcher is interested to study the role of indigenous knowledge practices in forest resource management in the woreda forest management. Furthermore, it primarily assesses the aspects that indigenous knowledge practice in forest management awareness. Because of the time and resource constraints,

1.7 Limitations of the Study

The study's main limitation was the use of mixed research methods (Quantitative and qualitative research methods). In this study, the researcher used the random sampling method, which means that all individuals in the population had an equal chance of being included in the study. Due to time and resource constraints, conducting the study in all kebeles is difficult. As a result, the study's scope was limited to two rural kebeles: Qananii and Kitinbillee.

1.8. Organization of the Paper

This paper is divided into five chapters. The first chapter is an introduction and presents the problem under study. It highlights the background of the study, statement of the problem; the objectives of the study, research questions; significance; scope; limitations; and the definition of operational terms. The second chapter reviews the literature that helps develop the conceptual and theoretical frameworks for the study. It then identifies the gap in the existing literature and guides the study. It also concludes by discussing the main theory and concepts applied in the study. Chapter three describes the area of the study, research design, and methodology of the study. The discussion concludes in Chapter 4, and recommendations are given and concluded in Chapter 5.

CHAPTER TWO

2. Review of related literature

This chapter presents the concept of indigenous knowledge practice in forest management. It views the research work related to the forms of indigenous knowledge in forest management, the perception of the local community towards forest use, the conventional ecological importance of local forests, and the assessment of policy implications concerning indigenous knowledge in forest management as integral. Topics dealing with the theoretical framework and empirical review at the international and national level of practice are present.

2.1. Concept of Indigenous Knowledge.

Indigenous knowledge refers to knowledge that is unique to a particular culture and society. The following is the most commonly accepted definition of traditional ecological knowledge: Traditional ecological knowledge is a body of knowledge and beliefs about the relationship of living beings with one another and with their environment that's been passed down through the generations through cultural transmission. Traditional ecological knowledge is a characteristic of societies with a storied history of resource usage practices; these are currently sedentary or a smaller number of technologically advanced societies. Berkes (1993)

As Joshi et al. (2004) Traditional ecological knowledge may or may not be indigenous, but it is firmly rooted in both cases, as opposed to local knowledge, which is also place-based experiential knowledge but not necessarily old. Otherwise, the term TEK is controversial because it could be interpreted as old and static by Lewis (2012). Traditional knowledge, on the other hand, is highly dynamic and cumulative, and although it is based on previous generations' experience, it is verified and adapted to reflect the current socioeconomic and technological changes through adaptive processes and trial-and-error learning for each new generation. Hviding and Baines (1993)

This concept involves not just protection and respect of the ecosystem as a whole but also its varied uses. Non-timber forest products are extremely important to traditional peoples living in forest ecosystems, and research on these products has often been done with TEK and forest management studies. This concept offers a unique opportunity for research on how ecology,

TEK, timber, and NTFP harvesting can be combined with a forest management framework. Davidson-Hunt and Berkes (2001),

In forest resource and environmental management, TEK gets recent recognition. If the concept of knowledge is understood with regards to how we know through people's relationships with their environment and not as objective truth, then there is a common ground to enable multiple perspectives to contribute to ecosystem management. Woodley (2005)

Traditional societies' ecological knowledge systems are based on survival and success in pursuing, fishing, assembling, and deceiving, which ensure sustainable use of resources. Forest management can be defined as maintaining and enhancing the long-standing health of forest ecosystems for the benefit of all living things, both nationally and globally, while providing environmental, economic, social, and traditional occasions for the benefit of present and future generations. Regier(1993).

Regier (1993) shows how Western knowledge models have changed over the decades, from a dichotomy of the organic and inorganic worlds to a vision in which animals and habitats are incorporated into a complex system. Most scientists considered TEK to be superstition when ecological theories were based on climax equilibrium and maximum sustainable yield, and thus of no practical use for current management issues. New paradigms that introduce concepts like complexity, system dynamics, and resilience have led to massive applications of new approaches like adaptive and sustainable management (Holling, 1986). Western scientists now encourage the preservation of ecosystem integrity even after resource exploitation (Hunter, 2004), which is considered the fundamental principle of ecosystem-based management (Hunter, 2004). These approaches also include a broader view of the connections between ecosystems and societies, which incentives our averse public involvement, especially where traditional peoples are connected to the ecosystems in which they live.

2, 2. Background of indigenous knowledge practice in Forest Management

According to Stiles (2012), as cited in Abdul Kediri (2012), indigenous knowledge is a systematic body of knowledge acquired by local people through the accumulation of informal experiences and a comprehensive understanding of their environment in a given society. According to Wikipedia As Abdul Kediri (2012), stated, traditionally, the Yuoboli forest in Ghana has been managed through unsound practices such as communal labor, prohibitions, and

annual libations. Hunting, farming, bush burning, felling of trees, and grazing [during the farming season] are prohibited. However, dry trees are allowed to be felled and animal grazing is permitted during dry seasons. Any breach of these rules attracts a penalty. The knowledge, innovations, and practices of these communities evolved through various experiences gained over centuries under changing environmental, economic, political, and social conditions. Typically, the elderly have transmitted traditional knowledge orally from generation to generation, often in the form of stories, songs, folklore, and proverbs, as well as direct training of youth. Traditional knowledge supported by and embodied in local languages, cultural values, beliefs, rituals, community laws, and governance systems has created a diverse array of natural resource management practices that sustain these communities' food security, health, and cultural traditions. Berkes (2008). John et al. (2016) cite this.

According to Persha et al. (2011), cited in Beth (2015), in the pre-colonial period, the local community conserved natural resources such as water springs and dry season grazing. This they did through the development of rules, regulations, and community sanctions. Forests were also conserved for their value other than the resources they contained; they provided refuge and often had a religious significance. The Mijikenda community of the Kenyan coastal forests, for example, protected the Kaya forests for religious reasons. While forest use practices are in part determined by the role of forest resources in the local economy, they are also influenced by villagers' beliefs, knowledge, and attitudes regarding the forest. Indigenous knowledge and management are often used to conserve and, in some cases, enhance bio-diversity since it uses readily available management science that is better adapted to serve the needs of ecological sustainability. Cultural knowledge and management systems also include regimes for sustainable harvesting and processing of materials from individual species. Beth (2015).

Indigenous knowledge The practice of traditional ecological knowledge (TEK) in resource and environmental management is a fairly recent development. Though this knowledge was long recognized by ethnologists, its utility and relevance to applied management appeared only in the early 1980s with the IUCN Symposium on TEK held in Indonesia in 1982 and the creation of the TEK Working Group in 1984. Moreover, it is only since the publication of our common future by the World Commission on Environment and Development, which encouraged the use of TEK

to solve problems in modern resource management, that TEK finally received its current widely accepted international recognition. Johnson (1992)

Tradition further implies historical continuity of culture and knowledge over many generations. Traditional people, who could be defined as people living a subsistence lifestyle, close to nature and natural resources, have developed a nested worldview, produced by Berkes (1999) in the knowledge–practice–belief triangle, where knowledge of the land, animals, and plants is embedded in a management system with land-use practices, which are sustained by social establishments, all being defined by particular ethics and beliefs. Tradition further implies historical continuity of culture and knowledge over many generations. These fundamentally different worldviews have been one of the major causes of land use and management conflict between managers, scientists, and government on the one hand and traditional communities on the other. However, all systems of human knowledge are created by similar processes and are more alike than a focus on their apparent differences may suggest. According to Cheveau et al. (2008), western models of knowledge have also changed between centuries, from a dichotomy of the organic and inorganic world to a vision where animals and habitats are incorporated into a complex system. When ecological theories were based on climax equilibrium and maximum sustainable yield, TEK was first regarded as superstition by most scientists, and consequently of no practical use for current management issues, according to Howard and Widdowson (1996).

However, if the concept of knowledge is understood with regards to how we know instead of what we know through people's relationships with their environment, and not as objective truth, then there is a common ground to enable multiple perspectives to contribute to ecosystem management. Woodley (2005) Traditional peoples' ecological knowledge systems are based on survival and success in hunting, fishing, gathering, and trapping, which are inset in the gathering of resources. Forest management can be defined as maintaining and enhancing the long-term health of forest ecosystems for the benefit of all living things, both nationally and globally, while providing environmental, economic, social, and cultural opportunities for the benefit of present and future generations. CCFM (2000).

2.3. The concept of forest management

According to a study by Ellen W. (2011) cited in Habtamu (2016), villagers' commitment is required at all levels of the community forest management process, which includes stages of planning, implementing, monitoring, and evaluation. It also includes community involvement in the distribution of the benefits derived from the management process. Even if forest management designs, names, and ideas are as varied as the number of implementers around the world, the focus on community participation in forest management, which includes agreeing on management plans with government institutions or landowners and sharing responsibilities, costs, and benefits between a given community and landowners, continues to remain the same. The lack of appropriate local-level institutions, as well as the ineffective model of the participation process, hindered the implementation of rest management. Communities' resistance and uncertainty when introduced to the concept of boundary disputes during the forest's definition, and difficulties in building mutual trust between farmers and implementers, are all characteristics of administration. The most common way to raise community awareness is through frequent activities and meetings, including all stakeholders, and including respectable community, religious, and administrative leaders in the involved procedures and development activities. Ellen W. (2011)), as cited by Habtamu (2016).

2.4. Forest Management in Ethiopia

Ethiopia has a long history of forest management activities. According to historical records, afforestation began in the early 1400s on King Zera-Yakob's (1434–1468) orders, but contemporary tree planting using introduced tree species started when Emperor Menelik II (1889–1913) looked into ways to mitigate the capital's firewood and construction wood shortages. During the Derge era (1974–1974), large-scale and community plantations expanded quickly, resulting in the establishment of large-scale plantations mainly to meet Ethiopia's huge demand for wood products. Cited by Amogne (2013) and Habtamu (2016)

As Bekele (2003) stated and cited by Habtamu (2016), during the monarchial period, the historical development of institutions for forest resource management was marked by a total disregard for sustainable resource use (before 1974). However, between 1974 and 1991, the state's resource control was extremely protective and exclusionary, resulting in persistent conflicts of interest between the state and the native communities. Due to a lack of rigorous enforcement of forest rules and regulations and also occasional political power vacuums during times of government transition, de facto open access and times of severe deforestation resulted.

According to Yemiru (2011), cited by Habtamu (2016), the forest development and management department's main responsibilities include running nurseries, supplying seedlings to agricultural plantations, and issuing forest product marketing licenses. Agricultural and forest policies changed dramatically after the socialist government came to power in 1974. The removal of the feudal system of land tenure and the introduction of Peasant Associations (PAs) to reach and organize the rural population were the two most prominent changes. After 1975, government-led reforestation and afforestation increased dramatically. Ethiopia's man-made forests include state-owned and managed industrial, permaculture, and catchment protection plantations, as well as community woodlots. Individual and community tree planting has remained low for a range of reasons, including tenure insecurity, resource scarcity, and infrastructural challenges to accessing the forest. Mulugeta and Melaku (2008), cited by Habtamu (2016).

