COLLEGE OF SOCIAL SCIENCES AND HUMANITIES, SCHOOL OF GRADUATE STUDIES, DEPARTMENT OF ANTHROPOLOGY

THE ROLE OF INDIGENOUS KNOWLEDGE AND PRACTICES IN NATURAL RESOURCE MANAGEMENT: A CASE OF MARAK'A WOREDA, DAWURO ZONE, SOUTH WEST ETHIOPIA PEOPLES REGION.

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A THESIS SUBMITTED TO DEPARTMENT OF ANTHROPOLOGY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ART IN SOCIAL ANTHROPOLOGY

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DECLARATION

I, the undersigned, declare that this is my original work, has never been presented in this or any other university, and to the best of my knowledge and belief, this thesis contains no material previously published by any other person except where proper citation and due acknowledgement have been made. I do further affirm that this thesis has not been presented or submitted as part of the requirements of any other academic degree or publication, in English or in any other language.

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APPROVAL SHEET 1 OF THE THESIS

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This is to certify that the thesis entitled ***"*****The Role of Indigenous Knowledge and Practices in Natural Resource Management: A Case of Marak'a Woreda, Dawuro Zone, South West Ethiopia Peoples Region."** submitted in partial fulfillment of the requirements for the degree of **Master's** with specialization in Social Anthropology**,** the Graduate Program of the School of Anthropology, and has been carried out by Amanuel Alkasa I.D.No GPSoAnR/0002/14 under my supervision. Therefore I recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the department.

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Glossary of Local Terms

Adilliya: Spiring season

Balgguwa: Rainy season

Boniya: Dry season

C'eggenna: Supposedly unlucky dark days occurring between new moon and waning moon

Daana: Traditional political administrative tittle following Guuda

Dawuro: Refers to both the people and the land of Dawuro ethnic group

Eek'a: Ritual ceremony in which sacrifices are offered

Erasha: Traditional political administrative title responsible to rule sub region under the kingship in Dawuro locality

Gad'a: Low altitude land

Gayttiya: Means divine power in the local community's belief (rain maker or rain stopper)

Gezziyaa/Geyyuwaa: A traditional place of ceremony for elderly women

Geziya: High altitude land

Guuda: Traditional political administrative tittle following Eraasha

Kaashsha: Traditional home garden of witch doctors where 'spirits dwell'

S'oossa/Godaa: Local name of God

Sherechuwa/ Alaama: A traditional belief leader or witchdoctor

Tokibe'a: New Year celebration of the Dawuro people

Wodilechuwaa: Mid altitude land

Woraba: Traditional political administrative tittle following Kaati/ king)

Abbreviation and Acronyms

ATR	Africa traditional beliefs
CBNRM	Community Based Natural Resource Management
Das	Development Agents
DZA	Dawuro zone Administration
DZFED	Dawuro zone Finance and Economic Development
FGDs	Focus Group Discussion
IIED	International Institute for Environment and Development
IK	Indigenous Knowledge
MWARMD	Marak'a Woreda Agricultural Resource Management Development
NGOs	Non-Governmental Organizations
NRM	Natural Resource Management
SWEPR	South Western Ethiopia Peoples Region
UN	United Nations

Abstract

The aim of this study was to investigate the indigenous knowledge and practices on natural resource management in Marak'a woreda. The objective of this study was to investigate the indigenous knowledge and practices on natural resource management in Marak'a woreda. The study was conducted with the utilization of a descriptive type of qualitative anthropological research method by using both primary and secondary data sources with appropriate data collection methods such as interview, FGD, observation, and document review. Generally, the major finding of the study shows the use of a wide range of indigenous knowledge and practices in natural resource management, including in the human and spiritual worlds, as well as biological and physical attributes that contribute to sustainable resource management. The role of humans in this case is to protect and sustain the equilibrium of the systems and to abide by the established distance and respect for every relationship. Moreover, the dif erent indigenous knowledge and practices have a function in adapting to climate change. Soil erosion, water scarcity, and loss of plant cover were the environmental problems of the study. Local people have been employing various indigenous practices to solve the problems. These local people solve environmental problems people of the study area have their own traditional ecological knowledge that has sustained the natural resources to present. The customary laws of practices have played a great role in natural resource conservation. Different indigenous practices in soil and water conservation, as well as plant management, of people in the area were identified. Traditional beliefs also contributed to natural resource conservation, besides their main purpose in the area. The study asserted that farmers have valuable knowledge of natural resource conservation in the area; however, their practice needs some kind of improvement for sustainability. Moreover, the influencing challenges for the practice are both environmental and socio-economic factors. Such challenges are the expansion of farmland, poverty, the weakening of traditional governance, and the influence of formal education and Christianity. It is concluded that deep-rooted indigenous conservation needs to be assured to sustain resource use. Finally, based on the findings, recommendations are forwarded.

Key words

Indigenous knowledge, practices, rituals, soil, water, and plant/tree Conservation

CHAPTER ONE: INTRODUCTION

1.1. Background of the study

It is evident people were living in a world whose natural balance is greatly affected by human activities. As a result, the deterioration of natural resources and the very existence of human beings which depend on them have become the crucial agenda of the governments these days (Singh et al., 2022). Even though this issue has been raised by environmentalists for a long time, it is after its consequences have been felt in climate change (increase in global temperature, unseasonable rainfall, destructive storms, flood, drought, famine, glacial melting, to mention a few) that governments seem to have shown willingness to deal with the issue (Maurya, 2020 *et al*., Wassie, 2020).

The global sphere is experiencing a decline in a variety of natural resources. The problems of forest destruction, land degradation, water scarcity, and the decline in the variety and number of different wild animals are getting worse than ever. For example, Summit (2014), studies that forests support up to 80% of Earth's biodiversity and play a vital role in maintaining the climate by sequestering carbon naturally. However, an average of 13 million hectares of forest is lost each year, often with devastating impacts on communities and indigenous peoples.

According to Aladejare (2022), Africa's forests are in grave danger of degradation. Similarly, in Ethiopia, Mengstu *et al*., (2022), study the forests in the Kaffa declined from 46.9% of the original cover in 1986 to 31.5% in 2019. It looks very difficult and, with other natural resources, the situation does not seem different. Since the natural environment has deteriorated due in part to human activity, there are more risks than there were in the past, which justifies the need for environmental conservation. According to (Adelman, 2020), his study shows modernism's preference for itself and the marginalization of indigenous cultures are both contributing factors to the current environmental crisis.

Some literature argues that indigenous knowledge have a positive impact on the environment in which they are practiced. For example (Sillitoe, 2018), study in indigenous

people areas does not have any influence on either the development or growth of natural resources or on deteriorations of nature. Therefore, it is asserted that indigenous human culture can play a significant part in preventing environmental from destruction. One can further argue that the neglect of indigenous knowledge and practices can be one of the reasons for the degradation of the natural environment (Piacentini 1993). Based on this argument, this study tries to investigate the indigenous knowledge and practices of the Dawuro in the case of Marak'a woreda and their general attitude on the environment.

According to (Adimasu *et al*., 2013), the Dawuro people have a strong relationship with their natural environment. They possess good experience, knowledge, and take care of their natural resources. In the Dawuro area, people have continued to maintain some of their indigenous practices, like conservation of biodiversity, ritual relies upon and perform the sacrifices, healings, harvest rituals, and fire ceremonies that symbolize the past and future, rainmaking and rain stopping rituals (*Gayttiya*), women thanksgiving rituals (*Geziya*), protecting sacred groves and careful use of manure as fertilizer for soil fertility. For many years, the Dawuro indigenous people held the community responsible for the protection and well-being of the land, plants, water, and wildlife. So, this and other similar practices and people's knowledge will be the focus of this study.

1.2. Statement of the problem

Despite various efforts like terracing, tree planting, cut-off drains, check dams and canals, etc., intended to lessen or prevent the environmental crisis, the threat is expanding. Many scholars have argued that modern scientific approaches are essential to healing the environment(Wenz, 1966, Piacentini, 1993). This approach is discouraging indigenous knowledge and practices; even indigenous people have made a very significant contribution to the destruction of natural resources. Modren approaches are irrational and have even negatively affected the environment (Piacentini, 1993). However, on the contrary, some studies indicate the importance of indigenous knowledge and practices for environmental protection (Bizuayehu, 2021; Orr, 2015).

The little attention given to indigenous knowledge and practices could be attributed to a lack of awareness of how they contribute to environmental conservation. The study by (Tadesse *et al*., 2017) on the forest users' level of participation in a participatory forest management program in southwestern Ethiopia, in the case of Gebradima, a community forest, indicated that people are not encouraged to use their traditional ways of life to participate in forest management (conservation). This is clearly shows; it seems that the role of indigenous people in environmental protection is not given much attention.

Natural resource conservation and management strategies in third-world countries are under the influence of politically and economically powerful western developed countries. As a result, their official propaganda portrays indigenous knowledge as backward or out of date and promotes one dominant national culture and language at the expense of other minority cultures (Grenier 1998). This clearly indicates that the indigenous knowledge and practices of local people are ignored, and they are considered passive receivers of the imposed conservation strategies from developed countries. Similarly, in Ethiopia, some scholars argue that indigenous knowledge should be blended with scientific strategies sequentially to solve problems related to natural resource management and conservation (Tizita E.E., 2016, Desalegn, 2013).

There are several indigenous knowledge and practices that help people protect the environment in Dawuro, Marak'a district. In the area, the contribution of indigenous knowledge of natural resource conservation constitutes mostly norms, values, ethics, and taboos. These norms and values have been institutionalized as customary laws and conventions within the community. However, the contribution of indigenous knowledge and practices in the natural resource management of the area is being left out. This indigenous knowledge in the study area even seems to have not been given weight or significant attention, so it is being declined and even disappeared.

In the area indigenous knowledge and practices in natural resource management are in some way endangered by the emergence of modern world systems and the impact of globalization, formal education, and Christianization have contributed to reversing the long-established cultural traditions and underpinning philosophical principles of lives and existence. Hence,

the introduction of alien culture into the cultural traditions of the indigenous peoples has changed the entire aspects of their lives, even though it is not absolute. It seems the less attention given to valuable indigenous knowledge and the value of the society that fathers and forefathers have been using for a long time seems to have contributed to the destruction of natural resources including land, water, plants, and wildlife. That I feels that there is a gap that needs in-depth investigation about the current status of natural resource management, conservation, and the role of the local indigenous institutions in the management of natural resources in the study area.

In addition, the use of indigenous knowledge and practices for managing natural resources and the awareness of the community, limited scientific research on indigenous knowledge, and poor use of systems of indigenous knowledge and practices in the study area need research attention. In order to fill this gap, the present study has focused on an assessment of the role of Indigenous Knowledge and Practice in Natural Resource Conservation among the Marak'a society, which is a new study of its kind and a gap that has not been addressed by other studies.

1. 3. Research questions

This study answers the following research basic questions;

- What are the indigenous knowledge and practices of the community in relation to their environment, focused on natural resources (land, plants, and water) in the study area?
- How do Dawuro in Marak'a people think about the contribution of indigenous knowledge and practice in natural resource conservation and sustainability in the study area?
- What are the Factors Hindering of indigenous knowledge and practices in natural resource management and proper use in the study area?

1.4. Objectives of the study

1. 4.1. General objective

The general objective of this study is to investigate the role of indigenous knowledge and practices in natural resources management in Maraka District.

1. 4.2. Specific objective

- To describe the indigenous knowledge and practices of the community in relation to their environment, focus on natural resources (land, plants, and water)
- To explore role of indigenous knowledge/practices to environmental conservation and sustainability
- To investigate Factors Hindering of indigenous knowledge and practices in the natural resource management and use in the study communities

1.5. Significance of the Study

This study takes up the issue of investigating the role of indigenous knowledge and practices in conserving the environment. This study might have several significance. The primary purpose was for the partial fulfillment of the degree of Master of Arts with a specialization in social anthropology. In second place, the residents of the Marak'a district can make use of the findings of the study through improved indigenous natural resource conservation knowledge. In addition, environmental protection agencies in the district can make use of the findings of the study through improved indigenous natural resource conservation practices.

This research may give anthropological insights on how local people-natural resources interaction is understood from a local perspective. The findings of the study may also be important input to help fill the gap in literature about the role of indigenous knowledge and practices in conserving the environment in the study area and to encourage others to carry out further studies in the area.

Finally, this study offers overwhelming contributions to the environmental conservation of the country, as management of land, plants, and water is one of the critical elements, and working with indigenous practices in natural resource management is one of the best strategies to achieve environmental sustainability.

1.6. The Scope and Limitations of the Study

The study was focused on rural areas of Marek'a woreda since a large group of communities are found in rural areas. As such, the researcher was needed to investigate the existence of coordinated local or indigenous knowledge and their participation in the conservation of natural resources. The study is further delimited to Dawuro zone Marak'a woreda from fifteen kebeles and selected four kebeles, namely: Gozo-Bamushi, Gobo-Shamana, Mada-kuyli, and Yamala-Meso kebeles, with the different indigenous methods of natural resource management mechanisms. Practically, it is impossible to make a sound investigation into every aspect of natural resource conservation in a short time and with limited finance. Although there are different aspects of natural resource conservation and area, to make the study manageable, the researcher focused on indigenous knowledge and practices of natural resource conservation only. Regarding limitations of the study, this study faces financial, time, and reference material shortages related to the topic in the study area.

1.7. The organization of the study

This thesis is organized into six chapters. Each part is presented in a well-organized manner, consisting of an introduction, discussion, and conclusion. Chapter one introduced the introduction part. Chapter two presents the literature review, which encompasses definitions of concepts, theoretical clarification, and an empirical review of literature related to the role of indigenous knowledge in the conservation of natural resources. Chapter three describes the study area and methodology that have been used by the study as well as the producers that are included in the study. Chapter four discusses the findings of the Indigenous Knowledge and Practices of the Dawuro in Marak'a and presents the contribution of indigenous knowledge and practices to environmental conservation and sustainability. Chapter Five discusses factors hindering Indigenous Knowledge and Practices in Natural Resource Management and Use in the Study Communities, and Chapter Six about conclusions and recommendations.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

This chapter indicates the literature on indigenous knowledge and natural resource conservation practices. It focuses on the quest for indigenous knowledge, human-environment interactions, and the historical context of definitions and concepts of indigenous issues related to the rationale for environmental protection. The chapter also includes theory to help understand the relationship between indigenous knowledge, practice, and conservation.

