



Empowering Forest Conservation: Harnessing Indigenous Knowledge within Southern Ethiopia's Forest-Dependent Communities

Mando Doyo Choto¹, Rajesh Kumar²

¹Institute of Gada and Culture Studies, Department of Gada and Governance Studies Bule Hora University, Ethiopia

²Department of Governance and Development Studies, Hora University, Ethiopia

¹doyomando2017@gmail.com, ²gadsrajesh@gmail.com

How to cite this paper: M. D. Choto, R. Kumar, "Empowering Forest Conservation: Harnessing Indigenous Knowledge within Southern Ethiopia's Forest-Dependent Communities," *Journal of Management and Service Science (JMSS)*, Vol. 04, Iss. 01, S. No. 060, pp. 1-15, 2024.

<https://doi.org/10.54060/a2zjournals.jmss.59>

Received: 12/11/2023

Accepted: 11/03/2024

Online First: 25/04/2024

Published: 25/04/2024

Copyright © 2024 The Author(s).
This work is licensed under the
Creative Commons Attribution
International License (CC BY 4.0).
<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

This study was carried out in Kercha district, West Guji Zone, Oromia Regional State, Ethiopia, with the overarching goal of investigating Empowering Forest Conservation: Harnessing Indigenous Knowledge within Southern Ethiopia's Forest-Dependent Communities. The study used a qualitative research design with a descriptive technique due to the nature of the stated research problem, which was to explore people's experiences with conserving forests and behaviors. In this study 146 sample households were chosen from 2224 households through multi-stage selection approaches. Both primary and secondary data were utilized. The primary data were gathered through structured questionnaires, key informant interviews, and focus group discussions. This study found that the community used distinct indigenous knowledge in various activities. Farmers who illegally cut down forests believed that God cursed them, and Gada elders accused them of isolating from the society. Particularly trees culturally regarded among community like 'Wodessa' and religious respected trees like Oda also certain trees which community used for blessing. The belief and rules governing local communities to replace trees used for other domestic consumption or other purposes, as well as the usage of fire outside of their homes, are governed by societal beliefs and customs. Local communities across different agro-ecological zones have more experience planting trees before taking them down for a specific purpose. Aside from the best indigenous forest conservation practices and the presence of modern religion and culture, the expansion/increased demand of agricultural land market economies or livelihood systems, as well as investment activities, have an impact on indigenous forest conservation practice in studied areas. Based on the study's findings, the researchers advocate that community, government, and policymakers



integrate modern forest conservation with traditional forest conservation without compromising the culture and beliefs of the local community for forest conservation.

Keywords

Empowering Forest Conservation, Harnessing Indigenous Knowledge, Southern Ethiopia, Forest-Dependent Communities

1. Introduction

Growing political consciousness and action by Indigenous peoples have led to increased recognition of indigenous expertise and ideas, and scientists are increasingly finding value in working with local populations [1]. The value of quantitative knowledge for resource management has, however, received less emphasis. A sizeable fraction of the world's woods is community-managed, although little is known about their state or the specifics of their management. Indigenous approaches to managing natural resources are typically not documented or included in scientific forest management. Its possible impact on the environment of Africa has not received much attention. Very few studies have been done recently to illustrate how traditional knowledge contributes to biodiversity, addressing climate change, and preventing desertification.

Indigenous forest knowledge is still largely ignored in planning and management, and indigenous peoples are generally at best considered "just another stakeholder". Although local people in the management and conservation of forest resources have used indigenous forest management practices effectively, these practices are eroding, causing negative consequences for the welfare of the people and their forests. To stem the erosion of indigenous practices and instead stimulate, preserve, or improve their use, this study determines the socioeconomic factors that drive households' use of the practices in the management and conservation of plant species of non-wood forest products (NWFPs). The indigenous knowledge system in this study refers to a body of knowledge that has been generated, tested, and improved over time through human interactions with their supporting ecosystem, enhanced and safeguarded by norms, values, taboos, rituals, and sacredness, and that is interwoven with local politics and the spiritual and socio-economic characteristics of the people concerned[2].

It has been argued in several circles that indigenous knowledge has an important role to play in the development and emancipation of the African populace. This would be an illusion if this knowledge one major setback for local forest conservation approaches may be the governments of the Central African sub-region's failure to record the indigenous knowledge of the pygmies. The majority of the pygmies' practices are not recorded, and if immediate action is not taken to document them, the sub-region faces the danger of losing this valuable traditional knowledge. The populations who depend on forests reside either inside or close to the forest areas in the present study area. This village is among the original forest inhabitants who obtain their daily needs by selling the firewood they cut down from the forest. In three specific populations that depend on forests, the potential of forest resources has been drastically reduced by human settlements surrounding forest areas were not captured, processed, and disseminated to the relevant stakeholders [3]. Therefore, Forest coverage in study areas is declining due to agricultural expansion, settlement, charcoal making, and fuel wood gathering, and logging timber. Indigenous knowledge practices are crucial for forest conservation and management. However, there is no literature on traditional conservation practices among local forest dependents.