According to the FDRE Minister of Environment's 2017 Forest and Climate Change Report, the country's forest coverage touched about 15.5 percent of its area in 2015. However, Mammo et al. (2016), cited by Habtamu (2016), stated that generating a reliable estimate of forest cover and change in Ethiopia is extremely difficult. There is no national forest inventory or organized data database. Currently, Ethiopia's natural forests are found in small patches mainly in the south and southwest, in Oromia, the Southern Nations, Nationalities and Peoples Region (SNNPR), and Gambella regional state, accounting for about 95% of the country's high natural forest. Many developing countries, including Ethiopia, are still dealing with the problem. Ellen W. (2011), cited by Habtamu (2016).

2.5. The local Community Participation in Forest Management

As Beth (2015) cited in Habtamu (2016), participation, generally stated, means that a project is the direct result of people's happiness. It happens when people are involved in the planning, organization, and decision-making of a project from the beginning, which is important to ensure that it meets their needs and capabilities. Community participation in forest management involves several different ways that members of the community can join in to take full advantage of the forest. Fatima (2008).

According to Beth (2015), as cited in Habtamu (2016), according to the United States Department of Agriculture, one of the most essential development activities for ensuring sustainable natural resource use in forests is increasing local capacity to sustainably manage forests. Such interventions aim to improve technical skills in resource management, increase market access and participation, build essential community-level institutions, and improve the institutional structure to ensure that resource management benefits are preserved. According to Ethiopia's forest development, protection, and utilization proclamation no. 542/2007, forest development non-conservation and utilization plans should be introduced to enable local communities to participate in the development and conservation of state forests as well as to share benefits from their development.

2.6. Local Communities' Awareness of the Benefits of Participating in Forest Management

Ethiopia's environmental policy has recognized environmental education and awareness as a key strategy for transferring knowledge of environmental issues to the general public. Wuletao, (2008), cited in Beth, (2015). Socioeconomic factors like age, gender, literacy level, and land ownership also played an important role in people's attitudes toward forest conservation. Tesfaye, (2017). Many decision-maker assets have been conducted using various media at different times and levels in terms of knowledge created through research, brochures, media, and annual events in Ethiopia. Raising awareness of the general public and decision-makers has been conducted using various media at different times and levels in terms of knowledge created through research, brochures, media, and annual events. Because of a lack of awareness about forests, decision-makers and the public at large often influence forest resources through their actions. EBI, (2014).Habtamu (2016) cites this.

2.7. The Role of Indigenous Knowledge in Forest Management

Study of Indigenous knowledge of forest management is essential for the survival of the forest resource, which is the backbone of all living creatures. Forest trees were also given to forest-dependent communities to keep beehives on their long branches and protect them from cutting and destruction. In rural areas of eastern Africa, trees from the forest are utilized to protect crops from pests. Is there still a Borana-Oromo Geda-system whose traditional knowledge and structures have made a significant contribution to forest management? Gadaa manages the major pillar for natural resource management and the equitable distribution of these resources within its broad institutional arrangements, in addition to its social, cultural, and political roles. As stated above, indigenous knowledge related to forest management is not transferred in a unique way. This means it is influenced by factors such as age, gender, experience, formal schooling, political power, and occupation, which may generate different knowledge systems within the same community as well as affect the superiority and measure of indigenous knowledge possessed by a person. Tsegaye et al. (2013). Age-old traditional practices have often been neglected in this modernizing world. Yet, traditional practices that have been sustained over generations may provide insights for developing sustainable practices in the present scenario. If one realizes the potential of traditional practices in developing sustainable resource management packages, a detailed analysis of indigenous knowledge and socio-cultural capital needs to be undertaken in varied environmental, social, and economic conditions in Keshava.Maharjan, (2005), cited in A Mekete, (2018).

2.8. Challenges to the Local Communities in Forest Management

As A Mekete (2018), the community is faced with several environmental challenges. Lack of cooperation among organized environmental groups, inadequate funding to run the groups' activities, poor infrastructure, including poor road and communication networks, political interference through state actors in the extraction of forest resources, the effects of climate change, forest fires, and their effects on biodiversity, destruction of seedlings by wild animals, and human-wildlife conflict are these problems. According to Gebremedhn (2004), as stated in Dawit (2014), socioeconomic criteria including education level, health experience, skill and occupation, and income situation influence the influence/degree of community participation anticipation toward natural resource management practices. The degree of empowerment, such as increased awareness, based decision-making, and improved access to knowledge, is necessary

to enable real community participation.As stated by Dawit (2014), another factor that affects community participation and long-term natural resource investment is environmental policy. Ethnic conflicts and civil strife; cultural, and language diversity; high population density and growth; low human resource development in rural areas; and low levels of poor quality infrastructure are all common challenges in forestry and rural development in many developing countries. Policies in other sectors, as well as overall macroeconomic policies in some countries, impede the development of forestry and rural areas. In many cases, poor coordination within the government and the lack of a clear development strategy exacerbate these problems. FAO (2015), cited by Habtamu (2016).

2.9. Impact of Government Policies and Regulatory Guidelines on Indigenous Knowledge practice in Forest Management

Farm Africa (2007) indicated that forest management plans should be kept simple and brief, and they should be updated regularly. Practical experience and the performance of the management plan are necessary to develop skills and knowledge. The Forest Management Plan must be developed by the local community and include their decisions on how to manage the resources. Foresters must resist the impulse to impose rules and regulations; doing so just takes us back to the top-down approach of the past. According to a study conducted by Ishi (2007) cited in Beth (2015), tenure security, user rights for involved interest holders, education, and other forms of capacity building have been found to help build an enabling environment for participatory forest conservation. Local people have already been marginalized by policies for managing common-pool resources, such as forests, for many years, denying them access to these resources. There was also a realization that the policing approach to forest resource management and protection was not meeting the requirements of nature or rural populations. Most governments have been affected by the public interest in and support for policy and legislative frameworks that encourage community participation in natural resource management. Beth, (2015). As cited in BersisaKacho et al. (2014), studies conducted by Daniel (2002) and Abera (2003) reviewing forestry policies and legislation to incorporate aspects of participatory forest management to conserve and manage resources in just and sustainable communities are now a significant feature of national policies and practices of internationally funded programs all over the world.

2.10. Empirical Evidence

General indigenous knowledge and forest knowledge must not be neglected as we move toward a new development agenda. Some studies on Oromo indigenous knowledge, the forest, and the environment have indeed been conducted, such as those (Workineh, 2005; Lammessa, 2012; Kitessa, 2007), which examined the role of Oromo indigenous knowledge in environmental protection. Moreover, the works of Kassam and Gemechu (1994; Kitessa, 2007; Bartels, 1990; De Salvia, 1901; and Aneesa, 2002) directly or indirectly tackled Oromo forest knowledge and environmental philosophy. As a result, the study focuses on Oromo indigenous forest knowledge, their interaction, and cultural values about Oromo indigenous knowledge protection and sustainability issues. Indigenous forest knowledge, which is rooted in traditions and is still mostly passed orally, provides a long-term perspective that can be particularly useful. Indigenous forest knowledge, which is rooted in traditions and is still mostly passed orally, provides a long-term perspective, which can be especially useful in areas where written archives or instrumental data are recent, discontinuous, or unavailable. There is growing concern over the loss of indigenous knowledge and the rapid erosion of cultural heritage. When the next generation undermines indigenous knowledge, indigenous environmental and forest knowledge protection and management, which is an essential part of local community livelihoods and productivity, is lost. When the next age undermines their indigenous knowledge, they lose their indigenous environmental and forest knowledge of protection and management, which is an essential element of local community livelihoods and production.

In a study conducted by Tsegaye et al. (2013), members of the community are active in the protection and sustainability of the forest in the Wondo Genet catchment area. Because they understand the forest's value not only as a source of fuelwood and construction materials, but also as a source of water for drinking, downstream irrigation, climatic stability, and employment and income generation. Yemiru (2011). A study was conducted to assess local people's attitudes toward collective action for forest management, and the results indicate that the success of planting activities in terms of seedling survival has a strong effect on motivating households to participate in the planting. As an outcome, the study indicates that community involvement in forest resource management through participatory approaches not only emphasizes delegation of management rights, responsibilities, and returns to local institutions but also provides the best opportunities for generating tangible and long-term livelihood impacts. Despite the reality that

many studies have indeed been done across the world or in Ethiopia on the role of local community participation in forest management, Even though many studies have been done on the role of local community participation in forest management around the world, as well as in Ethiopia, how citizens are engaged varies from place to place. Additionally, local forest management practices are regarded as backward in many studies. There is also no previous research on the local communities' forest management in the study area. As a result, the researcher focuses on evaluating the role of the local community in forest management through collaboration with stakeholders to protect forest resources in the future.

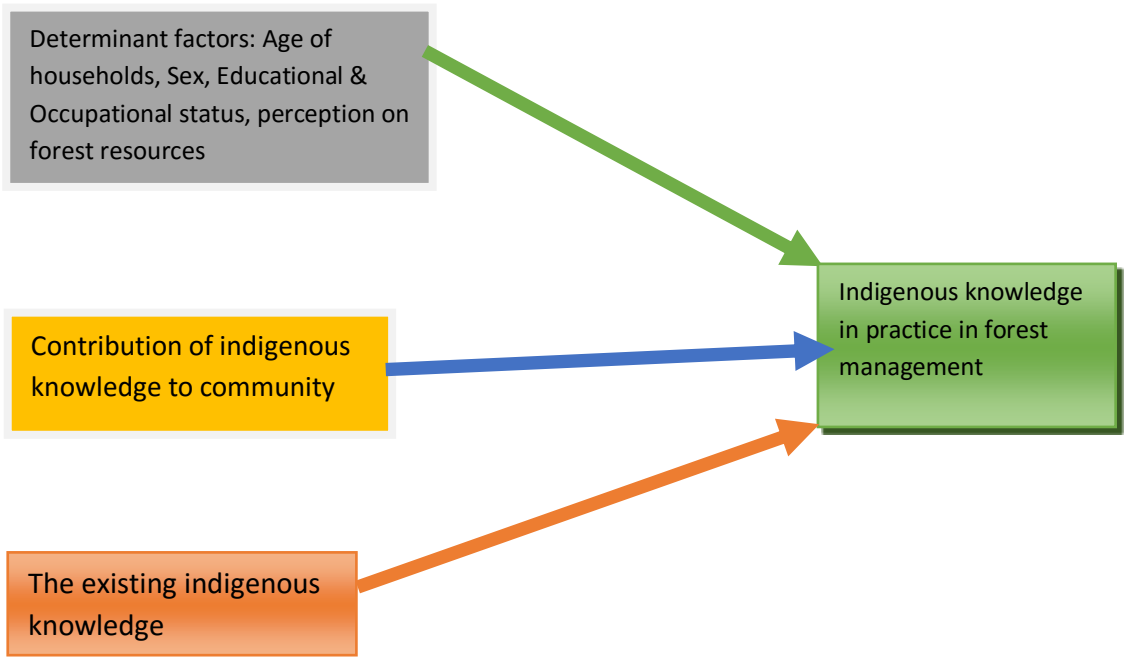
2.11. Conceptual Framework

The protection and management of forest resources cannot be achieved without the active participation of the millions of small farmers and landless people who every day depend on forests and trees for their existence. It has been progressively recognized that effective local participation is an important component of sustainable management of forests, which can relate wildlife tourism to conservation and development (Fatima, 2008).