2.1. Indigenous Knowledge

The term ‘indigenous knowledge’ is exceedingly vague and challenging to define. The challenge arises from the meaning the term ‘indigenous’ encompasses. The term ‘indigenous’ poses a challenge because who is to be called 'indigenous'? It is unclear how to be given a level. Battiste explains that indigenous people are the ‘original’ residents of a particular geographic location with a culture and belief system. Indigenous knowledge is local knowledge and is defined as the full set of the entire body of knowledge, experience, and practices maintained and developed by peoples, typically in rural areas, who have a long history of interacting with the natural environment. These sets of understandings, interpretations, and meanings are part of a cultural complex that includes language, naming and classification systems, practices for using natural resources, and more (Battiste 2016).

Indigenous knowledge has been passed on orally from one person to another over generations. Most forms of indigenous knowledge are expressed through stories, legends, folklore, rituals, songs, and even laws, or are obtained through experience and experimentation and have been the basis for agriculture, food preparation and conservation, health care, education, and a wide range of other activities that sustain a society and its environment in many parts of the world for many centuries (Senanayake, 2006). According to Janke and Sentina (2018), indigenous knowledge is local knowledge, sometimes called traditional knowledge.

They are interchangeable, and traditional knowledge is the ‘totality of all knowledge, skills,

and practices, whether explicit or implicit, applied in the management of socio-economic, spiritual, and ecological facts of existence.' As Warren (2011), on the other hand, advocates, 'local knowledge' is localized knowledge unique to a particular society or ethnic group in contrast to the international knowledge system generated through the global network of formal educational establishments and further raises 'local knowledge', as a broader concept that refers to the knowledge possessed by any group living in a particular area for a long period of time.

Some scholars define indigenous knowledge more broadly by incorporating both indigenous and local concepts. It is for this reason that 'indigenous knowledge' is sometimes referred to by names also known as traditional knowledge, local knowledge, experiential knowledge, etc. According to Hilhorst (2015), indigenous or traditional knowledge is a body of knowledge built up by a group of people through generations of living in close contact with nature. Indigenous knowledge is stored in people's memories and activities, and it is expressed in the form of stories, songs, folklore, proverbs, dances, myths, cultural values, beliefs, rituals, community laws, agricultural practices, etc.

Indigenous ecological knowledge is described by Davis and Ruddle as a body of deep and thorough knowledge of the environment accumulated by local people through generations of direct contact with nature. Additionally, Davis and Ruddle claim that people who live off the land and use its resources have a deep understanding of those resources, how ecosystems work, and how their culture and the environment interact. Arguably, indigenous environmental knowledge and practices are the mechanisms by which people adapt to their environment. 'Indigenous environmental knowledge' is also known as 'indigenous ecological knowledge' or 'traditional ecological knowledge'. It is considered one form of 'indigenous knowledge' (Davis and Ruddle 2015). Berkes (2009) writes that traditional environmental knowledge is a 'cumulative body of knowledge, practice, and belief' that is passed down through the generations through cultural transmission and evolves through adaptive processes. In this study, the concept of traditional ecological knowledge, which he frames as a knowledge-practice-belief complex, was used.

According to Berkes and Berkes (2009), the knowledge-practice-belief complex has four interrelated analytical levels. These are: i) the local knowledge about animals, plants, soils, and landscape based on empirical observations; ii) the natural resource management system that includes an appropriate set of practices, tools, and techniques using local environmental knowledge. iii) the traditional social institutions that include sets of rules-in-use and codes of social relationships; and iv) the worldview or belief system that shapes environmental perception and gives meaning to observations of the environment, a level within which the other three are embedded. In this framework, as Berkes and Berkes explain, traditional worldviews and belief systems are fundamental to indigenous ecological analysis. Indigenous knowledge is established based on the worldview of the indigenous peoples.

According to this paradigm, Berkes & Berkes explained that indigenous ecological analysis is fundamentally based on traditional worldviews and belief systems. The worldview of the indigenous peoples serves as the foundation for indigenous knowledge. These scholars elaborate on this by stating that traditional worldviews and belief systems are the most important factor as a core lesson of indigenous ecological knowledge and are essential to its interpretation.

Additionally, according to the United Nations Declaration on the Rights of Indigenous People, “indigenous peoples have the right to the conservation and protection of their environment and the productive capacity of an assistance program for the indigenous peoples for such conservation and protection without discrimination” (UN 2007). In general, the concept of indigenous knowledge embraces the indigenous practices and belief systems of the local community. The environment is a broad concept, and one of its meanings, as Schuster et al., (2019) put it, is the natural environment, which is inclusive of the atmosphere, the oceans, land, trees, and wildlife.

As well as outlined above, this study is taken to represent the natural environment, such as land, forest, and water resources, in the study area. The term ‘conservation’ is used to refer to protection, care, and use without endangering them. It is also mentioned that indigenous knowledge has made it clear how to protect the environment in the past and what kind of motivation and loyalty they have for protection. The role of indigenous knowledge and

conservation of natural resources that will be studied encompasses the people's worldviews, attitudes, and practices.

2.2. The Role of IK in Conservation of Natural Resources

There are different opinions that exist about the role of indigenous knowledge in the conservation of natural resources. IK has played a great role, although outsiders have neglected and marginalized it in various parts of the world (Buenavista *et al.,* 2018). For example, Le Breton (1993), citing one of the Indians, makes the point that the coming of settlers almost meant the end for Indians in his book on indigenous knowledge (IK) and the influence of outsiders on indigenous peoples and their knowledge. The indigenous population of Rondonia in the Amazon fell from 30,000 to 6,000 in 20 years. For thousands of years, humans and the environment have coexisted. However, outsiders have ruined our forests, wiped off our natural life, polluted our rivers and lakes, demolished our cultural, religious, and environmental traditions, and enslaved and prostituted our people for less than 500 years (Le Breton, 1993: 4).

Le Breton (1993) found that Indians were the biggest losers because outsiders occupied their lands. They have lost their land, their livelihood, and their lives. As a result, she recommended that nothing was more urgent than the demarcation and protection of her land. She also commended the need to strengthen an indigenous knowledge center that collects and documents traditional Indian knowledge and passes it on to the next generation. In accordance with Le Breton's recommendation, the experience of Brazil shows that the fight for the right to resources could bring about changes.

Regarding Africa, Johnson and Anderson (2019) note that developed countries view Africans as engaged exclusively in unproductive activities that deplete natural resources. For this reason, colonizers, for example, implemented conservation policies that disregarded the indigenous knowledge of African societies in the countries of southern Africa (Chevallier, 2016). However, their policies were found to have negative impacts on the conservation of natural resources. In South Africa's Eastern Cape Province, for example, surveys conducted among local communities showed that the condition of native forests deteriorated

significantly after the school head system for forest management collapsed under the corrupting influences of apartheid. People in Africa have generally valued nature and incorporated it into their metaphors, folklore, proverbs, and belief systems (Chevallier, 2016). Many of their belief systems for governing featured laws intended to control how natural resources were used and managed. There are taboos that forbid using particular resources during particular times in order to allow those resources a chance to replenish. There are sacred forests, for instance, that are dispersed throughout southern Africa. For example, there are also sacred forests scattered throughout southern Africa that believe that the natural resources are the indigenous creation and the gift and blessing of *Yamba* (the supreme deity).

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In Ethiopia, various natural resource conservation systems have their own respective systems; for example, in Beni-ShengulGumuz, there are missa (holy spirits) who ensure their proper use and management. Violations of these will result in severe fines and penalties in the appropriate jurisdiction. Therefore, the Gumuz ethnic groups consider the natural resources sacred and inherited from their ancestors, and their ownership and protection are passed on to the present and future generations. The Gumuz people's livelihoods are mainly based on activities related to forest resources, such as shifting cultivation, an indigenous agro-ecological knowledge through which they skillfully shift fields and sustainably maintain and manage the natural forest and associated resources such as soil, water, and wildlife (Sumner & Yimam, 2002).

Accordingly, interests in local indigenous conservation have become a tool for indigenous peoples to regain the resources they had previously lost, rather than fundamentally conserving those resources. According to so many researchers, for whatever reason (political, economic, or cultural), the position of the indigenous people seems to stem from the oppression and violation of their rights by oppressive rulers or colonizers and their failure to conduct their lives, which depend on their natural resources. This requires action to respect their rights and their indigenous methods of conserving natural resources. Many of the above studies have shown that indigenous knowledge has significantly contributed to the conservation of natural resources. i.e., the uncertain status of indigenous knowledge, which reflects many generations of experiences and problem-solving methods from thousands of ethnic groups around the world, is of great concern to many world citizens (Warren, 1996). Therefore, the general trend that environmentalists and development actors must follow today seems to be that any development effort must be undertaken in a sustainable manner without endangering the environment or the people who depend on it.

To do this, such an effort must take into account the valuable knowledge, tradition, and culture of the indigenous people (Warren, 1996; Magni, 2017).

I think this requires cooperative work by developing and developed countries, indigenous peoples, and outsiders, as well as policymakers and the local community, to integrate valuable knowledge and experiences from both indigenous knowledge and Eurocentric modern science for the common good: the sustainable use of resources for development.

2.3. Conservation of Natural Resources

The term “natural resource” means something that we use from our environment to achieve our goal. A resource can be defined as ‘any natural or artificial substance, energy, or organism that is used by a person for its welfare. These resources can be of two types: natural resources and artificial resources. All that nature has provided, such as soil, air, water, minerals, coal, sunshine (sunlight), animals, plants, etc., are known as natural resources. The resources that have been developed by humans during the growth of civilization are called artificial resources. For example, biogas, thermal electricity, and plastics These man-made resources are generally derived from some other natural resources (Oxford Dictionaries 2014 and Yourdictionary.com, retrieved 2016).

Conservation is the proper management of a natural resource to prevent its exploitation, destruction, or degradation. Conservation is the sum total of activities that can derive benefits from natural resources but, at the same time, prevent excessive use leading to destruction or degradation.

According to Ashley (2000), natural resource management and conservation integrate the management of social, economic, and environmental values by involving the community in planning and other activities. It is essentially about humans, as its fulfillment is ultimately determined by the level of community involvement and the adoption of ecologically sustainable practices across the community. The extensive literature on natural resource management (e.g., Pritchard & Sanderson, 2002) highlights the importance of participatory development and knowledge management. There is a widespread reputation (Bessette, 2004) that participatory development is important for accomplishing sound resource management,

but this indicates that empowering the local community's information describing the natural sources forms the base upon which sustainable development is built, and subsequently, it is essential to manage knowledge resources effectively.

However, the local knowledge assets in many communities in developing countries are not codified in Western scientific phrases but, as an alternative, incorporate what's known as 'indigenous knowledge'. Natural resource exploitation provides livelihoods for a high proportion of the world's population. Since the 1992 Earth Summit in Rio and culminating in the Copenhagen Conference in 2009, there have been increasing concerns about climate change and the sustainability of the world's natural resources. As human activity is the major destructive pressure in nature, improving natural resource management and conservation in general calls for changing human behavior at the 'grassroots' stage. Nowadays, it's widely agreed that local people's perspectives want to be at the center of studies efforts for development and that innovations need to be 'owned' by the local land users if adjustments in decision-making and behavior leading to a positive impact are to be carried out. Such ownership can be created correctly through the development and implementation of innovations by using local humans themselves in cooperation with outsiders (Hagmann & Chuma, 2002).

2.3.1. Land conservation

Land provides a range of biophysical and socio-economic goods and services that support the sustainability of ecosystem services, livelihoods, and human wellbeing. However, land degradation and desertification create global threats to fertile land and the benefits that land provides to human society (Knowledge Hub, 2019). To keep cultural and natural landscapes alive, protect cultural heritage, valorize indigenous knowledge and production methods, enhance the aesthetic experience, and provide a space for recreation (Amare 2009), The concept of land management refers to soil conservation and fertility improvement activities.

As stated by Adimew (2014), soil conservation, soil fertility management, agricultural forestry practices, controlled grazing, and several others are typical examples of land management practices.

The knowledge local people have about the land is not considered important in soil conservation projects. But land management using IK is a way to protect our environment and make it healthy and sustainable. So, studying and applying appropriate land management practices leads to sustainable development. If we understand more about how we learn, we may be able to learn to teach others well.

2.3.2. Plant Conservation

Programs and projects concerned with conservation and sustainable development will only succeed on any scale when they address the social factors influencing the way people interact with the environment. According to Ghai, these factors include access to essential resources such as land, water, trees, and marine resources; gender relations, which often constrain women's access to capital, labor power, knowledge, and time; and the question of empowerment, or the level of control people exert over resources and decision-making processes that affect the management of natural resources (Ghai, 1995).

According to Workineh (2001), cited in Mitiku (2014), food habits differ from one region to another and from one country to another. Human beings are involved in the selection, domestication, and cultivation of wild plants. A wild plant in one country can be a domesticated crop in another country. For instance, pigs and cattle in the USA eat maize, while it is a staple food in other countries. Teff, i.e., a grass-like crop (the grains of which are used for making local bread), is a staple food in Ethiopia, where it is cultivated for high production in South Africa and Australia. In India, it serves as green fodder. Some ethnic groups in Metekel eat the leaves of various trees, while others in central Ethiopia think that this habit is morally unjustifiable.

According to Dagnachew (2012), the Dawuro use different wild plant species for dietary and other domestic purposes during the normal period and in times of crop failure. The fruits of Rubusstevtineri, Rosa abyssinica, and Ficus vasta are widely eaten in the highlands. Peasants and their children eat the fruits of Ficusexasperata, Carrisaedulis, Pygeaumafricanum, Cordiaafricana, and Euphorbia candelabrum. Several wild plants survive droughts where conventional crops perish. These trees are considered a highly

nutritious source of food. Cordia africana is considered an important source of energy. Flacourtia indica is as sweet as candy.