2. Description of the Study Area

This study has been conducted in the Kercha District West Guji Zone, Oromia Regional State, and Southern Ethiopia. It has an estimated area covering 550.90366 square kilometers. It is located at 471 km away from Addis Ababa, the capital city of Ethio-



pia within latitudes $5^{\circ}36'30''$ - $5^{\circ}53'00''$ N and longitudes $38^{\circ}21'00''$ - $38^{\circ}32'00''$ E. Birbirsa Kojowa, Bule Hora, Gedeo zone of South Nation Nationality and People (SNNP) and Malka Soda in the east, west, north and south directions, respectively, borders the study area. The district is located within an elevation of 1500 -3000 m.a.s.l. The geographical location of the study area is shown on the following figure (Fig. 1).

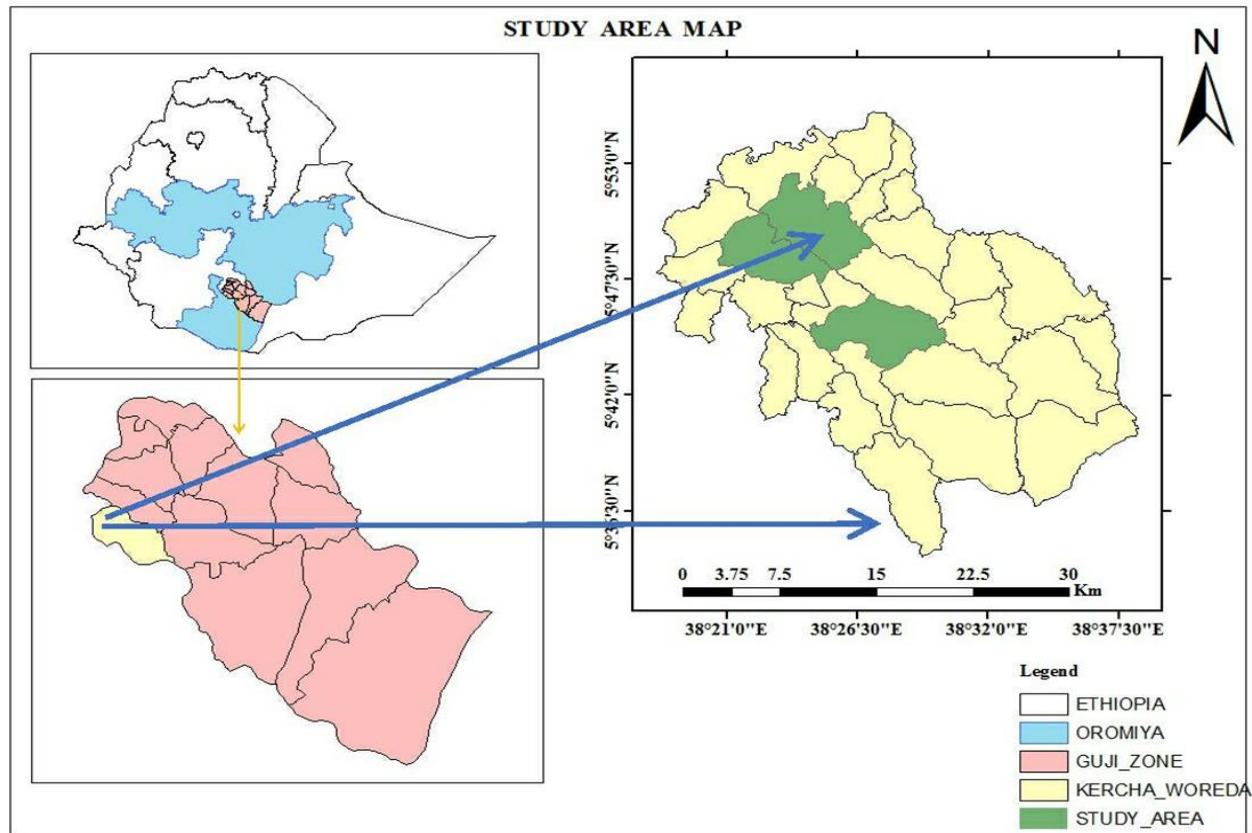


Figure 1. Map of the study area

2.1. Demography and Climatic Condition

According to CSA (2015) the estimated total population of the district was 272,494, of which 13, 6454 (males) and 13, 6040 (females) and the district has five urban and 23 rural Villages (kebeles). The district (Kercha) is characterized by a bimodal rainfall of which the high rainfall extending from August to October and the low rainfall from February to April. The mean annual temperature of the area ranges between 12°C and 18°C and the mean annual rainfall is 1700mm. The soils of the area are believed to be a relatively fertile and during good rains, farmers can harvest good yield even without fertilizer application.

3. Research Methods

The study has been targeted on indigenous Knowledge of forest dependent community in relation to forest conservation and the qualitative method will be used for data collection. Indigenous knowledge practices applied to forest management were collected via FGD with community adults and elders (Age range 30-120), who were considered knowledgeable about the Indigenous Knowledge of the community.

3.1. Data Collection Methods

In light of this, both primary data and secondary data was used. The primary data was collected through structured questionnaire, key informant information and focus group discussion. The secondary data was collected from books, journals, and project reports, published and unpublished materials. Qualitative methods involving interviews and focus group discussions with villagers were used to gather data. This study involved in-depth interviews with local elders, Gada leaders, government officials, forest management experts, and development agents to understand the promotion of indigenous knowledge of forest management.