According to Manyisye (2010), to enhance local communities' ability to participate fully in forest management, communication, education, and public awareness are crucial. However, traditionally they have been taught and are aware of forest management. Indigenous management practices are important as everyone has a role to play in the management of the forest. As they are embedded in the cultural fabric of the people and are easily understood, they will pass on knowledge and skills to the next generation. The application of local knowledge contributes both to the equity, opportunity, security, and empowerment of local communities and to the sustainability of their natural resources. (Abdul-Kadiri, 2012), as cited by Habtamu (2016).

As per a study done by Bersisa and Melesse (2017), leaders' transparency, knowledge, and skill to mobilize local resources; the right to be involved in decision-making processes related to benefit sharing and local resource management; and the willingness of the source management and topographic features are major factors. However, participation of the local people in the management of forests will not only make management successful but will also help in poverty alienation as a result of mutual sharing of forest resources and benefits (Robert, 2013). To solve the problems related to the community in forest management, all the stakeholders should participate actively.

As Engida and Mengistu (2013) studied age, gender, and level of education, family size was found to have a significant effect on the level of participation. The household's economic benefit from the forest was also the fourth and proved to be significant. Therefore, the following analytical framework shows the awareness of the role of indigenous knowledge practices in forest management by using their indigenous knowledge in collaboration with the stakeholders. Besides, it also demonstrates the most important variables that influence the role of indigenous knowledge practice in forest management in Woreda. NadhiiGibee



Source (Researcher Own creativity)

CHAPTER THREE

3. RESEARCH METHODS

3.1. Study area

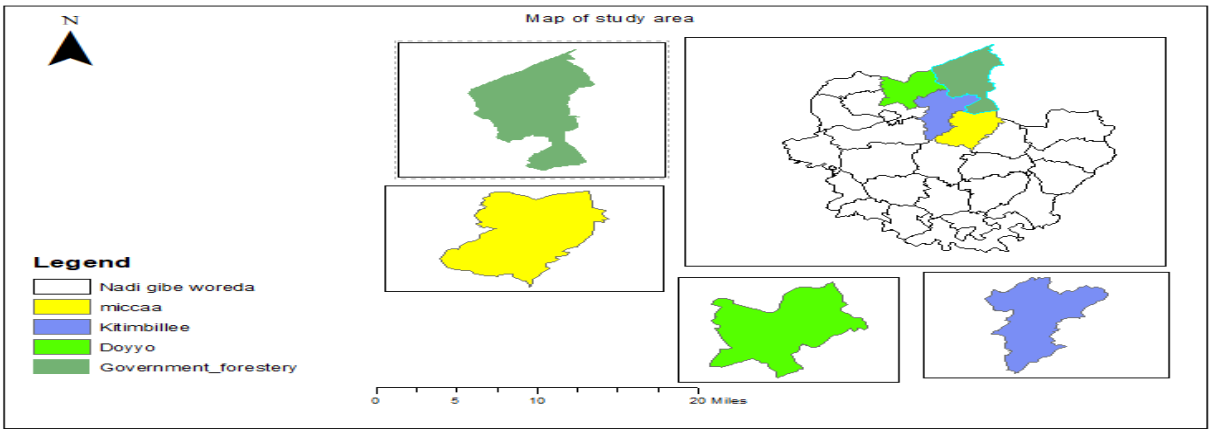
The study was conducted in Nadhii Gibee woreda, which is located in the Jimma zone of Oromia National Regional State, in the southwestern part of Ethiopia. It is located 282 km from Addis Ababa and 64 km from Jimma City. The area is where Indigenous knowledge is practiced in forest management methods such as tree planting around eroded gully areas, public roads, graves, sacred areas, hillsides, farmland, government and non-governmental institutions, churches, and mosques. The location of the study area is Woreda Nadhii Gibee, which was formerly (until 2012) named Tiro Afeta. It is one of the woreda in the Oromia Region of Ethiopia. Part of the Jimma Zone, Nadhii Gibee is bordered in the south by Omo Nada; in the west by Kersa; in the north by Limmu Kosa; and in the east by Sokoru. The administrative center of the Woreda is Dimtu. Topography of The altitude of this woreda ranges from 1640 to 2800 meters above sea level; the mountains include Geshe, Haro, Gebera, and Hako Albiti. Perennial rivers include the Gilgel Gibe, the Busa, the Nadhii, and the Aleltu.

Land Cover indicated as a survey of the land in this Woreda shows that 26% is arable or cultivable (20.5% was under annual crops), 8.3% pasture, 14% forest, and the remaining 51.7% are considered built-up, degraded, or otherwise unusable. Forest land includes the Kara Bedesa forest, part of the Tiro Abalti State Forest. The industry in Woreda includes 52-grain mills. There were 25 farmer's associations with 11,010 members and 7 farmer's service cooperatives with 7,283 members. Nadhii Gibee has 34 kilometers of dry-weather roads, for an average road density of 34.9 kilometers per 1000 square kilometers. About 71.5% of the urban and 9.8% of the rural population have access to drinking water. Around 131,536, of whom 65,341 were men

and 66,195 were women; 5,309, or 4.04% of its population, were urban dwellers. Based on figures published by the CSA in 2005, 1.78% of the woreda population, are urban dwellers, which is less than the Zone average of 12.3%. With an estimated area of 973.91 square kilometers, Nadhii Gibee has an estimated population density of 134.1 people per square kilometer, which is less than the Zone average of 15 .[source Google census 1999)

The socioeconomic condition of the study area has been considered one of the food-surplus producing areas of Ethiopia. However, since the beginning of 1997, the harvest and production of crops began to deteriorate, mainly because of the appearance of crop diseases such as gray leaf spots, caused by the fungus dis. For instance, in the year 1999, the situation worsened as: household granaries became empty, begging and committing crimes became new features of the lives of the people of the study area, many children became dependent on their relatives or friends, and there was reduced student enrollment in schools. As a result, food insecurity has risen over the past 15 years, existing in the area as both severe and non-severe with 37% of inhabitants experiencing it overall. There is a gender differentiation between food insecure and secure households. Food insecurity is mainly due to human-induced reduced hazards. The principal crops grown are maize, sorghum, teff, and coffee. Corporately grown food products include a maze, teff, and sorghum. The highest-earning cash crops are maize, coffee, peppers, and chit. The main livestock kept are cattle, goats, sheep, donkeys, and chickens. Market access is considered good due to the number of all-weather roads passing through the target area and the proximity of localities to urban market centers. Cultivated land, livestock ownership, and household size are the chief determinants of wealth. Perennial crops (cereals and chat) also help to differentiate households' relative wealth. The primary sources of food are producing crops for home consumption, paying in kind, and purchasing. Except for the very poor group, all other groups produce more than half of their annual food requirement from their fields. Maize and sorghum are the main crops consumed by poorer households. A significant part of the annual income for all wealthy groups comes from their crop sales. Maize is the largest cash earner in the area. After maize, coffee, peppers, chat, sorghum, and teff, also contribute to cash incomes. All households sell cattle, goats, and chickens. Weeding, harvesting, and construction labor generate income for poorer households. Non-staple food, household items, and agricultural inputs are the largest expenditure categories. Non-staple food and household items make up the main areas of spending for poorer households. Wealthier households spend primarily on inputs. Additionally,

periodic crop pests and diseases affect the target area every 2-3 years. Coping strategies for poorer households include seeking additional casual labor, reducing non-essential expenditures, and taking loans from better-off households. For better-off households, coping strategies include increasing the sales of livestock and crops, consuming stocks and savings as well as reducing non-essential expenditures.



3.2. Study Population

The study population for this research was Household heads in two Kebele those who have full information about the indigenous knowledge and social institution concerning forest management as well as those who are mostly closer to the densely forested area of Keneni, and Kitinbile Kebeles.

3.3. Research Design

In this study, a cross-sectional design was employed to collect data on a topic in time. This is to enable data collection procedures within a limited time framework, i.e. it is not a longitudinal study. This descriptive cross-sectional design is believed to assist in studying the role of indigenous knowledge in making decisions together with the extent of forest management as well as data related to factors that influence indigenous knowledge in forest management in the study area. As a result, the corresponding data was collected and analyzed to achieve the study's intended goal.

A mixed research method was used to collect data in this study. Mixed research methods enable the minimization of weaknesses and maximization of strengths of the study under investigation. The central idea of mixed methods is that "the use of quantitative approach in combination with qualitative approach provides a better understanding of research problems than either approach

alone," Creswell and Plano Clark (2007:5). It also provides better quality than a single method. This requires the researcher to have both numeric and objective data to triangulate the results of the study

3. 4. Samples and sampling Technique

Simple random sampling which is a probability sampling method and purposive sampling which is non-probability sampling were employed. .

The researcher selected the sample size for the qualitative research purposively from the residents who live nearest to the Kaarra Baddessaa forest and from the concerned stakeholders to answer the research objectives adequately. Purposive sampling, was chosen to obtain information-rich cases for the most effective utilization of available resources about indigenous knowledge practice in forest management. Two local farmers from the two selected Ganda were interviewed, as were two climate change authorities and forest and wildlife enterprises (Jimma branch), and one focus group discussion was held on each Ganda with participants such as local religious people, the elderly, abbaaReejjii leaders, youngsters, forest guards, and managers. A total of four discussion groups were conducted for this study. The number of participants in each group was 8. The total number of informants interviewed in each Ganda and by concerned stakeholders was determined based on data saturation.

The population size of Qananii and Kitinbillee are 924 and 1048, respectively, Therefore, the total population of the study is 1972 household heads in the selected kebele for this study. The respondents were chosen at random. The sample size of the study is determined by using the simplified formula for proportion developed by Yemane (1967). A 93% confidence level and a p-value of 0.7% are assumed. Here is the equation n-N/1+N (e) 2. Where n is the sample size. N is the population size, and e is the level of precision. Therefore, the sample size of the study was 184 respondents. Based on this calculation, the proportionate number of respondents was drawn from each kebele. Accordingly, 184 respondents were selected from Qananii and Kitinbile kebeles, respectively. The household questionnaire was administered to the respondents by the recruited data collectors and the researcher.