According to Zerga et al. (2019), plant species schefflera, abyssinica, croton, macrostachyus, and vernonia are preferred by bees and protected by local people for the benefits derived from these species in beekeeping. Plants like Albiza, gummifera, acecia abyssinica, and militia ferugnia are the most preferred tree species as coffee shade trees. Because of the size of their leaves and their crown, which obstruct direct rain splash and ice and allow light and rainwater to reach the coffee plant without causing damage to the plant and the soil (Dagnachew 2012), They also have small leaves that can easily pass through coffee tree branches without causing damage to fruits and flowers when they are shading. In addition to this, non-timber plants like afrarom korerima and timiz (wild pepper) and other spices are obtained from the forest. Indigenous people know these products exit only when the forest is kept intact. Forests are used as shelter for cattle during the dry season, balancing the weather conditions. Protections of aduwa's (springs) are used for cattle's drinking, and the local communities know that if these forests are removed, these important sources of water will also get dry (Taybela 2013).

2.3.3. Water Conservation

Water is essential for the survival of all living organisms. It is the most important component of all life forms and is necessary for sustaining life. Conservation and management of water are essential for the survival of mankind, plants, and animals. This can be achieved by adopting growing vegetation in the catchment areas, which will hold water in the soil, allow it to percolate into deeper layers, and contribute to the formation of groundwater (FAO, 2020).

There are no universal conservation practices that work everywhere. Planning water conservation is like having a large array of techniques and practices set out in a separate pigeonhole. The object of planning water conservation is to make up a system by selecting a set of individual items that are relevant to the conditions and that can be combined into a workable system (Taybela 2013).

As Yeshambel (2013) put it, water conservation activities aim at increasing water availability and efficiency. Water conservation for plant production has direct benefits to people through increased crop yield, reduced risk of crop failure, cultivation of higher-value crops, and reduced soil erosion risk. Indirect benefits include increased groundwater recharge, dry-season river flows, and water availability.

All of these benefits translate into improvements in the productivity of land labor resources, the standard of living, and commitment to natural resource conservation and management.

2.4. Contributions of IK and Beliefs on Conservation of Natural Resources

One possible explanation for a particular attitude is one's beliefs. Locals have long since created a range of resource management techniques and strategies that are still in use today in South America, tropical Africa, Asia, and other regions of the world (Appiah-Opoku, 2007). The contributions of indigenous and local belief systems towards a better understanding of natural resources and their sustainable use and management have been documented in the scientific and gray literature in many domains: biodiversity conservation and wildlife management, customary marine resource management, rural development and agroforestry, traditional medicine and health, impact assessment, and natural disaster preparedness and response. It is therefore evident that the role of traditional belief systems in the conservation of a large number of elements of local natural resources, regardless of their use value, dates back to creation (Shastri *et al.,* 2002).

One of the numerous approaches to natural resource conservation and management is the use of indigenous belief systems of taboos and totems. These traditional belief systems are capable of protecting biodiversity, species in particular, and the environment in general, as long as the local communities have an interest in them. Traditional African societies also observe environmental ethics that help regulate their interactions with the natural environment. African traditional religion and cultural practices in most parts of African communities are environmentally friendly and sustainable, contributing so much to natural resource sustainability and conservation (Shastri *et al.,* 2002).

The most African traditional practices and cosmologies, Otiende *et al*. (1991) write that a vast amount of information is stored in the form of words, proverbs, songs, rituals, and even idioms that express the utility and conservation of resources. Different ethnographies speak of the environmental knowledge of traditional societies in Africa. The Dogon village of Tireli in West Africa has been described by Milton (1996). Respect for their environment is an essential component of the relationship between them and their environment. In this community, the bush is seen as dangerous, the home of spirits, which may attack people, and of animals, rocks, and trees that are also feared because of their spiritual power. Indeed, the bush is the source of all power, knowledge, and life. Similarly, Mukwada (2000) found out that the belief system of people in Zimbabwe is significant in the conservation of a particular type of tree. These people believe that big trees should be protected because the cuckoo bird sings for rain and likes to rest in such trees. Ancestral spirits also come and rest in these trees when they attend rainmaking ceremonies, so people protect trees for fear of retribution.

Another notable account of the indigenous environmental knowledge and belief system is the kenyan river conservation case, as indicated by Kilungu *et al.* (2019). The Katun River in kenya is considered central to the culture of the indigenous Altaians. They still observe traditional ceremonies honoring the river and spring throughout the watershed and utilize traditional ecological knowledge in their management of the land and water resources. The writers further describe that the Katun River is considered a living being, and kenyas show respect by not throwing stones into the river. Special words are said whenever the river is crossed, and water is not taken from rivers at night because this may upset the spirit associated with the river (Kilungu *et al*., 2019).

In the sequence of cultural evolution, agriculture is considered the point at which human beings gained control over the environment. Hunter-gatherers depended on the giving environment, while cultivators depended on a passive environment amenable to human control (Milton, 1996). Over the ages, indigenous peoples have devised ways to farm deserts without irrigation and produce abundance from the rainforest without destroying the delicate balance that maintains the ecosystem (Dagnachew 2012). Also observed is that indigenous knowledge covers many fields of activity essential for the sustenance of life. This

knowledge includes farming techniques that extend from terracing, irrigation, and crop rotation to soil conservation.

In Africa, the traditional belief systems ascribe supernatural powers to objects called gods and goddesses. African traditional religion and belief systems lie in the abode of the gods and goddesses, located in rocks, streams, ponds, trees, land, or anywhere within the community and respected by the people it governs. For example, in Ghana, indigenous belief systems, including taboos, rituals, and totems, have played significant roles in the conservation and management of natural resources. Indigenous belief methods for conserving biodiversity identified taboos and totems as the key indigenous methods for conserving biodiversity in Ghana (Rim-Rukeh *et al.,* 2013).

According to the Ethiopian context, traditional beliefs, social institutions, and cultural practices are performed in traditional communities of Ethiopia to harmonize interaction between the community and their natural environment (Tizita 2016). Traditional communities in Ethiopia believed that certain places and species were the ideal places to meet with their God and give special attention to them. Plant species like Ficus sycomorus, Podocarpus falcatus, Olea capensis, and Ficus vasta are regarded as a source of different spirits and have developed positive attitudes towards the plant species, and cutting them is immoral. Gada system, Kobo system, Gudo system, Jang system, Maga, Songo, and Baallee are traditional institutions that play a significant role in animal and plant species conservation in Oromo, Kaficho, Sheka, Majang, and Gedeo communities, respectively. Taboos, oral declarations, social banishment, customary law, and punishment practiced by indigenous communities prohibit actions and activities that harm the welfare of biodiversity and their natural environment. Preservation of traditional beliefs and institutions is a form of biodiversity conservation (Shemsu, 2022).

Indigenous Ethiopian traditional beliefs and practices about items and living beings in their environment, as well as other imagined forces and Some places were given due consideration as sacred. The sacred places are believed to have relations with the Supreme Being. Activities like getting to sacred natural sites and killing and utilizing some species for

the sake of protecting the sites from harmful and damaging interventions by local people (Sibani, 2018)

The aforementioned ethnographic narratives all demonstrate how indigenous knowledge, practices, and belief systems are used in a variety of human endeavors and have an impact on the surroundings in which they are used. The accounts, however, have little to tell us to what extent and how they contribute to environmental conservation.

2.5. Challenges of Indigenous Natural Resource Conservation Mechanisms

Despite different notable local and national achievements, fundamental challenges to natural resource management using Indigenous knowledge remain. Overall, there remain relatively few cases of communities obtaining formal authority over lands and the natural resources found on those lands. Centralized control over natural resources persists despite the ubiquitous change in rhetoric over land and resource management. In some cases, trends point more towards the central consolidation of the right to use and allocate valuable natural resources. Conflicts between local groups and other more powerful actors, including both state agencies and private sector investors, remain widespread across the subcontinent and are often intensifying. There are strong political and economic incentives for political elites and central bureaucracies to consolidate their control over natural resources (IIED, 2009). Foreign donors and international NGOs spearheading Community-Based Natural Resource Management (CBNRM) efforts are often poorly positioned, in a political sense, to address these challenges. Further conflicts arise from differences in perceived priority management objectives; the most appropriate scale at which to manage from an ecological perspective rarely tallies with the most appropriate scale from a social or economic perspective. When local governance institutions are not held downwardly accountable to the community and local elites disproportionately reap the advantages, similar difficulties arise at the local level (Dagnachew, 2012).

Tensions exist in some places between the development of locally accountable governance and traditional authorities. Often, community-based natural resource management interventions are not accompanied by the type of long-term investments in capacity-building

required to ensure broader participation and the accountability of local leaders to their community. The distribution of local benefits from natural resources can also be influenced by the nature of the benefits generated and how individuals are able to gain access to them. In some cases, the principles that govern the distribution of benefits are built into community-based natural resource management systems, as in Dawuro. In different programs, benefits are variously channeled through: employment; the sale of products; and community construction projects, in which the opportunities are more likely to be accessible to the well-skilled, wealthy, and politically connected. Where community-based natural resource management results in growing wildlife populations, it can be a victim of its own success by creating increased levels of human-wildlife conflict (Alemayehu, 2019).

2.6. Theoretical Framework

2.6.1. Cultural ecology

Cultural ecology was developed by Julian Steward (1955). Cultural ecology focuses on discovering cultural adaptations. Human beings and their activities, residences, work localities, facilities, and sacred locations are located across a landscape in a culturally extensive way, referred to as settlement patterns. The environment, especially the duration of the growing season and the amount of precipitation, can also play a role in the improvement of garage behaviors, leading to cultural complexity. Studies of cultural classification structures have handled the ways in which human beings cluster the things inside the world, what is covered with what, and what is overlooked. Cultural ecologists come into their own when they have a look at the methods people use to think about sources. Cultural responses consist of era and corporation, along with the shape of monetary, political, and social systems. The combination of biological and cultural ecological interplay is pretty complicated. A selection of cultural practices can “mitigate” the effect of environmental change and so level environmental variations (Sutton 2020).

Cultural ecology tends to give unique emphasis to the relationship between technology and the environment. Steward’s concept of cultural ecology has proved to be a powerful and effective method for human ecological research, providing new knowledge of ways

conventional societies have successfully adapted to their environments. This method emphasizes the preparation of method, economy, and social company for human adaptation to their surroundings. In step with Steward, not all cultural tendencies have been defined in ecological terms, but just a few factors he referred to as the culture core technology, economics, population, and social organization have adaptive significance. His emphasis is on the connection between technology and the environment.

However, stewards observe that the Cultural Ecology of India's Sacred Cattle (1966), Marvin Harris work, and human and environmental activity like religious belief must have been caused by technological and environmental factors. In the 'Ecosystem-based Ecosystem-based ecology proposed by Rappaport (1968), Pigs for the Ancestors, the religious rituals practiced by the Tsembaga of New Guinea functioned to maintain their population in balance with the available resources of their environment. Religion, an institution that Steward had largely excluded from his concept of the ecologically adaptive cultural core, was seen by Rappaport as playing a key regulatory role in relations between the Tsembaga population and the other components of their ecosystem (Rambo 1983). The cultural ecology approach in environmental anthropology is another important model to understand the phenomenon of natural resource conservation, the way culture interacts with the environment, the role of local communities, their relation to ecology, etc. As Milton (1996) argues, the development of cultural ecology represents a significant innovation in the way the relationship between the environment and culture was conceptualized; while environmental determinism and historical Possibilism treated environment and culture as separate entities that affect each other externally, cultural ecology introduced the concept of an integrated system in which cultural and environmental factors interact.

Milton further noted that stewards denounced the environmental determinist model for being too general and offering no understanding of how specific cultures related to their local environments; stewards own cultural ecology model merely reproduced environmental determinism, albeit at a more precise level. Also, stewards acknowledged that cultural-historical factors such as population, regulation, health, and politics may determine some cultural traits, but these factors were often overlooked. Despite the emphasis of cultural

ecology on a more interactive relationship between people and their environment, the process of linear causality retained its dominance. Conservation of natural resources depends on how one perceives that environment according to religious, aesthetic, economic, or social terms rather than the environment itself (Milton 1996).

Humans and their cultures are an integral part of the environment. Human activity affects the environment, which is then altered, in turn affecting human activities. The shape and form of the environment are dependent on its history, a history that includes humans. Yet it is also important to realize that humans are not just another animal. Humans are self-aware, cooperative, technological, and highly social. Thus, unique combinations separate humans from other organisms, making their interactions with the environment more complex and fascinating (Anderson and Sutton 2010).

Methodologically, there are three broad conceptualizations of the relationship between human being and environment in cultural ecology theories: first, human beings adapt to and are therefore shaped by their environments; second, human beings adapt their environments to suit their own needs and therefore determine or shape those environments; and third, human beings interact with their environments in such a way that they shape each other (Milton 1996).

2.6.2. Political ecology

Eric R. Wolf first used the term 'political ecology' in 1972 to describe the examination of how power relations shape human-environmental interactions (Wolf 1972). This interdisciplinary field brings together anthropologists, ecologists, sociologists, geographers, and more to explore the state and evolution of social-environmental systems (Bryant, 2015). Political ecology's lens on conservation extends to analyzing the economic, cultural, and political drivers that influence ecology and the environment, from degradation to land-use change to conservation programs (Leff, 2011; Doane, 2014). In the 1980s, postmodernist theories changed political ecology as we knew it. Aletta Biersack (1999) noted critiques of dualistic views of human-nature relationships and a lack of recognition for linear historical progress or difference. Today, political ecology has taken up at least five key theoretical

approaches: Understanding how reality is shaped through diverse signifying practices, challenging nature/culture dualism and looking at nature and culture's mutual effects, examining local-global interactions and their processes, exploring theories that consider both agency and events, and drawing on differences and social inequalities, such as those found in feminist studies, race, and ethnicity

The idea of political ecology, which places politics first to comprehend the connections between human-environment interactions and environmental degradation, should be recognized. Political ecology has developed as an alternate way of understanding the 'political sources, conditions, and outcomes of environmental change' (Bryant, 1992), originating from the initial surge of environmentalism in the 1960s, inspired by Rachel Carson's works, and combining political economy and ecology into a unified field of inquiry.