3.2. Sampling procedures and sample size determination

The forest dependent communities were the basic sample unit/target population of this study. Multi-stages sampling procedures were used to select sample frames. In the first stage, out of nine rural districts of West Guji zone, Kercha district was selected purposively due to its large forest coverage. In the second stage, from the total of 23 rural kebeles of the district, 3 kebeles (Gurrachu Jaldo, Banqo Miciicaa and Banqo Guduba) were selected purposively based on their proximity and exposure to the forest. Finally, respondents were randomly sampled from the households in the kebeles using simple random sampling. Sample size determination was undertaken using Yamane's formula. As suggested by Yamane (1967), the size of a randomly selected sample for 95% confidence level and $p = 0.5$ (maximum variability in the population) should be:

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

Where, n is sample size; N is population size; and e is the level of precision.

Due to homogeneity of the population in terms of socio-economic characteristics, $\pm 8\%$ precision level (margin of allowable error) was used for sample selection to get the number of sample that can be effectively studied with the resource available for this study. As suggested by Israel (2012), the more homogeneous a population, the smaller the sample size required to obtain a given level of precision. [4] Accordingly, among 2224 total household heads, 146 respondents were sampled proportional to the household numbers in each Kebele. The researcher selected 46 informants from Banqo guduba, 52 informants from Banqo Miciicaa, and 48 informants from Gurachu Jaldo were the total sample size was 146.

Table 1. Population and sample size of the study

Kebeles Selected	Total no of House holds	*Sample HH %	**Sample size
Banqo Guduba	709	31.9	46
Banqo Miciicaa	785	35.30	52
Gurachu Jaldo	730	32.80	48
Total sample size	2224	100	146

*percentage (*Sample HH %) calculated by using (total population in individual kebele divided to total population of all sample KAs) x 100

**sample size for total HHs, calculated as (*Sample HH % x total sample size/100)

3.3. Data Analysis

To gather and analyse responses from FGD respondents, a qualitative technique was employed in the re-search. The study focused on indigenous knowledge and its role in forest conservation for communities that depend on forests. Utilizing explanatory data analysis, the association between determinants and participation was investigated. Conducting the interview



is data collection but recognizing the inconsistency between the sources is data analysis. Hence, data analysis began at the time of data collection. This led to the collection of new data by which the discrepancy was resolved. This means that data collection and analysis continuously interact.

4. Result and Discussion

Socio-Demographic Characteristics of Household

As shown in table 2, the total sample household respondents, about 134 or 91.78 % were male household heads. While 12 or 8.22% were female household heads. From this data, one can understand that majority of sample respondents on Contribution of Indigenous Knowledge on Forest conservation under selected Forest dependent community. There is also statistical difference between the in terms of the sex of the household. This is because male-headed households' have information than female headed households' this is due to traditional attitude; male head have more participation in different Indigenous Knowledge Forest conservation than females head.

Table 2. Sex composition of sample respondents

Item	Frequency	Percent
Male	134	91.78
Female	12	8.22

Source: survey results, 2023

4.1. Level of education of sample farmer

According to table 4 given below, educational levels of sample household significantly influence farmers' indigenous knowledge. According to the survey results, 45(30.82%) of the respondents were illiterate, while 52(35.62%) were primary school education. And the remains of 32(21.92%) and 17(11.64%) of respondents were secondary school and diploma/degree respectively. On the other hand, the majority of the forest conserver were 101 (69.18%) were literate and only 45(30.82%) were illiterate. This survey results shows that 69% and 31 % of the sample respondents were literate and illiterate respectively. Out of the total sample respondents who reported those use indigenous knowledge of forest conservation 69 % and 31 % were literate and illiterate respectively. The study results showed that education was positive and significantly related to indigenous knowledge.

Table 4. Level of education of sample farmer

Item	Frequency	Percent
Illiterate	45	30.82
Primary school	52	35.62
Secondary school	32	21.92
Diploma/degree	17	11.64
Total	146	100

Source: survey results, 2023

4.2. Indigenous Knowledge Practices for Forest for Forest Conservation under Forest Dependent Community

4.2.1. Belief and Laws in community in forest management

According to Table 5 below, out of total respondents of 146 about 126(86.3%) of respondents' reported that there are belief and law enacted by government and Gada leaders on forest conservation practice regarding unlawful cutting of forests. While about 20(13.7%) of respondents reported that there is no belief and laws regarding forest conservation practice. From the above data one can understand that majority of respondents reported that there is belief among local community as well as laws formulated by the government on illegal forest deforestation.

Table 5. Belief and laws on forest conservation

Item	Frequency	Percent
Yes	126	86.3
No	20	13.7

Source: survey results, 2023

According to focal group discussion with key informants there is local norms and beliefs in forest conservation as well as guiding principles settled by Gada leaders for types of forest that the community used for different purpose and cursed by Gada leader those illegal engaged in cutting forest. The survey results show that majority of sample respondents suggested that there is belief and laws of forest conservation in local community. According discussion conducted with local community traditional forest conservation at this moment is decline due to several factors. According to the ideas of these people due to increase in demand for cultivation land indigenous land management practice became decline particularly after 20years. This is mainly due to shifting from sedentary life style to agricultural(farming)life activity. The second factor is local community use forest for purpose of firewood and charcoal supplied for local market to generate income.

As my observation in different study kebeles, local communities have belief (cultural religion) for specific types of trees and they highly protect this tree from cutting. The communities highly respect and believe that if ones cut these trees their child will die or their family may be highly injured. According to Dessalegn (2013), local communities have laws and belief for forest conservation in their local surrounding.[5]

4.3. Conserve forest for its uses

According to data gathered from the respondents out of total sample respondents as shown in table no. 6, about 56(38.36%) of respondents were responded that forest is resource for them. While about 34(23.29%) of respondents were reported that forest is a human shelter and the rest of 29(19.86%) and 27(18.49%) were reported that forest as respected nature and wild life inhabitant. The study results show that the majority of sample respondents they consider are a resource.