3.5. Source of Data

Both primary and secondary data sources were employed in this study. Using questionnaires, in-depth interviews, focus group discussions, key informant interviews, and field observations, primary data were collected from house-holed heads, local indigenous leaders, local elders, local farmers, Ganda leaders, AbbaaReejjii leaders, and concerned stakeholders (TiroAbelti District, forest management and climate change authority, and Forest and Wildlife Enterprise Jimma branch). Secondary data was gathered from various related documents about the topic under investigation, as well as the annual report of the Woreda Nadhii Gibee Climate Change office and performance evaluation reports from the Tiro Abalti District Forest and Wildlife Enterprise Jimma branch.

3.6. Methods of Data Collection

The quantitative and qualitative methods of data collection used for this study were surveying household heads. Focus group discussions, field observation, key informants, and in-depth interviews were employed to collect quantitative and qualitative data regarding indigenous knowledge practice in forest management in the study areas. Hence, the following method was applied to collect the required data from the identified sources in the study area.

- **Survey Method**: The household survey method was used to collect data from the local community in the household head of kaarra baddessaa forest. Semi-structured household questionnaires were designed as a tool for this method of data collection.

- **In-depth interview**: Face-to-face interviews encourage respondents' perceptions to be captured in their own words, which is a highly desirable strategy in qualitative data collection (Frechitling, Sharp, and Westat 1997). This type of research method guarantees a high response rate and makes it easier to explain to informants (Neuman 1994). Thus, in this study, in-depth interviews were conducted with two Ganda local farmers to generate in-depth information about indigenous knowledge practices in forest management.

- **Key Informant interview**: The interviews were conducted with the community elders (four) and religious leaders (four), Nadhii Gibee Environmental Forest Protection and Climate Change Authority (one), and Jimma branch Forest and Wildlife Enterprise office (one), for a total of ten key informants from each Ganda. These key informants were purposefully selected to get the raw data needed to conduct this study regarding the existing indigenous

knowledge practice in forest management. Hence, the key informant interviews were conducted with an individual from each organization to get qualitative data.

- **Focus Group Discussions (FGD):**The focus group discussion was conducted based on the familiarity of informants with each other as well as the homogeneity of individuals in their behavior, to help the samples interact with each other rather than with the researcher, so that the participants' opinions could emerge as the participants' rather than the researcher's. A large portion of the data was derived from the group's interactions. As a result, this method was used to collect local people's points of view on indigenous knowledge practices in forest management. As a result, the researcher conducted two focus groups with local religious leaders, elders, Ganda leaders, AbaaReejji leaders, and youth from two Kebeles levels. The focus group was used to triangulate the data collected from the key informants and in-depth interviews. Each group had a total of eight participants (8). Due to a lack of time and financial resources, the researcher simply conducted one group discussion at each kebele. For this study, two focus discussions with 16 participants were conducted. Local elders, religious leaders, Iddir (Rejjii) leaders, farmers' youths, and forest guards were purposefully selected for the FGD to obtain rich information about indigenous knowledge practices in forest management.

- **Direct field Observation**: A field or direct observation was used to collect data. Information collected during the observation was very useful for the triangulation of data.

3.7. Instruments of Data Collection:

The instrument of data collection use, questioners, focus group discussion check-lists, key informant interview guidelines, and field observation checklists as an instrument of data collection for this study. These instruments of data collection are prepared in English and translated into the local language of the local community, i.e., Afaan Oromo.

3.8. Method of Data Analysis

The study of this section involved the way of searching for the method by which the collected raw data was changed to the final result. Accordingly, quantitative and qualitative raw data that resulted from the survey, interview, focus group discussion, and observation was then transcribed, categorized, and organized into themes and expressed to give concrete meaning. Thematic analysis was applied based on descriptive tools that were used in this approach, going

from the original data to the identification of meanings, organizing these into patterns, and writing the results of themes related to the study aim and the actual context. This means that after the collection of raw data, the researcher summarizes, analyzes, interprets, and presents the findings.

3.9. Data Validity and Reliability

In quantitative and qualitative research, there is a diversity of ways of ensuring the data's reliability. The researchers suggested using a triangulation of different data collection instruments, such as surveys, in-depth interviews, and key informant interviews, FGD, and two separate sources of data, primary and secondary, to ensure the validity and reliability of the data. The researcher's role was to minimize participants who do not provide reliable or trustworthy data. This was done by carefully approaching and assuring participants that their information was valued for the study's success. The research contexts were described, and different reasonable assumptions for each context were clearly stated, in terms of the degree to which the study's results can be generalized or transferred to other contexts.

In regards to the result's dependability, there may be some changes within the study area that affect the research's dependability. Using follow-up questions based on the participants' answers, the researcher thoroughly analyzed and described the changes across different situations during the fieldwork to ensure the study's dependability. To increase conform-ability, quantitative and qualitative data-generating methodologies were used. In-depth interview guides were prepared based on the specific objectives, and informants were captured by investigative or asked follow-up questions during interviews. The study's procedures, including the fieldwork process, were meticulously documented so that data was checked and re-checked. The researcher's ideas and beliefs were forced on the views of the participants and informants to minimize biases. Every procedure was carried out logically and consistently.

3.10. Ethical Consideration

Ethical issues were addressed to the greatest extent possible. According to Dawson and Yentis (2007), creating the right platform includes obscurity, which ensures that the researcher did not use any names or addresses in the final report, as well as confidentiality, which ensures that the researcher did not directly disclose any information provided in this group to third parties. As a result, participants were informed about the purpose of the investigation and what was happening

with the results, and their consent to participate was decided to be sought. In addition, the respondents were assured that their personal names and other identifying information were not disclosed. The informants' styles and personalities were respected, and their language was used in all data collection methods. During the interviews, their choices of places and moods were noted. There was no branding or distortion during the study and writing process. The language and phrases used during the study were not biased towards individuals based on gender, sexual orientation, racial or ethnic group, handicap, or age. Other ethical concerns in conducting the study include the possibility of concealing, misrepresenting, or inventing findings to respond to the demands of the researcher or an audience (Creswell et al. 2007). This research has advanced to the point where these research ethical issues are tolerated throughout the whole process of data collection to finding presentation.

CHAPTER FOUR

4. Result and Discussion

4.1. Introduction

This section discusses the results and discussion of the chapter. The focus of this study is to assess the role of indigenous knowledge practice in forest management in Nadhi Gibe Woreda. The questions, which were focused on the assessment of community's awareness concerning the benefits of forest management, identify the existing of indigenous knowledge practice in forest management, their contribution of indigenous knowledge practice in forest management, and examine challenges in indigenous knowledge practice for forest management, are going to be answered in this study.

To do this, both open-ended and close-ended questions were distributed to 184 because the questionnaire was prepared by Afaan oromoo most of respondents not learned basic education and some of them supported by Developmental Agents and teachers of around the rural school by giving training and Orientation . Of those respondents, all of them replied, so the response rate was 100%. Other than that respondent, 5 of them were involved through interviews: 2 from development agents, 2 from climate change experts, and 1 head of the TiroAbelti district forest enterprise branch office of the woreda. In addition, four groups of FGD were conducted, of which sixteen were selected from socially accepted local elders in two kebeles and sixteen from the two kebele administrations. For this reason, a total analysis of 224 representatives was conducted to collect primary data.

4.2. Socioeconomic characteristics of Survey respondents

Understanding the role of indigenous knowledge practice in forest management activities is crucial to forest managers and policymakers Engida and Mengistu, (2012). The household socioeconomic factors (household size, age, sex, and educational level of respondents; sources of household food and income; distance to and interaction with the forest ecosystem; alternative sources of meeting forest-based needs) have influenced indigenous practice in forest management (Kenya Forest Service 2015). The characteristics of the respondents reflected in this study include sex, age, family size, educational level, marital status, households, and occupations. These variables provide general information about the cultural behavior of people in the study area and are vitally important in assessing indigenous knowledge practices in forest management

4.2.1. Gender and age of respondent

As shown in table 4.1, 93.5% were male while 6.5% were female. Even if the number of male respondents was greater than females, the female participants were vital in the study area. The reason of fewer female respondents is household's participant level. It was also noted by tradition in the study area that household heads were males. Female-headed and single-headed households have a greater chance of participating than female-headed and single-headed households. As the sharing of domestic chores is often limited in these communities, sell (1997). Thus, in some cases, women were heads of households if they were single, widowed, or separated. Even if the participation of both males and females was essential in forest management, due to multiple roles at the family and community level, women have more burdens. As a result, their practice in forest management was poor.

Age is an important factor in social analysis because different age groups in most societies engage in different types of activities. Age can be seen as a sign of knowledge and experience as well as maturity level. The respondent groups aimed to gain awareness in forest management.

Table 4.2. 1. Gender and age of respondent

Sex of respondents		Frequency	Percent
Valid	Male	172	93.5
	Female	12	6.5
	Total	184	100.0
Age 0f respondents		Frequency	Percent
Valid	18-30	34	18.5
	31-45	89	48.4
	46-60	44	23.9
	Above 60	17	9.2
	Total	184	100.0

Source: field survey result: 2022

As shown in Table 4.2.1, the age composition of the respondents, 18.5% of the sample house household heads were from 18–30 years old, 48.4% accounted for households from 31–45 years old, 23.9 of the sample household heads were from 46–60 years old, and the remaining 9.2 % of the sample household heads were above 60 years old. This implies that people between the ages of 31 and 45 have the most responsibility for forest management in the study area.

4.2.2. Sizes of families

This study, conducted on the family size of respondents, aimed to ascertain if the family size has an impact on the indigenous knowledge practice in forest management.

Table 4.2.2.Sizes of families

Family size of respondents			
		Frequency	Percent
Valid	1-2	47	25.5
	3-6	88	47.8
	7-10	34	18.5
	Above	15	8.2
	Total	184	100.0

Source: field survey result: 2022

As shown (table 4.2.2), the study found that family sizes range from one to over ten. The highest household size was "between" 3-6 (valued at 47.8%), 1-2 family size accounted for (25.5%), the household size of 7-10 individuals accounted for (18.5%), and the remaining household size had above 10 covers (8.2%) of respondents. This finding indicates that a large proportion of the respondents had 3-6 family members, a large independent family size that provides more labor for forest management.