However, one of the most important theses in political ecology looks at how individuals and social groups relate to issues of subsistence and environmental activities (Robbins, 2012). Agrawal (2005) proposes that new environmental conditions create opportunities for local people to present themselves as political actors and emerge as environmental subjects.

But one of the most critical theses in political ecology seems to be how individuals and social groups relate to issues of subsistence and environmental activities (Robbins, 2012). Agrawal (2005) proposes that new environmental conditions create opportunities for local people to provide themselves as political actors and emerge as environmental subjects.

As the origin of political ecology, political ecologists, due to their diverse roots of origin, are interested in integrating place-based and no-place-based analysis, which largely turned to neo-Marxism in the late 1970s and early 1980s (Bryant, 1998). It is argued that at the center of political ecology lies the notion that politics should take precedence when looking at human-environmental interactions (Bryant, 1998). In a similar vein, advancing third-world political ecology as one field of research seeks to link political-economic and ecological processes, however, through a multitude of approaches (Bryant & Bailey, 1997). Thus, there

is an underlying assumption that politics and the environment are tightly intertwined everywhere.

Harvey (1993) observes that environmental and ecological projects and arguments are inherently political-economic, and sociopolitical arguments are always ecologically relevant. To gain a better insight into how to approach ecological issues, it is essential to look at the relationship between ecology and politics more closely. Harvey proposed a precursor to political ecology by demonstrating the power relations embedded in knowledge and institutional structures that limit oppression and control knowledge for sustainable conservation and livelihood practices.

Political ecologists thus attempt to comprehend the nature and features of a 'politicized environment (Bryant, 1998). To embody this concept, portray 'a chain of explanation' concerning specific environmental dilemmas. Political ecologists have from the outset been intrigued by how economic or legislative procedures at a national or international level affect local environmental practice, thus opposing Malthusian notions of overpopulation. The approach was well-received as it provided academics with a way to make sense of the 'non-place-based' forces (e.g., the practices of transnational corporations) in comparison to 'place-based' activities such as agricultural production (Bryant, 1998). Political ecology looks at people, places, and practices in the context of broader social and economic changes across different geographic scales. This takes into consideration the social origins of degradation and the variety of perceptions and definitions of ecological problems. Political ecology uses ecological concepts to evaluate how culture and politics interact with ecosystems that are largely socially constructed (Greenberg & Park, 1994).

Political ecology has been applied in a multitude of contexts, primarily aiming to address various ecological issues including population growth, human health, resource scarcity, deforestation, loss of biodiversity, pollution, and climate change. It also challenges existing theories and debates as well as socio-environmental conflicts. As such, it is mostly interested in examining environmental inequalities in terms of potential and costs rather than actively participating in policy-making for environmental protection. Thus, the politicization of ecology is an expression of power struggles focused on reclaiming nature (Leff 2011). This

theory looks at the intersection between political, economic, and environmental forces in determining the distribution of resources and power.

In Maraka woreda, this theory could be used to examine the role of local government policies and regulations in relation to indigenous knowledge and practices of natural resource conservation. Therefore, this theory is helpful in assessing various environmental issues in various geographical contexts in Dawuro/Maraka society. It uses the theory's central tenets to understand how environmental governance works in Dawuro and Maraka woreda.

2.6.3. Symbolic Approach (Interactionist)

Symbolic anthropology is a contemporary theoretical perspective. It focuses on studying the way in which people understand and interpret their surroundings, the actions and utterances of the other members of their society. These interpretations form a shaped system of meaning and understandings to varying degrees among members of the same society. Thus, symbolic anthropology is concerned with studying the process by which people give meaning to their world and how this world is expressed in cultural symbols (McGee and warms, 2008).

Symbolic Anthropologists agree with ethno scientists and cognitive anthropologists that culture could be modeled like mathematics or logic as an unworthy assumption. Instead they used a variety of analytical tools drawn from psychology, history, and literature to study symbolic action within culture. Their fundamental interest is based on examining how people formulated their reality culture can best be understood by listening and recording the ways in which the natives explain their own customary behavior (Ferraro and Andreata, 2010).

This perspective covers a variety of forms of analysis but to dominant trends in the field of symbolic anthropology represented by Clifford Greetz and Vitor Turner. Greetz’s approach was based on the idea that understanding another culture is always an act of interpretation, an inquiry that involves placing a cultural act, a ritual, a game, a political campaign, and son into the specific and local contexts in which the act is meaningful (Moore, 2009). He

emphasizes culture as an organized collection of symbolic systems. For Greetz, culture embodied in public symbols and actions and symbols are means of transmitting meaning. His main focus in how symbols affect the way people think about their world, how symbols operate as vehicle of culture (McGee and Warms, 2008). Greetz type of analysis focused at the level of the individual participant in society. He wants to provide his reader with a sense of what it might feel like to be a member of the culture he is describing. Geertz's stand connotes that man is in need of symbolic sources of illumination to orient him with respect to the system of meaning that is any particular culture i.e., the interpretive approach to symbolic anthropology.

Therefore, symbolic anthropology views culture as an independent system of meaning which is revealed by interpreting key symbols. To pillars of premises of symbolic anthropology are, the beliefs however, intelligible become comprehensible when understood as part of a cultural systems of meaning and the second is actions are guided by interpretation, allowing symbolism to aid in interpreting ideal as well as material activities.

For this study to understand the role of indigenous knowledge and practices in Natural resource management among the Marak'a the symbolic anthropology is useful because it provides the opportunity to describe, analyzes, and interpret the meaning of cultural activities of indigenous knowledge and practice in natural resource conservation in the life of Dawuro of Maraka society. Previously undertaken historic and research literatures prescribed the wide range of conservation of natural resource conservation or management in the Marak'a cultures like rituals. Therefore, in relation to these issues, it will be useful to be interpreting cultural activities of indigenous knowledge and practice in natural resource conservation and their values form the indigenous people's perspective.

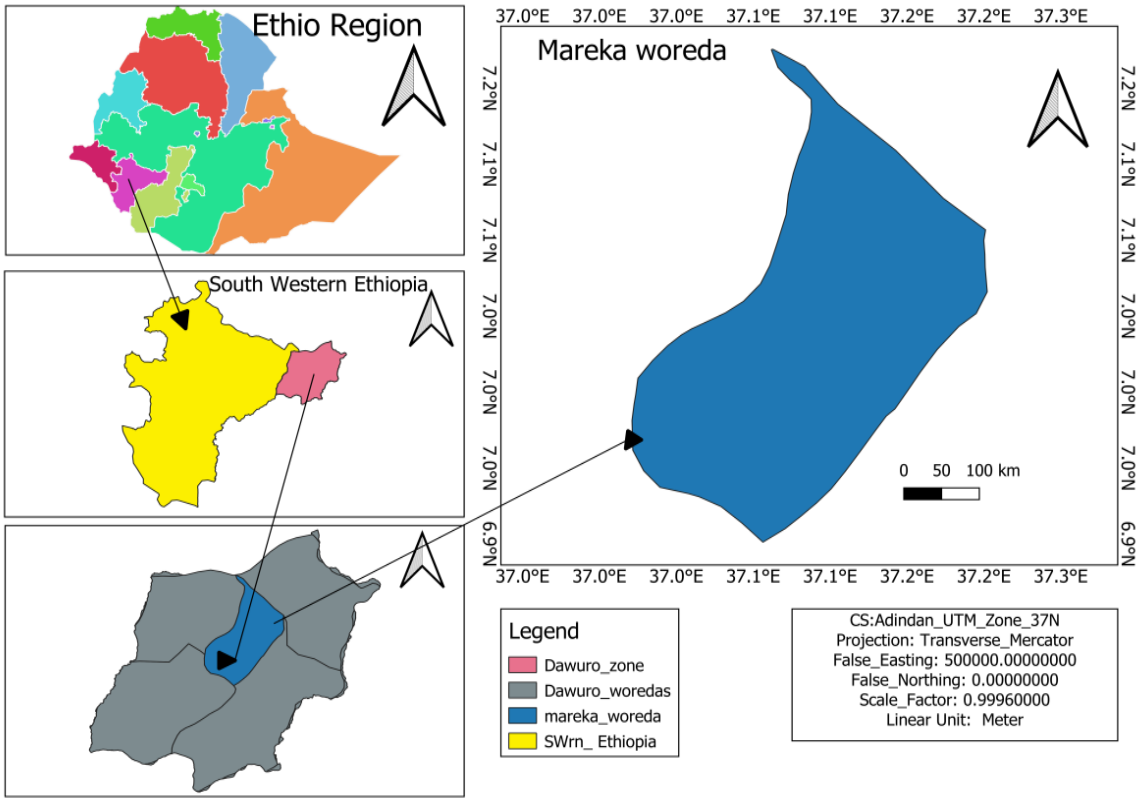
CHAPTER THREE: RESEARCH METHODOLOGY AND DESCRIPTION OF THE STUDY AREA

3.1. Description of the study area

3.1.1. Geographical location of Dawuro Zone

Dawuro is located in the south-western part of Ethiopian border in the Oromia region, Jimma zone to the north, Konta especial woreda to the west, Gamo Gofa zone to the south, Wolayta to the east, and Kambata-Tambaro to the north-east. Its political center, Tarcha, is located about 512km south-west of Addis Ababa via Jimma and 335km from Hawassa via Wolayta Soddo. The name Dawuro is employed for the people and their land (Zone) that are found in the southern nation's nationalities and people's regional state of Ethiopia (Dubale 2014).

picture 1: Map of Ethiopia, SWEPR, Dawuro zone and the study area



Source: Marak'a Woreda Finance and Economic Development Affairs April 2023

Dawuro zone has 10 districts and one town administration, namely Loma-Bossa, Disa, Marak'a, Mari-Mantsaa, Tocha, Kachi, Essara, Genna-Woldane, Zaba-Gazo, Tarcha-Zuria woreda, and Tarcha town administration. The total land area of the zone is 5000km2 lies between 6 59'-7 34'north latitude and 36 68' to 52' east longitudes. Its attitude varies from 500m to 2900m above sea level (Teferi 2019).

Dawuro land has three agro-ecological zones of area: Geziya (high land) at 29%, Dashuwa (mid land) at 40%, and Gad'a (low land) at 31%. the zone receives an annual rain fall of about 1800mm and 15.10c to 37.0c temperature. According to Dawuro tradition, seasons are classified into four. Such as Adiliya (September-November), Boniyan (December-February), Asuura (March-May), and Balguwa (June-August) (Wondimu and Adimasu 2011).

Dawuro is enriched with a variety of tree and plant species, natural vegetation, and forests. For instance, Chabara-Churichura National Park, natural forests along the Gojeb and Omo rivers valleys, and other bigger rivers in the zone, such as Mansa, Zigna, and Gelo revisers in Essara and Tocha Woreda, contain a large number of natural vegetation that is important for biodiversity further investigations. Dawuro is also endowed with perennial rivers whose springs are in the aforementioned highlands. Some of the bigger rivers include Buk'a, Shata, Wuni, and Zayiri in Marek'a Woreda, Wogayi, Zigna, Dibisa, Yarda, Chawa, Shepa in Tocha Woreda Zo'a, Kotoro, Panta, Koma, in Genabosa Woreda, Karethsa haatsa, Mawula, in Loma Woreda, and Mansa, Dalta, Gelo, Sumbursa, Dema, Chawa, Solantya, Banja, and Chofere small lake in Bubayilga, which is found in the Dawuro zone. All these rivers and others in Dawuro are tributaries of the Gojeb and Omo rivers (DZFED 2022).

3.1.2. Population and settlement

According to the 2007 census, the total population of Dawuro zone is about 492,742, of which 250,742 (51%) are male and 242,00 (49%) are female and the population of Dawuro zone is estimated to grow at an average rate of 2.8% per annual in rural areas and 4.8% per year in urban areas. Based on this projection, the zonal population was estimated at 715306, of which 364712 (51%) are male and 350594 (49%) are female in 2021 (DZFED 2022).

3.1.3. Economy

Agriculture is one of the predominant economic activities in Dawuro, and more than 93% of the population is engaged in agricultural activities. About 56% of the land is sustainable for farming. Dawuro zone has different agro-ecological zones, namely Dega, Woina Dega, and Kola. This is found between 501 and 2820 ma.sl (DZFED 2022). *Uutsaa* (Enset) is the most intensively grown crop in densely populated areas and the main stay of livelihood in Dawuro Zone.

3.1.4. Marak'a woreda

Marak'a Woreda is one of the administrative woredas found in Dawuro Zone. It is located in the southwestern part of the region and in the center of the Dawuro zone. The woreda is astronomically situated between 60 09'' and 7021'' N Latitude and 370 01'' E and 370 26'' E Longitude (Getahun, 2020).

The woreda is bounded to the south by the woreda of Loma; to the west by the woreda of Zaba Gazo; to the north by the woreda of Mari Mantsa; and to the east by the woreda of Esera. The total land coverage of the woreda is 44050 hectares, of which 2000 hectares (4.5%) are covered by forest, 11500 hectares (26.1%) are grazing land, and 28140 hectares (63.9%) are cultivating land and the remaining 2410 hectares (5.5%) comprise bushes, savanna, rivers, springs, stagnant waters, and hills. According to the agro-ecological classification criteria, the woreda is divided into three agro-ecological zones. Namely, high land (dega), midland (Woina dega), and lowland (kola) have total land holdings of 53%, 30%, and 17%, respectively (Ashenafi & Ataro, 2020).

According to information from the administration office of the town, Marak'a, the town of Waka was the earlier center when Dawuro was at Awuraja level under the Kaffa province and also later when it was part of the North Omo zone. Since it was assigned a zonal level of recognition in 1993 E.C., Tarcha has been preferred to be the new seat of the zonal administration since it was found favorable for settlement, development, social, economic, and related activities. Tarcha is located in Marak'a district, seventeen kilometers east of Waka town. It is 589 km away from Addis Ababa if traveled in the direction of Jimma, 596 km.

3.1.4. Demography and Settlement

The total population of Woreda is 145,955, of which 49.2% are males and the remaining 50.8% are females. Simultaneously, 91.9 percent of the population resides in a rural area, whereas 36% of them are Highlanders, and the rest, 51% and 13%, live in mid- and lowland areas (MWARMD, 2019; cited in Haile *et al.,* 2020).