Table 6. Local community conserve forest for its uses

Item	Frequency	Percent
As a Resource	56	38.36
Human shelter	34	23.29
Respected	29	19.86
Wildlife	27	18.49

Source: survey data, 2023

According focus group discussion had done with key informants' local community used forest as resource because they used

forest as source of income by selling form house construction and charcoal. While others used forest as means of medicinal plants and firewood and other local consumption. According to interview conducted with focus group discussion majority of community, conserve for its use. According to opinion of local community forest on their farm land or plot conserve for different purpose. Some of them conserve forest used for construction of shelter, for sale in future and shade for animals.

While others conserve forest for shade like for coffee and it self for consumption like Avocado and mango in recent time. Also the community conserves particular trees for respect/cultural belief like Oda, Wodessa and Birbirsa. As our observation in different kebeles selected for study, particularly Guracho Jaldo and Banko Guduba people use big trees for animal and crop shading in their farmland.

4.4. Cultures of society in forest conservation for Species of trees has valuable

According to Table 7 given below, out of total respondents of 146 about 113(77.4%) of respondents' re-ported that there are species of trees which communities gives culturally more values like which is in local language called Oda, is more value than other trees and while 33(22.6%) of respondents reported that there is no species of trees gives more value from local society.

From the above data one can understand that majority of respondents reported that there is tree species gives more value during conservation by local community. According to focal group discussion with key informants there is species of trees which community gives more value based on culturally.

Table 7. Cultures of society on forest conservation for species of tree

Item	Frequency	Percent
Yes	113	77.4
No	33	22.6
Total	146	100

Source: survey data, 2023

According to interview conducted with focal group discussion majority of community, conserve for its use. According to opinion of local community forest on their farmland or plot, conserve for different purpose. Some of them conserve forest used for construction of shelter, for sale in future and shade for animals. While others conserve forest for shade like for coffee and it self for consumption like Avocado and mango in recent time. Also the community conserve particular trees for respect/cultural belief like Oda, Wodessa and Birbirsa. Our other key informants (Birra, 20 November 2023; Jiloo, 15 November 2023 and Dullacha, 21 November 2023) have indicated that all plants are useful and together give beauty to the land even though they differ in their uses. Consequently, the care given to them depends on their uses. However, based on their growth and their uses for human beings and in increasing the fertility of the soil, some trees are more useful than the others. Some trees like Heexoo/Koosoo (*Hagenia Abyssinia*), Waddeessa (*Cordia abyssinica*), Birbirsa (*Podocarpus falcatus*), Hindheessa (*Teclea nobilis*), Gololcha (in Afaan Oromo), Gudubaa (*Polyscias fulva*), and Baddeessa (*Syzngium gaertn*) are useful for construction and furniture. Especially Hindheessa and Gololcha which are very strong and durable and can pass from generation to generation are more preferable for construction. Soft trees like *Bakkaniisa* in local language (*Croton macrostachyus*), *muka hurraa hurraa* (soft wood) are useful for increasing the fertility of the soil (Birra, 20 November 2023).

The idea that says' 'trees are trees" seems to show the society's holistic outlook toward trees, that all trees are useful. On the other hand, they give care for different species of trees to use the trees (forest) for different purposes (for multiple reasons).With this regard, some plant species in locally commonly known as Hiddii (*Solanium marginata*) and Eebicha (*Vernonia galamenis*), serve as good indigenous healers (locally called *cidheessa*) sometimes called as 'indigenous nurses'



or medicines (Baatii, 17 November 2023). Hence, different species of plants are conserved for the particular uses they have.

The species selective conservation of trees by the Oromo based on their uses becomes vivid when we consider the attention and care given to Odaa in Oromo land. In relation to this, Birra has stated the following: The Oromo proverb about Odaa that we learned from our fathers says that Odaa has three things on it. It has water under it; fruits on its tips and a grey stem. It has the complexion of Eebicha (*Vernonia galamensis*), a tree whose leaves cattle feed on during dry season. Eebicha of the cattle owners has a complexion of a married man. A married man is believed to have a good complexion in Guji as he is given care by his wife. Perhaps it was due to this that Odaa was selected from among the trees and the general assembly of Gadaa (Gumii Bokkoo) is conducted under it. It is under it that judgments are carried out and decisions are made; one becomes Abbaa Gadaa; one becomes expert or hayyuu; and one becomes jaldhaaba (a military or police in Gadaa). It is said that it is the one who attended the meetings under Odaa that has news about laws as they are told to the attendants there. Therefore, Odaa buluu is a special ceremony where the yaa'a gadaa (gada practitioners) are expected to spend the night. That is why it is said that „it is the one who passed his time under Odaa who has oduu (news)“ (Birra 20 November 2023).

As stated by Buno, Odaa has very large branches and broad leaves. As a result, the Gadaa assembly, arbitration and decisions are made under a tree. Consequently, it is associated with peace. It is even believed that harmful animals like snakes, baboons and monkeys do not live on it. It is also believed that lightening does not affect Odaa. But it requires careful and longtime observation to prove (evidence) whether this belief is true or not. In general, Odaa is considered as a symbol of peace and development. That is why “the Oromo often conduct meetings, worship their Waaqaa and bless one another under it” (Birra, 17 November 2023).