In forest management, most scholars agree that there is a positive or negative relationship between household size and practice in forest management Agrawal et al. (2005). Chetri (2005) stated that households with a large family size are in a better position to utilize the forest and hence are likely to practice more in forest management to meet their needs for forest management (as cited in Abay, (2013). This indicates large family members have a greater demand for forest products such as firewood, cutting grass, and other activities due to their large household size, hence the decision to practice forest management in order to increase their chances of accessing forest products. Small family sizes, on the other hand, find it difficult to practice due to a lack of work land or free labor, particularly during harvesting season Abay, (2013). It is agreed with the observation of Elizabeth W. et al. (2017) in Kenya that households with a large family size are in a better position to practice forest management.

4.2.3. Marital Status:

		Frequency	Percent
	married	148	80.4
	single	12	6.5
	Divorced	8	4.3
	Widowed	12	6.5
	separate	4	2.2
Valid	Total	184	100.0

Source: field survey result: 2022

As shown in table 4.2.3), 80.4% of the respondents were married; 6.5% of the respondents were single; 4.3% of the respondents were divorced; 6.5% of the respondents were widowed; and 2.2% of the respondents were separated from their family. The study shows that the majority of the respondents were engaged in marriage. The presence of other differences in the marital status of respondents results in their having a different understanding of forest management practice.

4.2.4. Respondent's educational level

Data on the educational level was sought to determine whether the level had an influence on the role of indigenous knowledge and practice in forest management.

Table: 4.2.4. Respondent's educational level

		Frequency	Percent
Valid	can't read and write	47	25.5
	Read or write-only	45	24.5
	Grade 1-4	41	22.3
	Grade 5-8	21	11.4
	Grade 9-12	12	6.5
	Diploma and Above	18	9.8
	Total	184	100.0

Source: field survey result: 2022

The findings on the educational level of the respondents are summarized in Table 4.2.4 b above. As indicated, 25.5 % of respondents had not read and written .24.5 % of respondents were writers/readers only, 22.3 percent had (first cycle primary education), 11.4 percent had grades 5-8, 6.5% had secondary education (grades 9-12), and 9.8 percent had attended Diploma and above. Even if education is important for better understanding, the environmental educational level has no impact on the role of indigenous knowledge practice in forest management. According to the researcher's survey observation, the majority of practitioners in forest management were uneducated people.

4.2.5. Occupation: of respondent

The respondent’s occupation was gathered in order to identify that occupation had to impact on their indigenous knowledge practice in forest management.

4.2.5. Occupation: of respondent

Occupation: of respondent		Frequency	Percent
Valid	Farmer	154	83.7
	Trading	6	3.3
	Fuelwood selling	12	6.5
	Tailor	8	4.3
	Handcraft	4	2.2
	Total	184	100.0

Source: field survey result: 2022

According to Table 4.1.7, 83.7 percent of respondents were farmers, 3.3% were merchants, and 0% indicated no liquid seller in the respondent. 6.5% of those polled worked as fuel wood sellers, while 4.3% worked from home. 2.2% of the respondents were engaged in handicraft activities, for example (carpenter, black sheet) activities, respectively. As the study shows, the majority of the respondents were engaged in farming. The presence of different occupational statuses in respondents' education has a different understanding concerning forest management practice.

4.3. Indigenous knowledge practice awareness concerning the benefits of forest management

The practice of indigenous knowledge in forest management is very important to achieve the proposed goals of our country in forest resources. primarily the practice of farmers and locals who live near forest lands in tree planting, design, and implementation of management plans To gain information on local community participation in forest management, the researcher asked the respondent whether they were practicing or not. Moreover, the finding is summarized in

Table 4. 3 .1.Indigenous knowledge practice awareness concerning the benefits of forest management

Item		Frequency	Percent
Valid	Yes	85	46.2
	No	99	53.8
	Total	184	100.0

From whom do you get the awareness on forest management?		Frequency	Percent
Valid	Elders	69	37.5
	Government bodies	46	25.0
	NGOs	17	9.2
	Through Experian's	52	28.3
	Total	184	100.0

Source: field survey result: 2022

Table 4.3.1. Indicated that46% of respondents had enough information about forest management, while 54% of respondents did not have enough information about forest management. The above study indicated that there is a lack of information about indigenous knowledge practices in forest management and Table also shows that the source of awareness and training for indigenous knowledge practices in forest management. The source of information include elders (37.5%),NGOs (9.24%), and 28.26% were through Experience's. This implies the majority of respondents get the awareness of respondents from elders.

4.3.2. Indigenous knowledge practice to enhance forest management

Table 4.3.2

Does the government give enough awareness and training for indigenous knowledge practice to enhance forest management?		Frequency	Percent
Valid	Yes	75	40.8
	No	109	59.2
	Total	184	100.0

4.3.3. What was the main focused area in the training?

What was the main focused area in the training?		Frequency	Percent
Valid	Tree planting	54	29.3
	Tree Nursery establishment	9	4.9
	Protection regenerating trees	12	6.5
	If other	109	59.2
	Total	184	100.0

Capacity building for indigenous knowledge practice in forest management improves their ability to plant trees, establish nurseries, and protect regenerating trees. As such, activities are common, and the forest coverage is increased from time to time. People got the following benefits: According to EBI (2014), public awareness-raising activities are gaining momentum through the use of media and annual events such as International Day for Biological Diversity, Tree Day, World Environment Day, Green Award Programs, and Annual Tree Planting programs that are organized and carried out by governmental and non-governmental organizations. In addition, knowledge created through research carried out by various institutions in the area of biodiversity is communicated using different media outlets, and these have been used to devise plans to conserve and sustainably utilize the forest resources of the country. The most prominent perceived benefits to the local people due to their participation in forest management were infrastructure, traditional medicine, aesthetic and recreational value, employment opportunities, the source of income, traditional beehive keeping and the source of honey, and access to free-range livestock grazing during drought periods when there was a scarcity of fodder for livestock. These are common situations around Qananii and Kitinbile

kebele in Nadhi Gibe woreda.All our activities and way of life depend on the products of the forest resource." Our troublesome instruments came from the tree. Trees are also used as shade, shelter, a source of food, to protect soil from erosion, and as a source of rain. Generally, the forest is the key and root of our lives, so we are eager to keep it. "

4.2.2. What work has been done to publicize indigenous knowledge practice in forest management?

As a result, As indicated by the respondent enough promotion work has been done to publicize indigenous knowledge practices in forest management and the attitude of people towards indigenous knowledge practices in forest management.

Do you think that enough promotion work has been done to publicize indigenous knowledge practice in forest management?		Frequency	Percent
Valid	Yes	75	40.8
	No	109	59.2
	Total	184	100.0
How is the attitude of people/community towards indigenous knowledge practice in forest management?		Frequency	Percent
Valid	Favorable	85	46.2
	Un favorable	99	53.8
	Total	184	100.0

Source: field survey result: 2022

As show in the above table, 40.8% of respondents believed that enough promotion work had been done to publicize indigenous knowledge practice in forest management. 59.2% of the respondents do not think enough promotion work has been done to publicize indigenous knowledge practices in forest management. Due to this, the majority of the respondents said they have not gotten enough promotion work has not been done to publicize indigenous knowledge practice in forest management.

4.3. The practice of indigenous knowledge in forest management

According to the survey results conducted in the study area, local knowledge and experience have their own significance in forest management. The role of indigenous knowledge practice uses their knowledge for the better management of their local resources based on their local

culture, tradition, customs, norms, and age-old values. Indigenous knowledge, which is common in the study area, was summarized in table 4.3.1.

Is there indigenous forest management practice in your area?		Frequency	Percent
Valid	Yes	145	78.8
	No	39	21.2
	Total	184	100.0

Source: field survey result: 2022

According to the survey results conducted through a questionnaire (Table 4.3.1), 79% of the respondents said there is indigenous forest management practice in their area, and 21% of the respondents said there is no indigenous forest management practice in their area. A majority indicated that there is indigenous knowledge practiced in the area.

Which indigenous forest management practices are existing in your area (multiple response is possible)?		Frequency	Percent
Valid	Traditional societal taboo (prohibition) to cut highly valued trees	66	35.9
	Planting trees in the compound of Mosques and burial places	13	7.1
	Planting trees around graves	20	10.9
	Planting trees around religious institutions (Churches and Mosques)	13	7.1
	Protection of sacred sites (traditional belief sites)	33	17.9
	Planting trees around houses and farm areas	33	17.9
	Plating trees for shade	6	3.3
	Total	184	100.0

Source: field survey result: 2022

According to the survey results (Table 4.3.2), 36% of respondents followed the traditional societal taboo (prohibition) of cutting highly valued trees; 18% of respondents were sacred sites; 18% of respondents were planting trees around houses and farm areas; the other 7%, 11%, 7%, and 3% of the respondents replied that they were planting trees in the compound of mosques and burial places. Planting trees around graves, planting trees around religious institutions (churches and mosques), and planting trees for shade, respectively. In addition, the survey results conducted through the interviews of the elderly show there was a long tradition of planting trees along with compounds, roads, eroded gullies, religious and governmental institutions, and watersheds. Trees are also planted in groves to provide shade from the harsh sun, serve as sacred sites for worship, and provide animal shelter.

The table below summarizes some of the indigenous practices in the management of the forest.

Which of the following indigenous forest protection practices are applicable in your area?		Frequency	Percent
Valid	Replanting of trees	85	46.2
	No tree cutting from the forest	46	25.0
	No farming encroachment to the forest	20	10.9
	No hunting in the forest	13	7.1
	Making of fire belt	13	7.1
		7	3.8
	Total	184	100.0

Source: field survey result: 2022

From the survey, 46% of the respondents listed replanting trees as one of the prominent practices. 25% of the respondents said there was no tree cutting in the forest. When questioned about its indigenous basis and whether they were taught, many responded that it was developed from within. To them, what constitutes indigenous knowledge is what is developed and learned from within without any external influence. There is no bush burning, farming, or hunting in the forest or making of fire belts, and 11%, 7%, 7%, and 4% respectively believe that these principles have sustained the forest over the years. All the practices in Figure are examples of indigenous management practices. One of the indigenous management practices is the replanting

of lost trees, which constituted 46% of the responses. Although one is not allowed to cut trees, dry trees are felled and replaced. These dry trees have economic importance to the people of Qananii and Kitinbile. In our discussion, it was pointed out that the community forest served as a refuge. It is still regarded as a sacred grove, and 18% think that sacrifices to the gods have kept the forest budding. These are special traditional beliefs that have been upheld by the community. It is different from the conventional principles because it does not incorporate any theory or practice. These are traditional systems laid down from one generation to the next. However, some explain that the existence of religion has actually weakened this reputable principle.