Although the dominant ethnic group is Dawuro, other ethnic groups like Amhara, Tigray, Wolayita, Hadiya, and Gurage are also found in the district. The rural areas are almost uniformly composed of Dawuro, whereas Waka town has an ethnically mixed population.

3.1.5. Livelihood of the People

The livelihoods of the Woredas are based on subsistence farming, which typically is a mixed type of farming including enset, maize, teff, peas, beans, spices, and animal husbandry. The study area has black soils, which are good for Enset crop production. They also make a living depending on domestic animals and their products. These are cattle, sheep, goats, and chickens. Other animals, like horses and donkeys, serve the people (MWARMD, 2019; cited in Haile *et al.,* 2020). The farmers in the rural parts of Marak'a grow different crops depending on the soil type. There is also a practice like crop rotation in order to make the best use of their farmland. The men predominantly take part in agricultural activities in the rural parts of the district, and the women assist their husbands on the farm by weeding and other activities besides home-related activities.

3.2. Research Methodology of the Study

Research methodology is used to solve the research problem systematically. It implies the various steps that are generally adapted by a researcher in studying the research problem, along with the logic behind them (Kothrai, 2004). In order to scientifically explore the role of indigenous knowledge and practice in natural resource conservation, a qualitative research approach and process will be employed in the study. Qualitative approaches are convenient for carrying out research in true-life settings because they enable the research to make detailed descriptions of people's behavior and thoughts to illuminate their social meanings. Therefore, the main reasons for selecting this approach are that it uses interactive data collection methods and allows new issues and concepts to be explored.

3.3. Research Design and Approaches

The researcher used a descriptive research design for this study because it is more useful to explore and describe the local community's understanding, values, and practices of conservation in the indigenous way of their natural resources like land, plants, and water. The appropriate research design for this study was a qualitative case study design to study indigenous knowledge and practice of natural resource conservation in the case of Marak'a Woreda, Dawuro Zone, South West Ethiopia Peoples Region. Qualitative researchers study things in their natural settings and attempt to make sense of or interpret phenomena in terms of the meanings people bring to them descriptive type helps to gather a large variety of data related to the problem under study. Therefore, in this study, the data was collected; their description and interpretation largely depend on society's understanding of their natural resource conservation and managment, with some explanations by the researcher.

According to Creswell (2013), the qualitative approach is helpful for dealing with stories, interactions, imaginations, perceptions, and perspectives. Thus, to achieve its goal, the research design entails procedures for the selection of participants for the study, tools for data gathering, i.e., both primary and secondary, ethical considerations, and a validation plan. The research employed the qualitative method for data collection as well as to analyze the data.

3.4. Sampling techniques and procedures

The population for this study was drawn from selected knowledgeable farmers and household headers of the Marak'a community, traditional belief leaders, and key informants, government representatives of relevant departments in Marak'a woreda and local development agents (DAs) and woreda natural resource experts. Knowledgeable farmers have, above 50 years old, those acceptable communities for different social and cultural affairs from four sample kebeles, namely *Gozo-bamushi, Gobo-shamana, Mada-kuyli,* and *Yamala-meso* kebeles.

Thus, four kebeles were selected based on agro-ecological exposure and their affiliation to socio-cultural values, i.e., notable tradition methods of management in cultural contexts like the prevalence of remnants of traditional belief systems and the abundance of natural resources like land, plants, and water resources.

The selection of research participants was also purposively determined, aiming to grasp the rich experiences and information they comprehended. Knowledgeable individuals who can provide clear information about the cultural contribution of indigenous knowledge and practices of land, plants, and water culturally, their use, and local knowledge were targeted. This target comprised knowledgeable farmers, traditional belief leaders or followers who have awareness about the system, and people who have engagement in the role of indigenous knowledge and practices of natural resource management like land, plant, and water management.

In order to generate additional information from the government institutions that have more awareness, like Environment, Forestry, and Climate Change, Agriculture and Natural Resource Management, Culture, and Tourism of Marak'a Woreda, some units from selected kebeles were included.

Regarding the sample size to conduct interviews and FGD, a total of **44** (**11** key informants, **20** rural household heads, including knowledgeable farmers and traditional belief leaders, took part in the study). In addition, **13** conduct interviews (**6** government representatives of relevant departments in Marak'a woreda and representatives of non-governmental

organizations) and 7 local department agents and woreda agricultural and natural resource department land management and utilization team leader, woreda forest protection development department forest development and conservation team leader, woreda culture and tourism office culture and heritage team leader experts were selected.

In order to sample respondents from the total population, purposive sampling has been largely used, with very limited use of non-probability (available) samplings. Because it is based on the assumption that the investigator can discover, understand, and gain insight into what is studied. That means the investigator must select a sample from which the most can be learned. In this regard, from (government representatives of different relevant departments in Marak'a woreda, Kebeles department agents, and natural resource experts) were selected using purposive sampling techniques. The researcher used available sampling techniques to select knowledgeable farmers and household heads, traditional belief leaders of the Maraka community, around the four kebeles of the woreda.

3.5. Methods of data collection

The study employed the qualitative research method. Primary and secondary sources were used to gather the necessary data for the study. The primary sources were accessed through fieldwork through observation, focus group discussions, in-depth interviews, and informal discussions with the informants. Field observation, focus group discussions, interviews, and informal discussions are designed to find out the perceptions of the informants' (insiders' views) about their different practices and environmental knowledge, as well as why and how they conserve or manage the natural environment.

The data was collected using the following procedure: First, data collection tools (interview and field observation checklist) was prepared. Then an unstructured and open-ended interview were be prepared. Interviews were conducted with the respondent in their local language. The response to the semi-structured interview was audio-recorded and transcribed immediately after each interview. Finally, the interview responses were collected at the given time, and the collected data from different data sources was analyzed accordingly. In addition, gather field notes by conducting an observation as an observer and participant.

Then, the data was analyzed to see the relevance of the knowledge and the practices and their implications for environmental conservation. Secondary data was also gathered from documented materials and from different offices (Marek'a Woreda Agricultural and Natural Resource Development Office and Environmental Protection and Forest Development Office) on the topographic and demographic profiles of the study areas.

3.5.1. Field Observation

Observations were being carried out in any areas around natural resources like land, water, forests, and wildlife. It provides the researcher with the opportunity to gather live data from live situations. Observation is used in reliable data collection as information that is difficult to obtain by way of interview; the direct field observation method was applied (Cohen et al., 2017).

Its main purpose was to see the different environmental characteristics of the area as well as observe the practices of the people, and the researcher was gathering field notes by conducting an observation as an observer and participant in observing lands, forests, ritual areas, sacred groves, wetlands, rivers, grazing and farm lands, rituals, customs, habits, and practices that reflect the knowledge and attitudes of local community settlement areas, nursery sites, and dwellings, as the nature of these things made me take this position.

Moreover, the environment includes aspects like the landscape, plant services delivered like medicine, construction, and utensils commonly used in homes, the landscape of plantations, water resources, and livelihoods related to the utilization of indigenous knowledge and practices of land, plants, and water management in every setting of the research.

During the observation period, the observable conditions were recorded by taking notes, capturing pictures, and recording video to some degree. This was thoroughly conducted in the setting of this particular study. Thus, the data was being incorporated into triangulating data gathered from interviews and FGDs.

3.5.2. In-depth Interview

In-depth interviews were used to gather detailed data from selected key informants. The informants were selected from the focus group discussions, during which the researcher identified the most knowledgeable individuals. They included knowledgeable elderly men and women household headers and farmer members, including *Woraba, Iraasha, Guuda, Daanna,* and traditional belief leaders from four kebeles, with selected participants each, a total of **11** key informants were involved, and the another one (government representatives of relevant departments in Marak'a woreda and local development agents (DAs) and woreda natural resource experts) **13** people also involved in interview time. The informants chosen for this purpose were those who were willing to give details about their indigenous knowledge and deeply know the culture. The in-depth interviews were semi-structured to allow flexibility in directing questions. Some guiding questions were used, but other questions were also directed based on the responses of the informants. The questions revolved around the actions and experiences of the selected informants related to cultural, social, and subsistence practices in their areas, their knowledge about nature, and the status of their indigenous knowledge and practices in their respective areas.The total numbers of the population targeted about **24** participants were selected for the sake of interview time.

3.5.3. Focus Group Discussion

The focus group discussions were also used to collect information to triangulate the reliability and validity of the data collected by other methods. This data collection method helps to generate data on a topic determined by the researcher through the interaction of a purposefully formed small group of people. As a result of this research, three focus group discussions (FGDs) were organized in the three sample kebeles around Marak'a woreda. The researcher formed three groups, with the number of participants in each focus group ranging from **6 to 8,** and the researcher moderated the discussion by using FGD guidelines. That means the study was conducted between three group discussions, and the total number of participants from the groups was **20.** The participants included selected elders, males and females, and knowledgeable members of the community.

Issues under discussion were matched with traditional practices related to conservation of natural resources, perceptions about the use of natural resources, observed changes in the before and present situation, factors affecting traditional knowledge and practice of the community in conservation, and others. During this, the researcher has conducted interactive discussions, gotten relevant data, and taken the necessary data by using an audio recorder and a video recorder. Field notes and pictures were also taken.

3.3. Secondary Sources

Secondary sources of information were accessed from different books, journal articles, websites, and published and unpublished theses from Hawassa University. Thus, books, journals, published and unpublished theses, manuscripts, reports, etc., were conducted and reviewed to substantiate the research area. The information from secondary sources was used to find out related works about the environment, define concepts, and show the missing gap in related studies. Demographic and topographic data about the study area was obtained from the District Administrative Office, Woreda Economic and Finance Development Office, Culture and Tourism Office, Agricultural and Natural Resource Development Office, and Woreda Environmental Protection and Forest Development Office of the Marak'a Woreda.

3.4. Methods of data analysis

Methods of data analysis are one of the most important steps in the research process. It is the process of summarizing and analyzing raw data to obtain study outcomes. So, data has to be processed and analyzed in accordance with the outline laid down in the research plan. Data analysis involves several closely related operations that are performed to summarize the collected data and organize them in such a manner that they answer the research question. After accomplishing the data collection process, the analysis and interpretation of the data are undertaken using qualitative techniques to present and interpret the data gathered from different sources.

In this study, qualitative data were collected through interviews; personal observation, focus group discussion (FGD), and document analysis were put into different categorical variables

and were mostly in the form of verbal narrative information. These were written down during the study and summarized, and they are qualitative in nature. The findings were used to draw arguments on relevant issues.

The secondary source was incorporated into the analysis in addition to the primary sources. This enables the researcher to sort data in a thematic pattern to broaden the horizons of the study. Finally, the major finding will be interpreted and presented in a meaningful manner.

3.6. Ethical Consideration

Respecting the site where the research takes place and gaining permission before entering a site is paramount in research. An introductory letter was obtained from Hawassa University, starting with the aim and purpose of the study and the need for the participants to consent and cooperate.

In the process of the study, ethical issues were considered. Among the most serious ethical concerns that recently received attention is the assurance that participants are voluntarily involved in the research and are informed of all potential risks (Arifin, 2018). Accordingly, the researcher clearly explained to the research participants the rights and responsibilities of both the researcher and the participants. To give priority to the participant's welfare, major ethical considerations were made while conducting this study. The researcher was engaged in the research setting after securing a letter of testimony from Hawassa University that provided background about the researcher and the aim of the fieldwork.

Appropriate ethical considerations were used in the process of conducting this study. Formal procedures in the data collection process were held; the informants were informed before asking for any form of information. They had an absolute right to participate in the data collection procedures only through informed consent. Generally, respondents' personal privacy and anonymity are properly maintained to maintain the confidence in which they live

CHAPTER FOUR: INDIGENOUS KNOWLEDGE AND PRACTICES OF THE DAWURO OF MARAK'A WOREDA

Introduction

In this chapter, the data obtained from the fieldwork is presented and discussed. The analysis of the data was enriched from primary and secondary sources using the method of this study. Indigenous people can generate knowledge from natural resources and their experiences of their living environment. The view of the Dawuro in Marak'a woreda towards nature and their knowledge about land, plants, and water are expounded. Their indigenous practices in relation to these natural resources are also discussed.

4.1. Indigenous Knowledge of Marak'a Community in Natural Resource Conservation

According to elders in the surrounding area and the practical observation of the researcher, our predecessors felt the need for the conservation of natural resources, and in Dawuro, there was a tradition of respecting and preserving nature and natural resources. Natural resources are conserved in the form of sacred groves and forests, sacred pools and lakes, sacred species, etc., e.g., the river Ganges. Sacred areas are patches of different dimensions dedicated by the tribes to their deities and ancestral spirits. Cutting down trees, hunting, and other human interference are strictly prohibited in protected areas. The widespread practice, particularly in Dawuro in Marak'a, has resulted in the protection of many plants and animals.

As to the informants and elders, *Daana* Didana Dooku mentioned similarly that several water bodies, e.g., aduwaa in Dawuro, were declared sacred by people, thus protecting aquatic flora. Worshipping certain places like *Gobbona Ochchaa* and *Aagona Zaalla* in *Arusi mogis kebeles, Gezziya/geyuwaa Borttuwa* in *Gozo-Bamushi kebeles,* etc. has not only preserved them but also encouraged their plantation. History recalls numerous instances where people have laid down their lives to protect trees.

In the focus group discussion the researcher had with the society, the Dawuro in Marak'a expressed the value of *Gobbona Ochchaa* and *Aagona Zaalla* using songs.

Gaashiya Ootsiyawe Galshshashaa …… Aagona Zaallay Gaashee

Maldduwaa Ootsiyawe Malssassaa ……. Aagona Zaallay Gaashee

Uutsaa tokkiyawe tagodaa …….. Gobona ochchay Shemppo

Badala Ootsiyawe Barssassa …….. Gobona ochchay Shemppo

Translation

People who plant teff, he is a leazy person... See you at the 'Aagona' rock.

People who plant millet are good-looking... See you at the 'Aagona' rock.

people who plant inset, he is good-looking…You sit under the Gobonaa' tree, which has a shadow.

people who plant corn, he is bumptious... You sit under the ' Gobonaa' tree, which has a shadow.