As it is practically observed, natural resources including forests have been under great destruction due to a number of factors that this study will deal with later on. To revitalize the tradition of conserving forests, Oromia Forest and Wildlife Enterprise, insisted that, “the enterprise has been working hard in the area of conservation and it is preparing the seedlings of Odaa to be distributed to the people so that they plant and grow it in their fields”. He also added that his organization “is trying to make Odaa a national tree so that it will become popular and every citizen will give care for it.” Moreover, fruit bearing plants that are used for honey production and trees which serve for hanging beehives on, medicinal plants, plants which serve as wild food are given special protection. Fruit and seed bearing plants, not only those used for food and honey production but also others are given care by the Guji. This seems to be associated with indigenous knowledge of Guji Oromo to maintain plants by giving care for their reproduction, (Barii & Dullacha, 21 November 2023). Giving care for fruit and seed bearing plants is common in many parts of Oromia. Similar study, in West Shewa, Tulluu (2012) stated that “in our tradition we do not allow our animals to graze in the forest mainly during their flowering season in order not to thwart (Prevent) their reproduction but we do so during dry season when there are fewer flowers. Giving care for flowering and seed bearing plants is also common in Wallaggaa. My observation of *Hagenia abyssinica* (Hexxoo) with beautiful hairy flowers, which the local people use as medicine on intensively agricultural lands of along Kercha districts in Guji, where it is difficult to get natural trees, appears to be a good witness for species selective conservation of trees/forests in the area. My informants, (Uturaa, Buno, December 2023; Boru, 25 November 2023 and Diidoo, 31 December 20 2023) were able to identify the species of trees in the forests by their names and uses which I was not able to record for their being numerous. This would help in the use of the plants for their appropriate purposes and in the attempt to recover the destructed forests with indigenous species.

As interviewed key informants, proper use of Fire in local community, particularly Guji Oromo's culture, careless setting of fire to forests is prohibited. Even when it becomes necessary to use fire as in the case of preparing farm land, buffer zones are first prepared so that the fire will not go beyond the limit of the needed area. The use of fire in forests was more common in grasslands than in high forests as the purpose was to initiate the growth of new grasses, as interview with (Barii & Dullacha, 21 November 2023). In the past, when the fire was used to burn grasslands, even though you may not have used buffer zone,



the fire would not enter into the forest since the land in the forest was wet (rainy). It is recently that the land has become drier and drier. According to other key informant idea, the dryness of the land could be attributed to the increase in the number of population, the decline in forest cover and the amount of rainfall” (Boru, 29 November 2023).

According interview conducted with Birra (on 17 November 2023) and Jilo (21 November 2023) with regards to the use of fire in harvesting honey, have pointed out that honey collection is not new to their people. The people never make careless use of fire. Honey harvesters carry fire in one of their hands and water in the other. After using fire for harvesting honey, they do not allow any bit of the fire to fall on the ground and burn the forest; they extinguish it with the water. However, the proper use of fire by the local community, particularly Guji indicated above could help to overcome this problem. The proper use of fire by the people of Guji is reflected in other activities. Kitessa (2007) study indicated that peoples respect different trees for cultural purpose or for religious matter and those trees have special consideration from local communities and get protection than other types of trees .[6]

4.5. Indigenous Knowledge Practices Change and Continuing for Forest Conservation under Forest Dependent Community

According to Table 8 below, out of total respondents of 146 about 53(36.3%) of respondents’ reported that they conserve forest traditionally for its product, while about 69(47.26%) of respondents’ reported that they conserve forest traditionally for its importance as shade for human, animals and crops and the remain of 5(3.42%) of respondents’ reported that they conserve forest traditionally for religion purpose and the rest of 8(5.48%) and 11(7.53%) of respondents’ reported that they conserve forest traditionally for its cultural aspects and for other purposes. The survey results indicated that majority of respondents conserve forest traditional for two major purposes for its product as well as in some place they conserve forest for shade for human, animals and for crops.

Table 8. Uses of forest

Item	Frequency	Percent
Source for forest related resource	53	36.3
for shade for human, animals and crops	69	47.26
For medicinal purpose	5	3.42
For cultural aspects	8	5.48
Other	11	7.53

Source: Survey results 2023

As key informant opinion, forests are the sources of wood for construction, fuel, and household furniture. Traditionally the local communities often use dead trees for firewood and branches for different construction purposes including part of their houses, for kraal; and big trees mainly for poles in constructing houses and for making furniture. Even the wooden scepter (bokkuu) handled by the Abbaa Gadaa is made of branches of a tree (Birra 17 November 2023). However, when it is said that big trees are respected as elders in local communities it does not mean that all trees are not totally cut. Concerning this, Birra(17 November 2023), an elderly of 70 years of age explained: From the above quotation (passage) it is possible to infer that the local community particularly Guji Oromo like big trees very much. On the other hand, it is an indication of how the big trees are used by the Guji Oromo for making boxes and other furniture. However, the data obtained from informants showed that the Guji are selective in the use of trees. That is why elders argue that it is not the culture of Guji Oromo to cut growing and big trees (Jiloo; Birra; Galchu & Bali, interviewed in November 2023). Sometimes when it becomes necessity to cut big or

growing trees, the Guji will show their condolence by putting green grass on the remaining parts of the trees wishing them quick recuperation(recovery) (Jaarraa and Barii, 21 November 2023).