.*4.3.2The role of Indigenous knowledge practice in forest management and in the community*

Do you have a role in forest management in your community		Frequency	Percent
Valid	Yes	66	35.9
	No	118	64.1
	Total	184	100.0

If your answer to question number '4' is “Yes”, in what way do you participate (multiple response is possible)?		Frequency	Percent
Valid	By giving awareness practically how to plant trees	61	33.2
	By planting trees	25	13.6
	Protection (guarding)	86	46.7
	Forest management committee member	12	6.5
	Total	184	100.0

Source: field survey result: 2022

The above survey indicated that 33% of respondents were aware of planting trees. 13.5% of the respondents were planting trees, 47% of the respondents were indicating protection trees, and 6.5% of the respondents were forest management committee members. This implies that 46.7% of the respondents were taking time for the protection of forests because of their benefits.

Does indigenous knowledge practice have benefits in forest management?		Frequency	Percent
Valid	Yes	138	75.0
	No	46	25.0
	Total	184	100.0
Which one is the most common benefit that you get from forest management in your locality (multiple response is possible)?		Frequency	Percent
Valid	Building and fence poles	48	26.1
	keeping Hebei	4	2.2
	The use of the forest as a source of income	13	7.1
	Pure water and fresh air	26	14.1
	Protection of soil from erosion	18	9.8
	Thatching grass	9	4.9
	. Fuel wood	39	21.2
	Medical Purpose	9	4.9
	Grass for livestock and grazing	9	4.9
	Wild fruits and green leaves	9	4.9
	Total	184	100.0

Source: field survey result: 2022

The survey results revealed that 26% of respondents were poles for building houses and fences; 14% were pure water and fresh air; 17% were soil erosion protection; 5% were grass for livestock and grazing land; 5% were different parts of trees for human and livestock herbal medicinal values; 5% were thatching grass; 21% were fuel wood; 5% were wild fruits and gr As in most other parts of the country, building, and fencing poles and firewood are still one of the most important sources for the household. In addition, nearly 26% of the material for housing and fence poles came from the forest, such as thatch for roofing material and timber for the house and furniture. This is shown by a shift towards corrugated iron roofing by households in the study area (from key informant interview) (48). The harvest of non-timber forest products (NTFPs) resources was significantly higher for women (proportion of landless and poor women-headed households and also the high natural forest coverage in Chilimo and Goban that relied on the forest to bridge the gap between household needs and available crops during the latent period, Wild fruits and green leaves were, in some cases, household dietary supplements, and

green leaves were used as medicine in some cases (9). The fiber was used for handicrafts, and its use did not differ between villages.

4.3.3 The importance of indigenous knowledge practice in forest management

The table indicated that 71% of the respondents were getting a good opportunity from the indigenous knowledge practice in forest management. 29.1% of the respondents said they had gotten a good opportunity from the indigenous knowledge practice. This implies that the majority of respondents used the earned opportunity.

Is there a good opportunity for indigenous knowledge practice in Forest Management in your locality?		Frequency	Percent
Valid	Yes	131	71.2
	No	53	28.8
	Total	184	100.0

What are the major opportunities available?		Frequency	Percent
Valid	Government policy that promotes indigenous knowledge practice in forest management	33	17.9
	The government's prohibition of cutting indigenous trees.	20	10.9
	The presence of communal land area for planting trees by local farmers for common use	13	7.1
	Organizing the youth to conserve and rehabilitate forest areas for income generating activities	66	35.9
	The traditional practice of farmers to plant trees on their farmland	52	28.3
	Total	184	100.0

Source: field survey result: 2022

As shown in Table 4.3.3, 36% of the respondents said that organizing the youth to conserve and rehabilitate forest areas for income-generating activities in forest management in their locality was the best option, while 29% of them said that the traditional practice of farmers to plant trees on their farmland was the best option. 18% of respondents said that government policy promotes

indigenous knowledge and practice in forest management, and 11% of respondents said that the government's prohibition of cutting indigenous trees. 7% of the respondents said that the presence of communal land area for planting trees by local farmers for common use, then the majority of the respondents indicated 36% of their opportunities were available on the o Organizing the youth to conserve and rehabilitate forest areas for income-generating activities in forest management in the study area.

3.4. Is indigenous knowledge practice more appropriate than scientific knowledge in forest

Management in your locality? As shown in Table 4.3.4, 57% of the respondents said that indigenous knowledge is more appropriate than scientific knowledge in forest resource management in their locality, while 43% said that scientific knowledge is more appropriate than indigenous knowledge in forest resource management. In supporting the above idea, Thompson et al. (1986), as cited in Shailesh Kumar and James (n.d), argue that even if science derives its power from the ability to explain, predict, and generalize, in generalization, some particulars are lost and this may present the greatest weakness in the method when science is applied to specific problems at a local level. Hybrid approaches, utilizing "sustainable knowledge" that combines scientific and indigenous or traditional knowledge, have been applied to the study of environmental and resource management problems.

Do you think indigenous knowledge practice is more appropriate than scientific knowledge in forest management in your locality?		Frequency	Percent
Valid	Yes	105	57.1
	No	79	42.9
	Total	184	100.0
If your answer to question number '10' is "Yes", why it is more appropriate in your area?		Frequency	Percent
Valid	. It is less costly and does not require high fund from the government	20	10.9
	. It is culturally acceptable and easy to involve the community in forest conservation	112	60.9
	Improves the participation of community in sustainable forest management	39	21.2
	Opens chance to benefit from forest resources in the area	13	7.1
	Total	184	100.0

Source: field survey result: 2022

As shown in Table 4.3.4. In the above, 10.9% of respondents said indigenous knowledge is less costly. While 60.9 % of respondents say that it is easy and understandable, and 21.2 % of respondents say that indigenous knowledge improves the participation of the community in sustainable forest management, only 7.1 % of the respondents said that this gives the chance to benefit from forest resources in the area. As we have seen from the survey data, indigenous knowledge is more advantageous in the area because it is easy and understandable. It improves the participation of A number Several practices were outlined by the respondents. Although respondents always confused the practice with some known conventional scientific principles, there were frequently occurring ones throughout the survey. The community members have blended some indigenous ways with mainstream scientific principles in the management of the reserve. There were no strict indigenous ways of managing the reserve, as in belief systems or taboos. Each response was calculated out of a sample size of fifty-seven without mentioning any of the other responses Community in forest management. It is also developed from local sources.

4. 1. The challenges of indigenous knowledge practice in forest management

As a result, when we evaluate the practice of indigenous knowledge practice in forest management of the respondents, 60.9% of the respondents said that it is low, 32.1% of the respondents said moderate, and 7.1% of the respondents said high. There is no error in the evaluation. The majority of the respondents indicated low. This role implies knowledge of practice in forest management is low in the study area.

How do you evaluate the practice of indigenous knowledge practice in your area?		Frequency	Percent
Valid	High	13	7.1
	Moderate	59	32.1
	Low	112	60.8
	Total	184	100.0
If your response is "low or none", what are the major challenges to practice indigenous knowledge in forest management?		Frequency	Percent
Valid	Community's lack of awareness of the importance of indigenous knowledge in forest management	105	57.1
	Illegal tree cutting/Deforestation	33	17.9
	Government's lack of commitment to use indigenous knowledge practice in forest management	20	10.9
	The community is not given the chance to participate in forest management	26	14.1
	Total	184	100.0

Source: field survey result: 2022

As the above result is on the table (4.4.), 57% of the respondents said that the community's lack of awareness of the importance of indigenous knowledge in forest management, 18% of the respondents said that illegal tree cutting or deforestation, 11% of the respondents said that the government's lack of commitment to using indigenous knowledge practice in forest management, and 14% of the respondents said that the community is not given the chance to participate in forest management. As we have seen from the survey data, 57% of the respondents said that there is a community lack of awareness of the importance of indigenous knowledge in forest management in the study area.

According to an expert from Nadhi Gibe woreda Agricultural Development agent and climate change experts from Tiro Abelti Forest District, more than 700 b rushers were distributed to the community this year, primarily to schools and farmers. He also mentioned that the exchange of information with the community on forest management will help to build confidence and assure all that the programs are relevant to their needs and that they have a sense of responsibility towards the program.

Informants with the elders and religious said as follows

As the researcher understood from the informant's responses it is difficult to say that there is complete management of forests in our area with indigenous knowledge practice, but recently there is a work started on how to protect and care for the role of indigenous knowledge practice in forests by organizing the community around the forests in our kebeles. Informants further said that there are associations organized for forest management practices based on local indigenous knowledge, namely Wolda Utuba Jiregna and Wolda Omishtote Bosona Karebedesa.The association is an association that has made its own internal regulations to restore and manage indigenous forests. We also have a role as a member of the association, and if people are found to be cutting down forests illegally, the association will come to us and take action against them. Making a source of income Picking and selling useless wood for firewood and making daily income by using it as a source of income is very useful for our livelihood. There are many challenges in the role of practicing indigenous knowledge and managing forests in our country. It is good if this policy is improved. If the role of indigenous knowledge in forest management is recognized and strengthened as a country, if independent laws and regulations are formulated for it and its implementation is not well done, for example, the forest cover in our district was more than 612 hectares, but now it is not more than 275 hectares. Because it is being used for the expansion of agricultural land, they are destroying native trees, so we say it is good for the district body and the environmental protection office to pay attention to it.

Figure 1:1 .Features of Kaarra Baddessaa area with local Farmers

Sources from the study area observation 2022

FGD 1 with the leaders of the two kebele.

Natural forest is found in the so-called cari zone of our kebele in an association called Wolda Omishtota Karbedesa, and the district body has no other involvement except for monitoring and support. It can be said that there is no greater recognition and expansion of the role of indigenous knowledge in forest management than the government. There is a problem. The support given to us by our kebele has paid little attention to this issue, and the support we have given is nothing more than the planting of saplings. If we compare trees planted with natural knowledge and trees planted with science, they are very different. For example, if we take a pine tree, it will fall and disappear during a strong storm, but the native is not vulnerable to this. The practice of indigenous knowledge is one of the many challenges that prevent the role of forest management from being properly accomplished. Kebeles: Lack of help from legal support providers. It is a challenge that the government has not given attention to this knowledge exercise to fulfill its role. They are thirsty

Figure 1:2 .FDG with kitinbile kebele leaders

Sources from the study area Focus group Discussion in kitinbile 2022

In the interview with the Kebele development Agent, the community has received awareness and training regarding their role in managing the forest as a supporting body for the practice of

indigenous knowledge. Since they have benefited from the forest, they have a high level of understanding, from those who have lost their jobs to those who have benefited greatly from the forest. We also have the same training, Awareness gives us every time. Indigenous knowledge practice in our area has a great role in managing the forest. Some of them said that since they are surrounded by forests, they do not care about replanting old trees, taking care of and protecting planted plants. And the practice is very beneficial because it is the practice of indigenous knowledge. It is enough to say that the role of managing the forest through indigenous knowledge is enough to evaluate the continuity and importance of the community. It is not. If we look at one or two of the many challenges that prevent the role of indigenous knowledge in forest management from being properly implemented, border pushing from neighboring kebeles, the lack of legal support providers, and the fact that the government has not given attention to the practice of this knowledge to fulfill its role

Figure 1:3 .Features of Kaarra Baddessaa area with Developmental Agent

Sources from the study area observation 2022

Informant 2 In addition to the interview with the elders' the interview with the forest expert in 2013 E.C plantation of trees were made privately, communal, and by organizations. As indicated, the large amounts planted were made privately. The trees were planted around homesteads, on agricultural land, on eroded land, along the road, in organization compounds, on terracing areas, and on hillsides. Large amounts of seedlings were planted on the eroded land to rehabilitate the damaged land. The number of growing planting seedlings in the study area is increased from

year to year. For instance, the number of growing seedlings in 2012/ 2013 was 69.5%, and in 2013/2014 increased to 79.7%. Respect sacred places, trees, and sacred local water streams

One of the mechanisms by which the local communities manage forests from destruction through respecting sacred places like QoolooTuphee, Jireen, and hafersu mountains of the area. This mountain was playing an important role in confirming forest management for the local communities of the study area. The forest resources around this area are .never cut down by anybody else for any purpose. Rather, they were saved as sacred areas where rituals are exercised for the past many years to get settlement and blessings from their creature.