This indicates that the Dawuro in Marak'a, or study area, is transmitting their traditional methods of natural resource protection and use of tree and rock resources in their based songs. This wisdom transmits cultural resource conservation to generations, aims at representing a segment of the social order, and conveys a part of the customs of the local people of tree and rock values. The local elders have also accomplished the command of individual attention on tree/ plant resource management through songs.

The importance of indigenous knowledge components was assessed based on the contributions of local knowledge of natural resource management and use properties; ecological knowledge on the growing conditions of plants and animals in the natural environment; *institutional knowledge* on norms, rules, and regulations for using and managing natural resources within a locality; *behavioral knowledge* on community needs and use patterns; *economic knowledge* on local levels that contributes towards income, poverty reduction, and often the basis of livelihoods in communities.

Dawuro of Marak'a indigenous knowledge is the essence of the social capital of Marak'a peoples and plays a significant role in the conservation of natural resources. Local culture and the spiritual, social, and ethical norms possessed by these peoples have often been determining factors for sustainable use and conservation of natural resources. According to

the informant's view, indigenous knowledge owned by Marak'a people to conserve natural resources is shifting cultivation, sacred groves, local methods of soil and water conservation practices (physical and biological structure), home gardens, and traditional agroforestry practices that are dominantly used in natural resource conservation.

Their rich knowledge of conserving natural resources, particularly land, water, and plants, which is the focus of his study presented in this part, also confirms the indignity of the Marak'a. Indignity, in this case, refers to the first inhabitants of an area with rich historical and cultural ties to the area. Local elders have an important role to play in shaping indigenous knowledge and practices to ensure its survival for future generations. The elders are also responsible for land use planning in the area. Community elders are the ones in charge of transferring knowledge to younger generations using various means chosen by society. This was clarified by one local elder;

> *We are enforcing the indigenous laws as planned; some time we travel to other places to look for more elderly people who know more than us to give us their opinions on things about which we are not sure. We also make sure that indigenous laws are respected and observed by current and future generations (Daanna Mangisttu Makura, 5 April 2023).*

As aforementioned, indigenous knowledge is the result of a continuous process of generation, transmission, and adaptation to changing conditions. Being constantly modified by the peasants, it is a dynamic entity permanently renegotiated between the people and their environment. In the Dawuro community, the approaches used by community elders as a means to transfer traditional knowledge to younger generations are age group meetings, traditional holidays, and traditional tales. Elders teach youth about customs and traditional culture and their relation to natural resources like land, water, plants, wildlife, and other life skills such as endurance, patience, and self-respect.

During the interview, the Woreda Agriculture and Rural Development Office pointed out that:

> *Marak'a indigenous knowledge is developed from experience gained over the centuries and adopted into the local culture and environment. It is transmitted orally from generation to generation. It tends to be collectively owned and takes*

> *the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds (Chernet Bezabih, 12 May 2023).*

One of the traditional healers mentioned:

> *We always share our knowledge during meetings, especially with those below us. We taught them about important medicinal trees in the forest, provided them with our will to protect the forest, and asked them to share their knowledge with others when they got older (Daana Ababa Asaro, 10 March 2023).*

This was an argument by one community elder (Guuda Ute Dolango, May *15,* 2023) when he said,

> *"When the appropriate time comes, people of certain ages are brought together. In a place where the main emphasis is on customs and traditions, making sure that current and future generations protect societal values is an important rite of passage in society".*

This indicates in general, the Marak'a people have generated a sizable understanding of natural resource conservation. The knowledge has been generated through experimental learning and is passed on through generations in family and village traditions. Indigenous knowledge is expressed through stories, legends, folklore, rituals, songs, and even laws. It is inherited from generation to generation and includes traditional knowledge, innovations, beliefs, and practices of local communities embodying traditional lifestyles relevant for the conservation and sustainable use of natural resources.

4.2. Indigenous Knowledge and Practices Related to Land

According to the informants, they respect and love their land. Indeed, some have asserted that their love for themselves is equal to their love for their land. Once or twice a year, we help our land. Regarding this attitude, my informant, Agize Abara, said, "I feel pain when my land is unfairly touched. This is because I rely on him to teach me how to raise my children; I inherited it from my father, and I have a responsibility to pass it on to my son''. The earth is the foundation of everything, and the creator says that I created the earth and the sky first. Everything that human beings need to live, such as water, crops, plants, animals, etc., is on earth and should be respected.

The findings reveal that the knowledge of wise utilization and conservation of land resources among the Dawuro of Marak'a is revealed in their rationale for land uses and land allocation for specific specialized purposes. The Dawuro of Marak'a allocates land resources based on their importance in the socio-cultural and economic lives of the people and for sustainable utilization and conservation. Based on this, the Dawuro of Marak'a generally put their lands into many categories. Some of these are: land under cultivation, sacred sites, forestland, homesteads, grazing land, and burial land. Through the application of indigenous knowledge of landscape classification, the Dawuro of Marak'a properly utilizes the resources and, at the same time, conserves them.

As the Dawuro in Marak'a of the study area explained, land is the basis for everything as it is the home for all creatures. Land has different forms and functions, all of which have their own interpretation and deserve respect according to the purpose they serve in the study areas.

4.2.1. Land under cultivation

According to elders in the surrounding area and the practical observation of the researcher, the farmers of Marak'a Districts are aware of the fact that land (farmland) is the base for their livelihood. They know some traditional mechanisms for maintaining the fertility of their land and protecting soil erosion by planting and keeping trees in their farmlands. The use of animal dung and byproducts of crops such as straws to increase the fertility of their soil is also common among the people of the study sites. These are directly carried out to protect land from destruction. Hence, they are some of the manifest functions for land (soil) conservation. This portion of land is identified and selected based on the soil type suitable for cultivation and its land features. Among the Dawuro of Marak'a, the identification of soil type for cultivation for a specific type of crop and its productivity are guided by the indigenous knowledge they have acquired through lifelong experiences. Each type of crop is selective in terms of soil type and fertility. The system of plowing is another practice that requires a thorough knowledge of land resource usage to sustain its fertility and protect the land from erosion. Some trees have been preserved on the land under cultivation for different purposes.

According to the findings, trees on land under cultivation are conserved for two significant purposes. First, they protect the land from erosion. Some tree species are planted or covered on the land under cultivation for their conservation impacts on the land under cultivation. The upper part of the soil, according to the informant, *Guuda* ute Doolango, is fertile and suitable for a better harvest. If eroded, the farmers lose the golden part of this soil, which is important for a good harvest. The second reason is that there are tree species that are protected on the land under cultivation. These tree species are those that have religious values in the indigenous religion of the Dawuro, such as *Boo'iya, Esa, Maaruwa, Wolaa (*Ficus sycomorus L.*), Borttuwaa (*Erythrina abyssinica*), and Ontsaa (*Prunus africana*).*

Among the Dawuro of Marak'a, in their rationale for agricultural land usage, two types of knowledge are detected. The first is their knowledge of allocating specific land for cultivation, and the second is their knowledge of sustainable utilization. Such indigenous knowledge and practices are used in the conservation of other natural resources, like plant species and underground water.

Taybela's (2013) study thus substantiates this knowledge of the Dawuro people in general and the Marak'a in particular. In his studies about 'protecting the environmental resources of Marak'a, he points out, "It has been agriculture where trees are preserved not only for their shade or majestic look, but for their conservation impacts on their environments". Implicit in this idea is that the Dawuro people have been practicing agriculture with the help of their indigenous knowledge, which helps to protect their environment. The fertility and productivity of this land are protected through the application of their indigenous agricultural methods, like shifting cultivation, crop rotation, inter-cropping, minimum tillage, and cattle kraal shifting.

4.2.2. Sacred land (sites)

Kaashsh-Biittaa declared this sacred place and its resources to be protected. As a result, the natural resources of this area were respected. Even hunters did not kill animals in this area. As a result, it was believed that Kaashsha was a sacred land that did not carry criminals.

Totally in the *Kaashshsa* area, there was no crime, abduction, killing of human beings and animals, or bloodshed on this land (Alaama Agize Allanchcha).

My key informants told me that in *Kaashsha,* worship was practiced, human rights were respected, animals were not killed, and forests were not cleared. From this case, it appears that *Kaashsha* was a sacred place where the rights of human beings were respected and animals and plants were protected. This traditional narration, supported by living evidence like sacred trees and a number of big trees in the area and forests in the surrounding areas, seems to show the contribution the beliefs of the Dawuro have on conservation of land and forests.

The result of the FGD and semi-structured interview further indicates that the customs and values of the society force them to preserve forests, especially sacred trees. They know Kaashsha trees are not cut for any purpose.

4.2.3. Duupuwaa Biitaa (Burial lands)

The data obtained from the study area through an in-depth interview with the local elders indicates that burial sites are historical and memorial places for the clan of the deceased to remember the individual of their clan. These places are also part of clan land. The community believes that for the deceased, this land is the resting place and their spirit resided around it. The value and the assumptions the community attaches to this land serve to protect and conserve this land and the vegetation it covers.

It is believed that an individual possesses spirit when alive, and when the person dies, this spirit remains on his grave. Because the spirit respected and valued the graveyards, they were respected and protected for generations. This portion of the land is detached from cultivation, grazing, and other social uses. Some plant species are planted on graves to mark the place where a particular individual was buried and to protect the grave from being disturbed.

My key informants, Abara Dubale, Doolango Dooshsha, and Daachu S’oona, mentioned that burial land is another form of land that has a role in conserving land. This area is respected, as it is believed that the spirits of the deceased dwell there. If the land is used for cultivation

and the trees on it are cut down, the spirits are offended and affect the one who destroys it. Out of this fear, the trees and the land are protected. This has the latent function of strengthening the effort towards conservation of land, trees, and animals. This is an indication of the respect given to such areas and the plants that grow in them.

4.3. Worshiping Site

My informants explained in the focus group discussion that mountains are raised land, and they are the places where the creator hears their people. A mountain is a symbolic place for the Dawuro; it connotes truth. Truth dwells on a raised mountain (land) so as to prevail over immoral acts and falsehood. For them, truth refers to behaviors that are based on morality, virtue, loyalty, and purity, which the creator likes. On the contrary, *woriya* (lie) implicates wickedness, immorality, disloyalty, and hence impurity. Dawuro saying states, *Tumawunne s'ink'k'o kesiyaasay d'ayenna* (literally, truth may get thinner, but never break up), implying that *Tumuwa* (truth) always prevails eventually over *woriya* (lie) regardless of the attempts to suppress and hide it.

Some of the key informants mentioned the Dawuro of Marak'a in the study area, people usually go to a mountain or sacred groove to worship the creator to get solutions for their immediate problems, like the delay of rain, the disease of animals, or failure in crop productivity. As my informant, Guudaa Ute Doolango, stated, when the Dawuro pleads with the creator to pray *Geeshsha marachiyappe* (pure stomach) for rain, the creator hears and blesses them with rain on that very day. Pure stomach here refers to a sign of being loyal to the creator by following the path of truth (*Tumaa*). The reason the Dawuro go to the mountain for worship is that it is where the glory of the creator (*Med'd'a-s'oossa*) is observed. As mountains are sites for exercising religious practices, an ordinary person who is a follower of the Dawuro culture is never expected to farm on them.

Some forms of land are used as a place for worshipping the Creator. Mountain is among such areas that are primarily respected for their religious significance. It is a sacred area and, hence, deserves respect. It is immoral to cut trees, leave land bare, and cultivate the land. No Dawuro who lives according to the indigenous culture is expected to break this principle.

The intended function of a mountain is religious, but the underlying effect encourages the conservation of land. If a mountain is respected, its trees are protected; this implies protecting the natural resources. Animals that live there are also protected if the mountain is protected. This shows us that religious practices have a latent function in environmental conservation.

Worship sites are sacred places where sacrifices for thanksgiving are offered and prayers are requested. It was declared a sacred place, and its resources were protected. As a result, the natural resources of this area were respected.

> *People do not cut the growing part or tip of a plant, but rather its branches. The gathering of any plant material, living or dead, is prohibited. This rule is serious to the extent that, even during sacrifices, offering firewood for the purpose is to be carried from far away and not obtained from within. No wild animal or bird should be killed or trapped in those places without a prior request from the gods. They believe that they are applying to god the damage done to them, and god will punish them (Woju Karetso, May 17, 2023, Yamala-Meso Kebele).*

This indicates that sacred groves (worshing sites) play an important role in soil, plant, and water conservation. They improve the soil stability of the region and act as a soil binder. Plants are maintained to bind the soil by preventing soil erosion.

4.4. Indigenous Knowledge and Practices Related to Plants

A young plant that is growing straight is respected, and cutting it is considered a wrong act according to the Dawuro tradition. Such an act is termed turning it on the way. This expresses that destroying something while it is still longing to grow is *Nagaranchcha* (sin); anyone who does this is believed to die without reaching manhood. Particularly, the culture forbids a young child to cut a young plant. As Guudaa Ute Doolango (72 years old) explains:

> *Biro dic'c'i de'iya mitsaynne k'eeri naanay itta. Keeri naanaw aya mala naagu koshintto nuuni ubbaykka eretto. Hewa gido diraw mitsaykka he likkiyan s'eelette. Maarinne wogi baynna ogiyan dekawa gido shoddawa nagaranchcha gi paydee. K'eeri naana hayk'k'oone metoo aatsi immeeddawa mala geetettee. Gujaankka Dawuro wogaanninne maaran biro dic'c'iya mitsay dekettennanne bul''ettenna. Asa gido golle*

mehii aad'oode erennan bul''ettooppe haray tokettee. Erennawa malati aad'd'i booppe asanatetsay baynna deshanne s'alaa, asanassi digo s'oossawukka yayenna nagaranchaa getettee.

Translation

Young plants and children are similar in Dawuro culture. It is clear to all what kind of care is needed for our children, so plants are like children and want to be protected. It is not appropriate to cut or uproot plants that are still growing. He is considered to have caused the death or abuse of a minor. According to Dawuro culture and tradition, young plants aren't cut, and they will not be removed. When a person or a pet passes and removes plants by mistake, another plant is planted in its place. If a person sees the removed plant and goes carelessly, then he will be hired as a sinner who has no mercy, is cruel, and does not fear the children of mankind or the Creator (Guudaa Ute Doolango fromm Madda-Kuyli Kebeles, May 15, 2023).