According to interviewed, key informants forests serve as shades for animals, humans and the undergrowth. They “shade the land and serve as a shelter for cattle during dry season,” (Loko, 05 October 2023; Liban, 1 October 2023). The local communities tend their cattle in the forest during winter and leave out during summer season. Accordingly, forests under which cattle shelter and travel to drink water are protected. Animals also shelter under big trees when there is heavy rain. The use of trees/forests as shades for cattle and the care given to them for this purpose was repeatedly mentioned by the informants of this study. Other key informant of this study has indicated, “Forests are also useful for humans to protect themselves from blazing sun, heavy rain and strong wind (Boru, 17 November 2023).” It is common that people take rest under the shades of trees when they are on journey or on work during dry season and shelter under big trees to protect themselves from heavy rain during rainy seasons. Forests also divert or weaken strong winds (cyclone) from demolishing houses or damaging crops and he states that the use of Odaa as a hall in Gadaa assembly is one of the unique examples of the use of trees or forests as shades for our people. According to Kiteessa (2007) and Dasalegn (2013) study, this is similar in other part of Oromia as indicated in Western Oromia and East Guji the people leave trees even in agricultural fields under which cattle shelter during dry season. [7]

According to the local elders, forests are sources of traditional medicinal plants like *Vernonia galamensis*, a kind of a flowering tree with bitter leaves and bark and *Hagenia abyssinica*, ((Birra, 17 November 2023, Buno, 16 November 2023; Didoo, 31 November, 2011) which serve as medicines. Moreover, a number of flowers, fruits and wild food are in the forests.

The flowering *Schefflera abyssinica*), *Syngium gaertn* and others are useful for harvesting honey as the case in kercha forests and many areas in Guji. Wild fruits which serve as food for animals and humans like *Syngium gaertn* and *Qilxa* (*Ficus vasta*) are also there (field notes). There are a number of wild vegetables, fruits and roots that serve as food for human beings and animals in the forests. The vegetables include *Hadhawa*, *Raafuu*, *Laleessa*, *Doobbii* and others which are mostly cooked and consumed with food made of maize, wheat and barley. They are believed to give good flavor and nutrients. There are also fruits like *Baddeessaa*, *Goraa*, *Meexxii*, *Hadheessa*, *Hudhaa*, *Hagamsa*, *Waddeessa*, *Qlaatii*, *Bururii* and others which are eaten by human beings and animals. Roots such as *Maroda*, *Burii*, *Silinga*, *Kurtee*, *Kilichuu* are mostly consumed during drought seasons when there shortage food crops. Forests are also the sources of water which is very necessary for living things (Buno, 16 November 2023). They are also the sources of grasses for cattle. Concerning the uses of forests and why to conserve them, *Jiloo* (15 November 2023) stated that, “we know that forests are lives; if there are no forests, no rain, no grass, no cattle, no sheep, no goat, no honey and no crop production.”

4.6. Tree species culturally protected

According to Table 9 below, out of total respondents of 146 about 100 (68.49%) of respondents’ reported that there are tree species culturally protected by community particularly in Guji Oromo tree species like *Wodessa*, *Oda* and *Dambi* (*Cordia Africana* typically respected due to belief system that consider it as culturally respected/protected. While about 46(31.61%) of respondents’ reported that there is no specific trees culturally protected by community but sometimes there is belief of community which gives special consideration as a belief. The survey results showed that majority of respondents’ reported that there are trees culturally protected. Because modern religion protected and respecting of trees which is commonly known as *Oda*, *wanza* and became decline from time to time.



Table 9. Tree species culturally protected

Item	Frequency	Percent
Yes	100	68.50
No	33	31.50

Source: sample survey, 2023

According to interview conducted with focus group discussion all trees are important but some trees are special in Guji Oromo Gada system. The diversified cultural values of trees are attached to many local stories, belief systems myths, narratives and expressions. As of Opinion of these local people some native trees like Oda trees have special consideration among local community and used as religion practice. The tress like Wodessa, Uraga, Mi'eessa, Abbayi and Hagana trees have also special consideration from Guji Oromo, for example there is prayer related to trees locally called 'Dambii'. The Local community pray their God by name of Dambi as' "*Dambii dagalee nugodhii waan daga dhufee nu baasi*" This means "let waqa keep us together like tying dambi and protect us from accidents" According Jemjem and Dhadacha (2011).findings indicate that local community have respect tree species culturally in different parts of country particularly in Guji zone Community pray their god by name of trees.

Factors Affecting Indigenous Knowledge Practices in Relation to Forest

There are a number of factors that have hindered the progress of indigenous knowledge in the world. As the factors are so complex and intertwined, it is very difficult to form distinct categories for them. Likewise, factors that have been hindering the development and use of indigenous knowledge of the Guji Oromo on forest conservation are so complex. They are mainly related to external factors, the influence of other groups on Guji people. Based on the information obtained through interview, observation in the fields and documentary analysis, I have presented the factors forming some categories as follows even though the categories may not be exclusive.

4.7. Agricultural land expansion

According to Table 10 below, out of total respondents of 146 about 99 (36.3%) of respondents' reported that the high demand for expansion of agricultural land have direct impact on indigenous knowledge. While about 47(47.26%) of respondents' reported that expansion of agricultural land have no impacts on indigenous knowledge of forest conservation. The survey results showed that majority of respondents' high demand for agricultural land expansion affects indigenous knowledge of forest conservation. Because due to expansion of this farmland culturally protected trees which is commonly known as waza in local language deforested.