FDG 2 , the discussion informant said as follows:

We have various forms of indigenous knowledge practiced until now in the area, indirectly to substantiate sustainable forest management. Among these traditional forms of indigenous knowledge towards forest management respecting sacred places found in the study area

A study conducted by Hua, Y. (2015) cited in Mekete (2016) found that, traditionally, the Akha people in Mengsong have two types of forest management objectives. First, they manage community rattan, water sources, cemeteries, and sacred forests for religious uses, and these are absolutely protected with limited accessibility. The second objective of forest management is to provide an accessible forest, including forestland used for timber harvest and other economic uses. People around the world have been using indigenous knowledge for hundreds of years to solve specific developmental and environmental problems that have happened in their day-to-day activities, and this knowledge is passed from generation to generation, usually by word of mouth and cultural practices. Indigenous knowledge is developed and learned from within without any external influence.

Local community forest management for the use of poles beyond the other benefits Residents of the study area sometimes conserve forest to strengthen strong social work within the residents by building a traditional bridge on the big rivers from the local strong pole. For these reasons, the local people of the study area pay more attention to local forest management.

Informant with local Farmers said as follows

One informant, a male 48 years old, says as follows: Traditional hats, bridges, and fences cannot be constructed without the strong poles that have been cut down from the local forest. The residents usually plant trees to get strong poles that are used for various traditional construction purposes. When they too intend to cut one tree for poles, they should replace the other five trees from their cultural perspective. If they do not, the local communities react negatively. The individual who wants to cut poles out of the forest should also get permission from the local elders and other concerned bodies unless otherwise, cutting any trees for any construction in general and particularly is forbidden for the local people of the study area.

Informant 2 .The value local communities' give to the strong pole is very high in the area. The local community sees the advantages of poles as mechanisms by which they are used to strengthen relationships between close relatives. "Neighbors with neighbors by building a stronger traditional bridge from the poles on the very big or dangerous river than the construction purpose.

Apart from forest management nowadays, local communities have been distracted by forests for various purposes in general, and study areas in particular forests can be distracted by forest interests or group interests, which have adverse effects on the lives of local people.

FDG 3. Discussion of the study area stated these issues as follows:

Kaarra baddessaa is an economically valuable source of timber products. It is not for fuel wood purposes, but also for using various construction materials, particularly timber.

One of the informant interviews has described the status of the current forest in general and Kaarra Baddessaa in particular as follows: The current status of Kaarra Baddessaa forest has been decreasing from time to time due to the exploitation of the forest for timber production by the forest district and the influence of residents.

Local communities use trees for different household items. They manage the forest because of the advantage they get from it. For this reason, the local communities are usually focused on the management of trees without any interference or knowledge influence.

One focus group discussion of the study area stated these issues as follows:

The traditional materials used for every household level, including beds, brooms, cooking spoons, tool handles, mats, and walking sticks, are largely made up of forest resources.

Others said we should give more value to local trees that have existed in our households and farmland. Due to the advantages of the local communities, it is mostly the management of tree types like waddeessa (cardinal Africana) and birbirsaa (Podocarps calculus). To the advantage of the local communities, it prepares various household materials from it. Cutting these tree species needlessly was forbidden for the societies, so they managed them by planting new seedlings to replace the already used ones for local household material.

"In the case of an emergency, whoever is closest to the incident and has knowledge of plant needs in it regards the collection of medicinal plants." However, if the collection of medicine requires spending more time or digging out the ground, which may consume potential energy, the men go for collecting or digging it kitesa (2007).One focus group discussion discussed these issues has been described as "traditional residents depend on indigenous knowledge practice care trends based on selective medicinal plants enormously extracted from kaarra baddessaa."

The wood forest is widely and potentially utilized for fuel wood and charcoal. Local communities are using the forest for fuel, wood, and charcoal from the local area's trees. The people who live around the local forest are utilizing forest resources for various purposes. The forest enabled the neighboring residents to be a source of income for the poorest parts of their local communities. These residents usually visit the local forest for the potential fuel wood demand. The forest has been offering them their energy needs until now. Local people were well known for selling fuel wood and timber products. One informant described these issues as follows:

Informant 3 : male, 40 years old. Local trees are known as the source of fuel wood and charcoal, particularly for the local people. Local arrangements exist between the local forest users which allow the local farmers to enter the forest for fuel wood collection once a week. However, the villagers were only allowed to collect dead wood and were not allowed to carry any hand tools like axes that were closely supervised by the forester. The forester feared that the villagers could use such tools to destroy the forest. On average, each household consumed about two head loads of fuel wood weekly. The use of the forest as a source of fuel wood has been well stated by many

previous studies, so this study is concerned more with forest management aspects. From the local community's cultural perspective, one can't cut trees for his/her own interest. As they respect each other, especially the elderly, they respect all species. Traditionally, women should get permission from the local elders and religious leaders to collect dead firewood to use it as a source of income for the poorest families. In one focus group discussion, informants put their ideas as follows:

Permission was obtained in that local forest users complained about the fuel wood day interval." They want the number of fuel wood collection days to be increased to at least three days a week. These complaints were also made about the restriction on the use of hand tools in the forest. Forest product collection at the household level is a set of gender roles played by both men and women in the study area in the collection of fuel wood and construction building materials from the forest. Whereas fuel wood collection from the forest is almost entirely the responsibility of local women, the collection of construction materials is exclusively the role of men. However, nowadays, this is changing from time to time. The gender role gap as a whole has been changing from time to time due to social changes. The forest is normally managed for fuel wood and charcoal.

The researcher also gained response from FGD tree species like waddessa, qilxuu, and birbisa are preferred to keep bee hives on their long branches and are protected by the whole local community's very long and branching trees in the selected area." It is forbidden to cut and dump waste materials. In the traditional belief system, these tree species may dry and droop instead of being used to keep hives, besides other expected multipurpose for the environment and expected forest-dependent communities. Hence, the forest is essential in honey production for the local communities of the study area. However, due to honey production, cutting some trees by the local communities has been forbidden.

Figure 1:4 .Features of Kaarra Baddessaa area with Qananii kebele leaders

Sources from the study area FDG Qananii Kebele 2022

The local administration on natural forest management recognizes and gives support to the local communities' indigenous knowledge practices in efforts made to protect the natural forest from destruction. However, natural forest management may not be realized without the full practice of local communities and indigenous knowledge practices. To ensure sustainable forest management, the commitment of the stakeholders, level by level, is very important. Unless we work together, otherwise, ensuring the sustainability of local forest conservation is basically impossible for an individual or one sector only. It needs more attention from the local administration. The community by itself were not egger and well awarded to inherit indigenous knowledge to the new generation. The concerned bodies living around the district and below the district level do not know about the indigenous knowledge practiced and its importance in sustainable forest management. They are given a higher position for scientific knowledge than local indigenous knowledge. The only time the elders give a higher position to the indigenous knowledge of the local communities is when they talk about indigenous knowledge and its importance in forest management when they talk about conserving local forests. Disasaet, al (2015),

FGD 4 informant:

"In our culture, we give a great expectation for the forest, every bodies use the toilet around the forest are responsible and stakeholder and forest management should have to focus on and promote indigenous knowledge since forest taken as a base for life and societies also keep its own norm, tradition, and custom on how to manage and that is why we value forest and have

conserved kaarrabaddessaa forest until now. Local communities indirectly support the local communities' indigenous knowledge practice for forest management. However, still many things are left in linking the normal activities of local communities and that of local communities to ensure sustainable forest management. The percentage of local communities by far and large has been a very important factor in keeping harmony with the existing forest Disasaet, el (2015).

Figure 1:5 .Features of Kaarra Baddessaa area indigenous plant around Qooloo Tuphee

Sources from the study area observation 2022

FDG, discussion informants put their ideas as follows.

In addition the FGD inform that, protection approach of our District excluded the values, norms, and traditional belief system of people and also the role of indigenous knowledge practice in forest management is very little or none, this protection approach of local administration makes us feel like outsiders, irresponsible .separated from our environment, and our knowledge or value has been also ignored and seen as meaningless.

CHAPTER FIVE

5. Conclusion and recommendation of

5.1 .Conclusion.

From this research finding, it was understood that kaarra baddessaa forest and trees found in the area were managed as a result of awareness created on the norms of the communities such as respecting the elders, sacred places, and mosques, selecting sacred trees, and monitoring the local mountain streams.

The perception and practice of the local community toward forest use were also strong enough to manage, maintain, and sustainably harvest forest resources in the study area. Forest management is critically and widely viewed as a core component of life sustenance by members of the community as a result of an increased perception of the local community on the wider benefit of the forest and an improved outlook that has been strongly linked with traditional beliefs, taboos, and worship.

The studded community has precious existing indigenous knowledge and exercises more effectively manipulated through indigenous knowledge practice techniques. For the study area's local communities, the forest is a source of life: local people use local trees for traditional medicine, fuel wood, local bridge construction, and ritual house and fence construction. Indigenous knowledge systems are the primary stakeholders in building houses, fence poles, and sacred environments for their culture, religion, and habitat.

The communities have been provided special care and protection for their natural forest through their indigenous knowledge and institutions. The local administration that deals with environmental management do not work together with local communities and traditional leaders on environmental management and forest management issues. Indigenous institutions and knowledge systems are important for forest management. Even though the indigenous institution and knowledge are important in forest management. The contribution of local administration in the appreciating, respecting and sustaining existing knowledge is limited and the appropriateness, and contribution, and that affects the determinants of indigenous knowledge practice in forest management is limited.