This indicates that the Marak'a, who abide by their indigenous culture, love and respect a tree that is straight.

The participants of the in-depth interviews asserted that Dawuro loves their trees like they love their children, sometimes even more than them. Most key informants, Mamo Ushecho, Tagagne Tadasa, and Chernete Bayana, express their love for plants /trees by saying trees are their life, flesh, clothing, and food. For example, key informants who say trees are their flesh say their bones cannot work and function without flesh; likewise, they say they cannot survive without trees. Similarly, others also express their feelings, saying trees are their life and they cannot work and live a happy life without trees, as they are their source of life. They also say trees are their home to show that they used to escape from dangers during wars by hiding themselves in the forest. During hunger, the Dawuros eat from the fruits of trees. When there is drought, the Dawuros use the sheds of trees as a mechanism to cool them. Even when people die, a sign is placed on the grave to remember the dead.

These are all indications of the fact that the working culture as well as the life of a Dawuros depend on trees. Others still say a tree is the source of all natural resources. For example, rain, water, wet land, different wild animals, soil, and favorable weather conditions are results of forests. Hence, a tree is the life of our society.

Generally, the Dawuro of Marak'a District use plants/trees for different purposes, like subsistence, social, and religious practices. Some of these are explained as follows:

4.5. Household Related Subsistence Activities

A. Firewood

Firewood makes up the main source of fuel for the rural Marak'a District. My informants underscored that the Dawuro know the plants/trees that serve for firewood purposes. Dachu Tona explained that the Dawuro know how and which plant serves best for firewood. In the belief of *Shaareechuwa/Alaama* (wizard), the shrine wood is not used for the purpose of firewood because the shrine wood is taboo. Yet, some trees are never thought of for firewood, even when they grow old and dry. Especially those who use a given tree for religious purposes in their village never think of using this tree for firewood. A plant that has dried on its own and is not meant for any other purposes can be used.

In this context, Doolango Doosha, Almaayo Ashango, and Daachu Toona emphasized during a focus group discussion that a young tree should not be cut down for firewood or other purposes. Only its branches may be cut in such a way that it does not affect the whole tree. Besides wood, it is also common to use cow dung (*Oshakewiya*) for fuel in rural areas of Marak'a. In the rural areas of Marak'a District, firewood is needed for cooking. Some also carry it to towns like Waka to generate income. When a big tree grows old, its branches get dry and fall down. This tree can be used for firewood. The practicality and sustainability of the firewood resources in the forest plant Collecting and handling the firewood is the task given to the young in the Dawuro of Marak'a community. Young are also responsible for keeping the fire warm by applying different techniques.

This indicates that old people told the new generation about shrines, protected areas of forest, and big trees that should not be cut down for firewood and other purposes.

B. Cleaning/Washing Purpose

Some trees are culturally associated with cleaning purposes among the Dawuro of Marak'a District. The informants reported that on FGD Discussion, plants like *Hanc'c'iic'iya*

(Phytolacca dodecandra) and *Bidintsaa* (soda ash) are used to wash and clean home tools and clothes. Formerly, when technologies like soap and machines did not exist, the local people of the study area used *Hanc'c'iic'iya* and *Bidintsaa* as soap by mixing them with water and simply removing dirt from clothes. The elderly woman, Belaynesh Mengesha, in the study area stated that they used the leaves of the *kamppaara* or Bakkannisa trees to wash *the baatsaa,* or clay pot, in which *parssuwa* (local beer) is brewed. They also disclosed that still today, the Dawuro use a small plant called *Kosorotiya or Shaashsha* to wash milk containers. As this plant has a good smell, it is believed that it gives a pleasant odor to milk and its products.

In the study area, these trees are very protected; they are not cut for any purpose, and indigenous people give more attention to conserving them.

C. Food

Fruits from some trees are consumed. As my informants explained, in rural areas it is common to eat the fruits of trees such as *Ochchaa (*Syzygium guineense (Willd.) DC. subsp. guineense*), Wodentsaa (*Syzgium guineense var. macrocarpa (Engl.) F. White*), Uutsaa (*Enset ventricosum (Welw.*) Jimaa (*Catha edulis (Vahl.) Forssk. ex Endl.*)Dul''uwaa, Injooriya, Murs's'akuwaa*. Mainly, children enjoy the fruits while they look after cattle in rural areas. *Doolango Dooshsha*, now 90 years of age, recalled the time he used to eat the fruits of different trees when he was a shepherd, remembering that he was never hungry when he reached home in the evenings.

The in-depth interviews held with *Danna Ute Doolango* and *Abara Dubale* revealed that wild animals like apes, monkeys, and birds also rely on the fruits of different trees as their main food. As a result, these animals do not seriously affect crops if trees that bear fruit grow around a field.

D. Construction

In rural areas of Marak'a, trees are also used in house-making in two ways. In traditional house-making, naturally available construction materials are used. There are different plants, stone, and mud for making houses traditionally.

According to the informants, the local people get trees like *Wooshsha* (Arundinaria alpina), *Ambiyaa* (Terminalia schimperiana Hochst.), *Ontsaa (*Prunus africana), *Gegec'uwa (*Maesa lanceolata Forssk.), *Zaagiya* (Milettia ferruginea), *Ochchaa (*Syzygium guineense (Willd.), and *C'ac'c'awuwa* (Clutia abyssinc) for construction from the forest. They explained that they take old trees that fall down, chop them, and use them for the construction of traditional houses and fences. They stated that these trees are strong for construction and dependable.

My informants explained that when such trees are cut, there are precautions to be taken by the person who does the cutting: first, the axe should be sharp, for the blunt one spoils the remaining part and affects regeneration. Second, it should not be cut completely from a single area. It should be done selectively. Third, a tree should be cut before the rainy season because regeneration may be affected by decomposition in the summer (rainy season). Finally, the trees should be cut in a slanting position to facilitate regeneration.

E. Tools

Trees are also used for making different tools. Household utensils like a bowel made of wood (*gap'atiya*), a raised and flat wooden bowl made of wood (*woc'iitiya*), and a flat plate made of wood (*pil''uwaa*) are made of *Mok'otsaa* (Cordia Africana). Agricultural instruments such as a beam of a plough (*Gindaa*), the handle attached to the beam of plough (*kos'iyaa*), and *Morgge mitsaa* are made of eucalyptus trees, *Barzaapiyaa* (Eucalyptus globules Labill), Zaagiya (Milettia ferruginea), and *Ambbiyaa (Terminalia schimperiana Hochst.)*.

In addition, trees like *Ontsaa* (Prunus africana), *Ambbiyaa* (Terminalia schimperiana Hochst.), *Mok'otsaa* (Cordia africana Lam.), *Ankkaa* (Croton macrostachyus Del), and *C'accawuwa* (Clutia abyssinc) are used to make the handles of every traditional agricultural and home tool like a hoe, axe, knife, sickle, and others. Moreover, *Mok'otsaa* (Cordia Africana) and *Esaa* (Bersema abyssinica) are trees to make mortar and pestle. There are two types of mortar: big and small. The big mortar is about 60cm tall and is used to grind crops by standing alongside the mortar. Whereas, the small mortar is about 15cm on average and used to grind coffee or other spices by sitting down.

Generally, there are different plant species used to make different agricultural and home tools. What is important is that the trees should be aged to make sure that they are strong and the tools are durable.

F. Bee keeping

The farmers in the rural areas of Marak'a practice beekeeping in a traditional way. They make a traditional hive from small plants like Shombok'uwaa (Arundo donax) and hang it on big trees. This is common in areas where big trees like Wolaa (Ficus sycomorus L.), K'aak'aa (Euphorbia candelabrum Kotsschy), Odooruwaa (Acacia abyssinica Hochst. ex Benth), and other similar big trees are available. In the same way, in areas with forests or rivers, some farmers keep bees. The honey is used as food or to generate income (Doolango Dooshsha and Abara Dubbaala).

Sometimes, as my key informants, Taadassa Biraga and Almaayo Ashango, explained, farmers may randomly come across a big tree on which bees make honey. Though there are modern beehives being introduced in Marak'a District, most people are using the traditional method of beekeeping (Marak'a Woreda Agricultural and Development Office, 2022–2023).

4.6. Shade (Shelter)

My informant, Chernet Bezabih, said that not only making the shelter, the tree also by itself is shelter. We see that big trees are used as a temporary shelter for both cattle and people. According to the Dawuro of Marak'a, big trees are used as homes for birds and other animals, too. Hence, plants also support other forms of nature (life). The Dawuro proverb my informant, *Daanna* Mangistto Makura, told: *Gadiya maaddiya (Aype) asay hayk'k'oode 'wogga wolay kunddeedda' gee'*. This mean When important person die, 'a fall a big tree'.

This shows the significance of trees and the love of trees; they symbolize trees as important and essential to people. In the day-to-day activities of the Marak'a, big trees play a role in protecting people against rain or heat. The proverb implies the fact that these two (an elderly man and a big tree) are important to protect oneself from attack. When there is heavy rain or heavy sun, it is under such trees that Dawuro get shelter in rural areas where there is no house around. In the same way, when a child commits some mistake and his father wants to

punish him, the child may run to an elderly person to escape the punishment. The father never punishes his child when he or she has run to an elderly man. Both a big tree and an elderly person enjoy high respect among the Dawuro of Marak'a.

4.7. Dispute Settlement

Trees are associated with dispute settlement processes. In Marak'a woreda, when there is a dispute between two people or groups, the elderly men of the area meet and discuss the case while sitting under big trees. Those who participate in the aforementioned institutions would often meet to conduct conflict resolution processes under the tree called *dubbusha*.

According to my informants, Doolango Dooshshaa, for the Dawuro, *Dubbushaa* is a type of sacred tree where people gather to discuss local matters. As my informants further explained among the Dawuro, any tree cannot be used as a *dubbbusha*. It is believed that *Dubbusha* is a place where the Dawuro sky god dwells and truth is spoken, which makes it sacred. So, the Dawuro society believes that *S'oosa* would help them while dealing with conflicts under *dubbusha* because the *S'oosa* spirit is residing on the branches and leaves of the sacred tree. Similar conceptions were held by the neighboring Dawuro people. For example, according to the study by Mamo (2017) on the history of interaction between Dawuro and the surrounding communities, *Yaa'a kare, or dubbusha,* is one of the religious shrines of the Dawuro people where the spirits of god dwell. Thus, this sacred place is highly respected and considered a palace where justice is provided, religious meetings are conducted, and truth is spoken.

As Guuda Ute Doolango explained,

> *Mitsay ubbay mitsa gidenna. Karii ubbay yewuwaa billanaw miikenna. Dooretto mitsaynne yewuwa oytsiya dubbushay de'ee. Murutaa immiya mitsaa gidon pirdettenna.*
>
> **Translation**
>
> *Not all wood is wood. Not every place is a place. There is a type of wood and an easy place to sort disputes out. Does not sit under like an edible fruit tree and solve the resolution (Guuda Ute Doolango from Madda-kuyli kebele, 12 May 2023).*

This indicates that there are different trees that give fruit and cannot. People simply settle disputes under a non-fruitful tree.

One of my key informants, Doolango Dooshsha and C'ufa C'udara, among the Dawuro, planted trees that could be able to give edible fruits (*Mangguwa (*Mangifera indica L.), *Abokaaduwa (Persea americana L.),* and the like trees are not preferred by the Dawuro's) and shade their leaves during the dry season. *Garaa* (Vernonia amygdalina Del) and *Zaagiya* (Milettia ferruginea) are not selected to conduct meetings and resolve conflicts. According to their belief, the tree types that are bearing edible fruits could become spoiled at a time when sinful and impure individuals are climbing them to eat their fruits. So, this would make their God angry while begging him to help them solve conflicting cases easily under the spoiled trees. Besides, those trees that could shade their leaves during the dry seasons are not comfortable for the good spirits to reside, and hence, there is no support from God while conducting discussions to resolve conflicts under seasonal trees. In line with this, informants also stated that evergreen trees could also help to protect against the bad sun rays while discussing and sitting under them while resolving conflicts.

As the informants stated, according to the beliefs of the Dawuro society, *Dubbusha* also symbolizes a man and his or her offspring. So, for the Dawuro, speaking evil, lying, or failing to expose oneself in this respected place (under *dubbusha*) may result in the ruin or death of the potential generation of contestants. Under this tree, the conflict resolvers would usually beg and ask the contestants in the process of conflict resolution, saying: "*Hinttee dubbushaw/kariyaw giidi tumuwa odite*" means 'tell the truth not to endanger your future descendants'.The disputants swear in the name of *Dubbusha* to approve their genuineness.

4.8. Plant Species Used for Traditional Medicines

Information from interviews with key informants reveals that most plants and leaves serving medicinal purposes are harvested from the wild. Very few of them can be found in the surrounding area. In addition to their medicinal values, these plants serve for the purposes of food, construction, sheds during the sunny season, and sources of income.

Trees that serve medicinal purposes are shrubs and herbs. Researchers (Mathewos *et al*., 2022) expressed this fact in their research findings. According to Dawuro culture, cultural

medicine takes into consideration the preparation, dosage, application, and administration of medicine. This wisdom is considered by a few selected individuals to be traditional healers.

Before this modern medicine came into being, the Dawuros had been using different medicines for both human beings and domesticated animals. This indigenous knowledge has been passed from generation to generation. Indigenous knowledge has had its share in the preservation of natural resources and forests. When they use shrubs and herbs for medicinal value, they only cut part of the tree or its leaves.