Table 10. Impacts of Expansion of farmland on IK forest conservation

Item	Frequency	Percent
Yes	99	67.8
No	47	32.2

Source: survey result of 2023

According to interview conducted with focus group discussion majority of community believe that transforming from pastoralist ways of life to farming ways of life and increasing high demand for farming land deteriorating indigenous forest conservation in study area. Not only increasing high demand for high demand for farming land but also public and private in-



vestment plays a significant role in affecting indigenous forest conservation practice. Particularly in study area due to investment expansion on agriculture and coffee plantation huge forest were destroyed. In addition due to expansion of infrastructure school, health post and rural road huge forest were destroyed.

The resettlement of crop producing newcomers in the area has greatly influenced the economic activities of local community, Guji in which many indigenous people are now transforming to crop production. This has also influenced their indigenous practice of conserving forests tied with cattle herding and small scale farming. With the increase in farming, the destruction of forests has also increased. In areas where there is more cereal crop production some Kebeles like Gurachu Jaldo there is less forest cover. The destruction of forests observed in many areas where farm land was highly expanded and mainly associated with agricultural activities like the cultivation of coffee, inset, maize and cereal crops such as barely, teff and wheat.

Concerning the economic activities and their impacts on forests around Birra (17 November 2023) indicated that the government encourages us to be farmers but our land is not suitable for crop production. I do not know the criteria with which they classified us as farmers. As we have observed, even though I am not an agriculturalist by profession, the area is dry, infertile and does not seem suitable for crop production. The few attempts had done in promoting farming seem to be further worsening the land to the extent that, in the future, even getting the grazing land will become very difficult.

The interview with elders at Banqo Micica and Gurachu Jaldo Kebele also supports the observation of Oba that the large land of the area and some parts of the kercha woreda seem suitable for sustainable agriculture particularly cereal crop production due to sufficient rainfall. The change in the land holding system that restricts the mobility of people has forced them to engage in agriculture, preferably in coffee production, as less productivity of cereal crops is noticed through experience.

Hence, this requires a thorough study by experts to identify an economic activity which is friendlier to that particular environment and more profitable for the people of the area. In my view, encouraging the people to move toward agriculture particularly cereal crop production may bring more damage to the fragile environment of the area with little benefit to the local community. The forest and wildlife enterprise of the area also needs to work more on how to rehabilitate the vegetation of the area before the land remains bare. The conservation activities should not be limited to government protected forests.

They have to involve patches of forests on community lands. I was informed that the enterprise has begun teaching the people to plant trees even in their own fields. But it has to work hard and bring observable changes on the ground.

4.8. Pattern of Settlement in Relation to Forests

The pattern of settlement of people influences the conservation of forests. The local often do not settle in forests, but outside forests. In my observation of surrounding forest (19 November 2023), I found dwellings and very minor cultivation of maize, and inset (Musa inset) on the sides of the natural forests of the highlands of kercha forest, where the settlers are mainly the particularly Guji. In the middle and at the foot of highlands, around Town, the forest seems thick seen horizontally. However, much of the under growths were cleared and replaced by coffee and inset (Musa inset) (field notes). This has a great impact on the biodiversity of the forest. According to the information obtained from the inhabitants of the area (Gelagile, Jego and Wariso, 19 November 2023), many of the inhabitants were from the Southern Nations, Nationalities and Peoples Regional State, mainly the Gedeo. Here, there was a conflict between the officials of the Gedeo-Guji Forest and Wildlife Enterprise and the inhabitants on the ownership of the forestland in which ripe coffee in the forest was cleared, an act for which the inhabitants blame the Gedeo-Guji Forest and Wildlife Enterprise for the loss of the coffee. Likewise, the Forest and Wildlife Enterprise blames the inhabitants for destroying the natural forests for coffee and inset production by encroaching on protected state forests. Identifying the true cause of the problem is beyond the scope of this research and was handled by the court.

However, in my observation in the forest, I found the remaining part of the cleared coffee which the inhabitants showed

me within the boundary of the protected forests. Anyhow, what is important, here, is in the areas where the Gedeo have settled, coffee and enset production is expanding in the forest and is affecting the biodiversity of the area. On the other hand, where the majority is Gedeo and Guji Oromo, there is relatively less penetration into the dense natural forest as many of them have settled 145 outside the forests. “Traditionally, the Guji do not settle in forests. They use forests as shades and grazing areas for their cattle during dry season; and those who do not have cattle need not settle in forests” (Buno, 16 November 2023). In relation to this, Dessalegn (2013) confirms that cattle come to the middle altitude areas in search of grass and water during dry season and go back to the lowlands during wet seasons. The information obtained from the study informants has shown that the rotational use of forests for cattle herding, as shades and sources of water and grass for dry season, and the settlement pattern of the society seem to have contributed to a relatively better conservation of forests by the Guji (Liban, 1 November 2023; Birra, 20 November 2023).