Generally, forest management was not well understood in the traditional sense due to the failure of local youngsters, local administration, and increasing population size.

1.2. Recommendation

Based on the findings and conclusions made on the previous page and as the basis of the survey follows, the researcher wants to recommend a few feasible strategies for the future.

It is recommended that the Indigenous knowledge system and appropriate policy should be commensurate with sustainable forest management. Government ministries that deal with environmental management need to work together with local communities and traditional leaders on environmental management and forest management issues.

Through indigenous knowledge, ways of forest management could be fused with modern methods of biodiversity conservation in order to achieve sustainable development in line with sustainable forest management. Traditional leaders and medium spirits should be empowered through legislation to be the guardians of our tradition and natural resources in their communities.

The government can give financial and human resources to support indigenous knowledge practice with communities. At present, our country does not have a policy specifically on indigenous knowledge and practice in forest management. There should be a fund budget to assist institutions that carry programs on indigenous knowledge practice in forest management in areas such as research, workshops, conferences, or training on the subject matter.

The younger generation needs to be kept informed and encouraged to adopt indigenous knowledge practices on forest management issues. The study recommends integrating indigenous knowledge practices into national development. So that all age groups are exposed to indigenous knowledge practices in order to appreciate our culture and tradition.

Despite the fact that it has been established that knowledge and institutions have played important roles in the conservation of natural resources such as forests, water, land, and wild animals. As a result, they require special consideration from policymakers. Government bodies and institutions and sustain them for the coming generation.

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Appendices

Appendix 1: Questionnaire for Household Survey
Dear Respondents,

My name is Zerihun Belihu, and I am a graduate student at Jimma University, Currently, I am writing my MA thesis entitled "The Role of Indigenous Knowledge Practice in Forest Management and the case of kaarraBaddessaa forest priority in NadhiGibeeWoreda, southwest of Oromia National Regional State" as part of the requirements for the award of a Master of Arts (MA) degree in sociology studies. Thus, the main purpose of this questionnaire is to gather information to investigate the role of indigenous knowledge practices in forest management. The study is being conducted only for sociological purposes, for which all the information you provide will be confidential.

Instruction

Encircle the letter of an appropriate answer.

Part I: Socio-economic and demographic characteristics of the respondents

1. Respondent's kebele _____

1. Sex A. Male B. Female

2. Age……. Years old

3. Marital Status: A. Married B. Single C. Divorced D. Widowed E. Separated

4. Household headship: A. Male headed B. Female-headed

5. Family Size: A.1-2 B. 3-6 C. 7-10 D. above 10

6. Education level of the household head:

A. Cannot read and writes

B. Write or/and read-only

C. First cycle Primary School (grades 1-4)

D. Second, cycle primary school (grades 5-8)

E. Secondary School (9-12)

F. Certificate and above

7. Occupation:

A. Farming B. Trading C. Local liquid sale D. Fuelwood selling

E. Tailor F. Handicraft (e.g. Blacksmith, carpenter, etc.)

Part II: Indigenous knowledge practice awareness concerning the benefits of forest management

1. Do you have enough information about forest management?

A) Yes B) No

2. If your answer to question number 1 is "Yes" from whom do you get the awareness on forest management?

A. Elders B. Government bodies C. NGO's D. Through experience

E. If other, please specify: _____

3. If your answer to the question; 2' is (B), does the government give enough awareness and training for indigenous knowledge practice to enhance forest management? A. Yes B. No

A) Yes B) No

4. If your answer is yes to question number '3', what was the main focused area in the training?

A. Tree planting B. Tree nursery establishment C. Protecting the regenerating trees D. If other, please specify

5. Do you think that enough promotion work has been done to publicize indigenous knowledge practice in forest management?

A. Yes B. No

6. How is the attitude of people/community towards indigenous knowledge practice in forest management?

A. Favorable B. Unfavorable

Part III: Questions about the Practice of indigenous knowledge in forest management

1) Is there indigenous forest management practice in your area?

A) Yes B) No

2. If your answer to question '2' is "Yes", which indigenous forest management practices are existing in your area (multiple responses is possible)?

- Traditional societal taboo (prohibition) to cut highly valued trees
- Planting trees in the compound of Mosques and burial places
- Planting trees around graves
- Planting trees around religious institutions (Churches and Mosques)
- Protection of sacred sites (traditional belief sites)
- Planting trees around houses and farm areas
- Plating trees for shade
- Others: _____

3. Which of the following indigenous forest protection practices are applicable in your area?

- Replanting of trees
- No tree cutting from the forest
- No farming encroachment to the forest
- No hunting in the forest
- Making of fire belt
- No bush burning in the forest

4. Do you have a role in forest management in your community?

A. Yes B. No

5. If your answer to question number '4' is “Yes”, in what way do you participate (multiple response is possible)?

A. By giving awareness to planting trees

B. By planting trees

C) Protection (guarding)

C. Forest management committee member

D. If other, please, specify ----------

6. Does indigenous knowledge practice have benefits in forest management?

A. Yes B. No

7. If your answer to question number '6' is “Yes”, which one is the most common benefit that you get from forest management in your locality (multiple response is possible)?

A. Building and fence poles B. Pure water and fresh air C. Protection of soil from erosion D. Thatching grass E. Fuel wood F. Handcrafts and fibers G. Medical Purpose H. Grass for livestock and grazing I. Wild fruits and green leaves J) keeping Hebei k) The use of the forest as a source of income

8. Is there a good opportunity for indigenous knowledge practice in Forest Management in your locality? A. Yes B. No

9. If your answer is 'yes' to question number ‘8’, what are the major opportunities available?

- Government policy that promotes indigenous knowledge practice in forest management
- The government’s prohibition of cutting indigenous trees.
- The presence of communal land area for planting trees by local farmers for common use

- Organizing the youth to conserve and rehabilitate forest areas for income generating activities
- The traditional practice of farmers to plant trees on their farmland
- If other specify: _____

10. Do you think indigenous knowledge practice is more appropriate than scientific knowledge in forest management in your locality? A. Yes B. No

11. If your answer to question number '10' is "Yes", why it is more appropriate in your area?

A. It is less costly and does not require high fund from the government

B. It is culturally acceptable and easy to involve the community in forest conservation

C. Improves the participation of community in sustainable forest management

D. Opens chance to benefit from forest resources in the area

E. If other, please specify _____

Part IV: Questions on challenges of indigenous knowledge practice in forest management

- How do you evaluate the practice of indigenous knowledge practice in your area?
- High B. Moderate C. Low D. None
- If your response is "**low** or **none**", what are the major challenges to practicing indigenous knowledge in forest management?
- Community's lack of awareness of the importance of indigenous knowledge in forest management
- Shortage of land for tree planting
- Illegal tree cutting/Deforestation
- Forest area encroachment for farming
- Government's lack of commitment to use indigenous knowledge practice in forest management

- The community is not given the chance to participate in forest management
- If other specify _____
- Please, would you mention possible solutions to the factors that hinder indigenous knowledge practice in forest management in NadhiiGibeeWoreda? _____ _____

Appendix 2: Key Informant Interview Checklist

A. For Expert.

- Are there government policies and programs for promoting indigenous knowledge practice in forest management?
- Do you give awareness of indigenous knowledge practice in forest management?
- How do you explain the awareness level of the community regarding forest policy, laws, and regulations?
- Do you think that indigenous knowledge practice is relevant in forest management?
- Is there indigenous forest management practice in your area?
- What indigenous forest management practices are existing in your area?
- To what extent indigenous knowledge in forest management has contributed to forest conservation in the woreda?
- What opportunities exist for indigenous knowledge practice in Forest Management in the woreda?
- Are there any rules and regulations that prohibit the illegal cutting and transportation of forest products?
- If your answer is yes to question number ‘7' is “Yes”, how do you evaluate the applicability of these rules and regulations in the Woreda?
- Do you think indigenous knowledge practice is more appropriate than scientific knowledge in forest management in your locality?
- How do you evaluate the sufficiency, sustainability, and effectiveness of indigenous knowledge practice in forest management?
- What are the challenges of indigenous knowledge practice in your area?
- Please, would you mention possible solutions to the factors that hinder indigenous knowledge practice in forest management in NadhiiGibeeWoreda?

B. For Development Agents

- Have you got awareness/training on indigenous knowledge practice in forest management?
- Is there indigenous forest management practice in your area?
- What indigenous forest management practices are existing in your area?
- What is your perception regarding the role of indigenous knowledge practice in forest management.
- What are the indigenous knowledge practice experiences of the community with forest management?
- What is the advantage of indigenous knowledge practice in forest management?
- How do you evaluate the sufficiency, sustainability, and effectiveness of indigenous knowledge practice in forest management?
- What are the challenges of indigenous knowledge practice in your area?
- Please, would you mention possible solutions to the factors that hinder indigenous knowledge practice in forest management in NadhiiGibeeWoreda?

Appendix 3. Observation checklist

- Is the existing indigenous knowledge practice used by the local community in forest management?
- How does the community Contribution to indigenous knowledge practice in forest management?
- How does the Determinant factors for not using these indigenous knowledge practices in forest management?

Appendix 4: Focus Group Discussion Guides

This study was conducted for a research purpose under the title "The Role of indigenous knowledge practice in Forest Management in NadhiiGibeeWoreda, Southwest Ethiopia".

Thus, the outcome of this research helped to assess the role of indigenous knowledge practice in forest management.

A. Focus Group Discussion Guide for Elders

- Is there indigenous forest management practice in your area?
- What indigenous forest management practices are existing in your area?
- Do you have a role in forest management in your community?
- What is your perception regarding the role of indigenous knowledge practice in forest management.
- What are the indigenous knowledge practice experiences of the community with forest management?
- What is the advantage of indigenous knowledge practice in forest management?
- What are the challenges of indigenous knowledge practice in your area?
- Please, would you mention possible solutions to the factors that hinder indigenous knowledge practice in forest management in NadhiiGibeeWoreda?
- **Focus Group Discussion Guides for Kebele Administrators**
- Is there indigenous forest management practice in your area?
- What indigenous forest management practices are existing in your area?
- What is the Woreda administration's role in forest management in the area?
- Are there government policies and programs for promoting indigenous knowledge practice in forest management?
- What opportunities exist for indigenous knowledge practice in Forest Management in your locality?

- How is the contribution of indigenous knowledge practice in forest management?
- How do you evaluate the sufficiency, sustainability, and effectiveness of indigenous knowledge practice in forest management?
- Do you think indigenous knowledge practice is more appropriate than scientific knowledge in forest management in your locality?
- What are the challenges of indigenous knowledge practice in your area?
- Please, would you mention possible solutions to the factors that hinder indigenous knowledge practice in forest management in Nadhii Gibee Woreda?