4.9. Modern Cultural and Religion

According to given below Table no.11, out of total respondents of 146 about 106(72.6%) of respondents’ reported that the modern cultures and religion have direct impact on indigenous knowledge according to opinion of local elders the local community respect specific tree species like Oda and Dambi but due to modern religion the respecting of those trees become decline. While about 40(27.4%) of respondents’ reported that modern cultures and religion have no impacts on indigenous knowledge of forest conservation. The survey results showed that majority of respondents’ reported that modern cultures and religion have significant impacts on indigenous knowledge of forest conservation. Because modern religion protected and respected trees which are commonly known as Oda, wanza and became decline from time to time.

Table 11. Impacts of modern cultures and religion

Item	Frequency	Percent
Yes	106	72.60
No	40	27.40

Source: Survey results 2023

According to interview conducted with focus group discussion majority of community believe that expansion and wide spread of modern cultures like Orthodox, protestant and other have significantly affect the indigenous knowledge of forest conservation practice. According to opinion of local community traditional belief and respecting of particular trees become absent among those protestant believers and those taken this religion in very recent period. Also they don’t give care for trees people give consideration those trees listed above like *Oda*, *Wodessa*, *Birbirsa* and *Dambi*. Due to this conservation made by local community for those forests before appearance of the modern religion become decline and in recent time culturally respected trees used as means of finance by local community those taken these modern religions rather than conserving they used for firewood and charcoal. And at current time this practice widespread not only in study areas but also in other parts of the zone. According to interview conducted by (Birra, 21 November 2023) the consequent strengthening of the emperors’ rules and the suppressive systems they followed have continued to bring a further debilitating effect on the customary governance of the people. The Ethiopian regimes’ rule from its very inception has “outlawed the Gadaa governance and imposed an autocratic rule on the people. This was followed by immigration of people from the north and central parts of Ethiopia. These people are with different cultures including mainly those who do not abide by the rule of Gadaa.



4.10. Expansion of investment and Infrastructure

As per total respondents of 146 about 109(74.66%) of respondents' reported that the expansion of investment and infrastructure have direct impact on indigenous knowledge. According to opinion of local elders due to expansion of investment like coffee processing industry, nursery site and exploitation of minerals huge forest were destroyed. In addition to this due to expansion of public schools, hospitals, rural road and health station vast forest coverage area became deteriorated. While about 37(25.34%) of respondents' re-reported that public and expansion of infrastructure have no impacts on indigenous knowledge of forest conservation. The survey results showed that majority of respondents' reported that expansion of investment and infrastructures have significant impacts on indigenous knowledge of forest conservation. According to interview conducted with focus group discussion majority of community believe that transforming from pastoralist ways of life to farming ways of life and increasing high demand for farming land deteriorating indigenous forest conservation in study area.

5. Conclusions

This study explores the reasons behind my father's punishment for cutting a young tree and the importance of conserving forests in Oromo communities. The indigenous knowledge of forests and their conservation is based on the utilitarian value attached to forests and the belief system of the society. The Oromo people believe that misusing creations brings punishment from the creator, and the indigenous norms contribute to the conservation of forests. The study found that the indigenous knowledge of communities mainly focuses on maintaining existing forests, which may not encourage the cutting down of aged trees and replacing them with young ones. However, the use of indigenous knowledge in modern conservation practices is low, and communities are not able to use their rich indigenous knowledge and natural resources for development. This is due to the failure to integrate the Gadaa System, which has great potential in democracy, natural resource conservation, and conflict resolution, with limited roles in ritual, ceremonial, and arbitrational roles.

5.1. Recommendations

Firstly, Study recommends the use of the slogan "Do not cut the tree" to conserve forests and the government's awareness of their importance for human life. It also highlights the decline of Gadaa, a traditional Ethiopian forest, and the need for a more inclusive curriculum. The research suggests a coordinated study involving indigenous people, researchers, policymakers, curriculum developers, NGOs, and other community organizations to identify and document indigenous knowledge on forest conservation. The study also highlights the need for a more comprehensive approach to integrating indigenous knowledge into the curriculum and daily activities. Secondly this study also suggests developing an independent indigenous knowledge subject at different grade levels to incorporate indigenous knowledge content. It also emphasizes the importance of indigenous species of trees in conservation efforts. Investment activities should focus on sustainable use of natural resources and the livelihoods of the indigenous people.

Finally, the study concludes that implementing these recommendations requires commitment, dedication, and cooperation from administrators, policy makers, indigenous people, and educators.

References

- [1.] H. Henry, "Arctic Science: The Local Perspective," *Nature*, vol. 478, no. 7368, pp. 182–183, 2011.
- [2.] Z. K. Khamis, "Integration of the indigenous knowledge and scientific systems for conservation of biodiversity: significances of their different worldviews and their win-loss relationship," *Journal of Sustainable Development in Africa*, vol. 14, no. 6, pp. 160–174, 2012.

- [3.] N. A. Check, "Indigenous Forest Conservation Methods: The case of the pygmy forest conservation technique", 2011.
- [4.] G. Israel, "Determining Sample Size" *In: PEOD6 (eds.)*, pp. 1-4, 2012.
- [5.] F. Desalegn, Indigenous Knowledge of Oromo on Conservation of Forests and its Implications to Curriculum Development: the Case of the Guji Oromo. 2013.
- [6.] K. Hundera, "Traditional forest management practices in Jimma zone, south west Ethiopia," *Ethiop. J. Educ. Sci.*, vol. 2, no. 2, 2008.
- [7.] F. Desalegn, Indigenous Knowledge of Oromo on Conservation of Forests and its Implications to Curriculum Development: the Case of the Guji Oromo. 2013.