Table: 1 some of common indigenous medical plants

Local name	**Scientific name**	**Life form**	**Part used**	**Treat for**	**Aliment types**
Naatiruwaa	Artemisa	herb	Leaf	Human	Hypertension;stomach, ache, severe abdominal cramp
Agupiya	Artemisisa afra	herb	Leaf	Human	Stomach, ache, ascaris
Loomiya	Citrus aurantifol	tree	Leaf/s/ root	Human, cattle	Stomachache,anthrax; Germ killing (wound)
C'ac'awuwa	Clutiaa byssinc	tree	Leaf/root	Human,cattle	Epileplic shock; Evil eye
Bidaara	Cyperus articulata	plant	Shrub	Human, cattle	Stomach ache, inteslinal problem
Damakasiya	Ocimum lamifolium	tree	Leaf	Human	Eye disease/eye allergic
S'alotiya	Ruta chalepen	plant	Leaf/seed	Human, cattle	Trypanosomiasis; Evil eye
Tunjjaa	Piper capense	climber	Seed/stem	Human, cattle	Stomachache,intestinal, cramp; Headache
Uutsaa	Ensete ventricosum	plant	Steam	Human, cattle	anthrax, liver problem, blood clotting, and earache
Shooshshuwa	Juniperus procera	plant	Leaf, root	Cattle	snakebite,Diarrhea, rheumatism, bedbug, and late placenta,
Hanc'c'iic'a	Phytolacca dodecandra	plant	Root/seed	Fish	Fishing purpose Rabies
Garaa	Vernonia	plant	leaf	Cattle	intestinal, cramp

	amygdalina Del.				
Zaagiya	Milettia ferruginea (Hochst.) Bak	plant	Seed	Fish	Fishing purpose Rabies
C'awulaa	Vepris danellii	plant	Root, leaf	Cattle	intestinal, cramp

Source: Field research 2023

NB. System of preparations, dosage, and applications are not discussed because traditional healers are not interested in divulging their knowledge on medicinal plants, and thus the knowledge and skills concerning these plants are individual mysteries and not available to the public. The intention to generate an income from the practice could be a big factor taken into consideration.

The above table indicates different types of plant species people in the study area have been using to treat different human and domestic animal diseases. In the FGD held at different Marak'a with the society, the elders assured that the knowledge of making medicine is not of all individuals in the society. Only a few individuals have that knowledge, but there is at least one or more traditional healers in a Marak'a. The traditional healer makes the medicine carefully, and nobody knows where he cuts it or how he makes it. It is given to the concerned body in the form of powder or liquid so that nobody guesses which plant species is used to make it.

4.9. Religion and Ritual Practices in the Area cosmology

The informants reported that on FGD discussion and study in Tefer et al. (2019), as in other societies, the people Dawuro of Marak'a believed in different traditional beliefs. Before the introduction of Christianity, each Marak'a had one or more traditional sprits. Each sprit belonged only to certain clan members. According to indigenous beliefs, Dawuro of Marak'a has different supernatural beings based on their nature and character. Some of the common deities are *Med'd'a-S'oossa* (which was believed to practice a household manner), *Sas'aa-soo'ossa* (which appeared on young people, women, and even people of outcast groups), and *Tillo-S'oossa*, which is said to have been the truthful god.

As to the informants and elders, one of the unique characteristics of the Dawuro of Marak'a traditional beliefs is that the *Shareechuwa* (wizard) religious leaders have their own spiritual places. In most cases, a spiritual position was hereditary. According to this tradition, the one who possessed the spirit from his father is known as *Work'k'a-S'oossa* (the golden god), and another spirit that may appear on the brother of the golden god is called *Biraa-S'oossa* (the silver god) and can act beyond the domain of the golden god in the village. Besides these, there were people who believed in different things like rain, trees, and stones. Besides the traditional beliefs, Christianity is another religion of the Dawuro of Marak'a society (Mamo, 2017).

According to elders in the surrounding area and the practical observation of the researcher, traditionally, most Dawuro people used to believe in natural phenomena such as the sun, moon, trees, rivers, lighting, and individual wild beasts like dragons, both as mediums or objects of worship. There are still a few Dawuro communities that believe in these and other natural phenomena. Traditional beliefs in spirits seem to still be dominant in influencing people's everyday behavior (Tefer et al., 2019). These beliefs among the Dawuro are represented by a number of spirits, or *S'oossa* (gods or deities).

In the focus group discussion the researcher had with the society, the Dawuro classified their indigenous religion into many branches. These are:

Godaa/ S'oossa:- The high God He is the creator.

Tilo-S'oossa:- "righteous god". It is believed that this god does not require any material sacrifice; acknowledgment of his power and deeds is sufficient. The leader *(shareechuwaa),* who represents *s'illo-S'ossa (the* righteous god), can tell fortunes or predict the future without accepting any rewards from adherents.

Dada:- Sky God, which is equated with the god of lightning. It has its own leaders and their assistants, called *agarishuwa*, in different parts of the countryside. If lightning kills people and animals or heats plants and other property, *Agarishuwa* has to perform a purifying ceremony.

Lage-S'oossa:- Lage-S'oossa: A god of a clan of equal rank with one's own who is to be consulted when one's own aawuwaa s'oossa (father god) can't be approached because of various misbehavior committed.

Sas'aa-S'ossa: This is a very powerful spirit that is believed to be highly reliable in its deeds and predictions of future phenomena. Unlike most other spirits, which are inherited from families, the *Sas'aa-S'oosa* spirit is believed to possess anyone of its own choice who may not be a descendant of a spirit possessor. It is believed that *sas'aa-s'oosaa* can bring quick harm to offenders of its adherents. The *Sas'a-s'oosa* spirit is widespread throughout Dawuro and collects gifts for its services through its representative, called *Finchuwa S'oossa*.

Mayiraaminttu (Geyyuwaa/Gezziya): fertility goddess. The attendants are women only. Women perform fertility rituals and bless those who want to have children. They also perform a variety of rituals when something "strange" happens in their community. These include the birth of a deformed baby, the birth of twins in a family, an abnormal menstrual cycle, and abnormal conditions in the preparation stages of Enset or in local drink preparation. When such a "strange" thing happens or to interpret dreams, women gather and boil coffee under a tree and make prayers led by *Baltteta* (an elderly woman) to *the Mayiraaminttu* spirit for mercy. This tree is always controlled.

Amiita:- spirit possession. God is believed to take temporary possession of men and women to speak through them.

As Data (1997) accurately noted, the majority of these gods (spirits) are contacted (worshipped) through the use of ritual leaders known as Shareechuwaa or Alaama. Beliefs in these spirits touch almost every aspect of peasant life in Dawuro. They are consulted for matters of farming, to set a journey, about whom to marry, what color of animals to breed, whom to be friends with, what to avoid, what rituals to perform, and so on.

Gomiya: is an affliction or misfortune believed to happen to a person, family, or community because of breaking a taboo or failing to do the right things. Among these is a failure to observe *pila* and *tuna*. *Gomiya* can happen through stages or in short-cut ways. There are

three possible ways: namely, from pila to tuna and then to *gomiya*, from *pila* to *gomiya,* and from *tuna* to *gomiya* (Data 1997).

Various important ceremonies are celebrated, and festivals are also prepared in Dawuro in relation to traditional religious beliefs. These are:

Shashida (shashiga): is an annual festival celebrated in front of a known *shareechuwa* (spiritual leader) residence. Food and beverages are prepared, and followers of the spirit sacrifice numerous animals—sometimes over fifty. The *shareechuwa* blesses the grave, exposes criminals and conspiracies, predicts the future through possession, and accepts previously vowed gifts in the name of his spirit.

Kuntsuwaa: There are two types of *kuntsuwaa* festivals known as *dadaw kuntsuwaa* (thanksgiving party to the spirit of lightning) by men and *mayraaminttu kuntsuwaa* (festival for fertility goddesses) by women, which are usually observed in January. In the case of data *kuntsuwaa*, an adherent whose vow to *Dada* (lightning spirit) was fulfilled constructs a temporary hut where food and drinks are prepared and stored. Elderly men and women from at least three clans are invited to the party to bless the host and to thank the *Dada* spirit for its generosity. A woman who gave birth to a twin prepares for the Mayraminttu Kuntsuwaa celebration in order to receive the blessing of older ladies not to have another twin in her lifetime.

Dubushaa: Annually, under a large tree, members of the same family or clan arrange the event known as Dubushaa. Money is collected from members to buy a bull or a goat of a selected color for sacrifice. The objective of this festival is to bless the community and its sacred places (shrines). It also helps to reinforce lineage and clan solidarity.

Adibaariya: This is a festival prepared on the first days of November and May in the Ethiopian calendar. Food and drinks are prepared, and a sheep of a selected color is killed under the *adibaariya* (a big tree). The food and drink are first "served" to the spirit, and then participants would enjoy themselves. Prayers and blessings are made by spiritual leaders and elders for the well-being of the community.

Yarshshuwaa (sacrifice): This is the first fruit harvest festival. The first crop(s) of the year and the first milk of a cow are saved and served first to the spirit, and then friends and neighbors who have gathered enjoy the festival together.

All the aforementioned narratives demonstrate that indigenous religion, ritual practices, and belief systems are practiced under large trees in the Dawuro of the Marak'a people. On the other hand, it has been observed that the knowledge and beliefs people claim to have and what they practice have a latent function and indirect implications for environmental conservation. This refers to the knowledge and practices that the actors are not so conscious of about their effects.

4.10. Religious and Other Symbolic Significance of Trees

4.10.1. Gayttiya kaashsha

My key informant, Daachu S'oona, Doolango Dooshsha, informs me that *Kashshaa* means trees that are planted and nurtured in places of residence and worship in connection with worship. As there are many *kashasha* forests in Dawuro, they have a significant role in mitigating the conflicts caused by social life, preserving heritage, and maintaining the air balance of the area.

They again mentioned that *Gayttiya* means divine power in the local community's beliefs. A person who is endowed with this divine power or spirit is called *Gayttiyantta*. It is believed that *Gayttiyantto* rains in the summer months and can stop the rain in the winter months if a certain payment is made for social issues such as weddings and mourning. The practice of this faith was held in a forest area called *Gayttianttu Kashshaa*. This forest is a place where this kind of worship ceremony has been held for many years, and besides, there are many rituals that have a positive side for social development in the forest. Some of these, for example, work to avoid conflict in Kashshaa.

It was found in the Marak'a district and has sacred places where sacrifices for thanksgiving are offered and prayers are requested. These places are sacred and therefore protected from being tampered with. Respondent Alaama Agize Alanche reflected that:

Around Gayttiya Kaashsha, there is a person who worships the mountain,the forest, and the river; he is known as Gayttiyantta. Without the permission given by Gayttiyantta, cutting trees or gathering any plant material, living or dead, is prohibited. Thus, the rule is serious to the extent that even during sacrifice, offering firewood for the purpose is to be carried from far away and not obtained from within. No wild animal or bird should be killed in these places without prior request to the gods (s'oossa) (Alaama Agize Alanche 13 May 2023).

Similarly, the FGD discussant explained that there was a different religious leader among the community, and they called him the Holy Father, whose name was *Gayttiyantta.* He was the first inhabitant and founder of the *Gayttiya Kaashsha* resident area. As a traditional religious leader, he resolved any disputes, prayed for peace, for the rivers, for the mountains, and for the community. *Gayttiyantto* declared this sacred place and its resources to be protected. As a result, the natural resources of this area were protected.

(Chufa Chudara, 24 March 2023), they do not cut the growing part or tip of a plant but rather its branches. Moreover, when someone cuts trees and they fall, they shatter violently. They believe that they are applying to god the damage done to them, and god will punish them. The sacred grove *(Gayttiyanttu Kaashshaa)* plays an important role in soil and water conservation. They improve the soil stability of the region and act as a soil binder. Plants are maintained to bind the soil there by preventing soil erosion.

As the researcher has observed, despite the better protection of the sacred land, sparse settlements are encroaching on the land at a near distance on all sides. Hence, this encroachment is worrying the land. The sacred Gayttiyanttu kaashshaa plays an important role in ecosystem services such as clean environment, i.e., air, soil, and water conservation, flora and fauna conservation, temperature control, and conservation of traditional knowledge.

4.10.2. Traditional Perception of Gigantic Trees

As to the informants/elders, people in the study area commonly perceive that huge and long-aged trees in their area are blessings from god, and they protect them. They gather under those trees for any social stuff such as *uk'k'ubiya* (ekub), *idiriya* (association), *irk'k'iya (mitigation),* etc. Because of these common uses, they keep the areas clean, make traditional

seats under those trees, and also build fences around them. On an individual level, some people grow and keep trees in front of their houses. Perceiving those trees would indicate that they are indigenous (have lived all their lives) in that community, and their compound is respected.

The finding was reported by Adimasu *et al*., (2013). in his study since ancient times, the people of Dawuro have identified existing trees that are long-lived by adapting themselves to the environment. Therefore, a good witness is a tree in the *Koyshaa* Palace compound in Loma Bosa district, which is locally known as a *Shinkkuwa tree.* This tree is said to have been planted in the palace grounds in Court Square during the reign of *Kaati* (king) *Halala*. In the king's seat, 7x14 meters, a tree called a tent was planted in the middle for the king to lean on.

Information from an interview with key informants *Daanna* Mangistto Makura and *Guudaa* Ute Dolango reveals that this tree was chosen from a type of tree that can last for many years and that was planted, and even today, people still believe in it and worship and perform rituals. Another big tree like *Wolaa* (Ficus sycomorus L.) is not cut. It is forbidden to use these trees for firewood. This should be encouraged, as it shows the positive side of community cohesion and shared values in preserving trees or forests.

4.11. Religious and Ritual Practices Related to Nature

As my informants, Mamo Ushecho, Abera Wondimu, and Agize Alanche, stated, it is either near what *Med'd'a-s'oossa* (created) or holding what he created that they practice their belief system. The Dawuro believe that *Med'd'a-s'oossa* hears the request of the Dawuro in special places: wet areas, raised land, or under shade. These are considered places of truth. Their expression for this is that the Dawuro worship the Creator with what He created. Thus, this is the reason behind frequenting riversides (*K'oolla*), big trees (*Dadaw*), and mountains for their religious practices. The Dawuro of Marak'a also practices its own belief systems and community values. These values include cultural, social, and religious amenities and some of the beliefs and practices related to natural resource conservation. Among the different spiritual and ritual practices, the following are the major ones:

4.11.1. Tokkibe’aa (the beginning of the first day of the New Year)

Tooki-be’a is a ceremony held from the end of August to the beginning of September during which the Dawuro deliver their thanks to the creator (S'oossa) for what He has done for them. They also pleaded with S’oossa for the prosperity of the future. As my key informant, Abara Wandimu, stated, "*Toki-be'* is a related season of freedom. When *Tokki-be’a* comes, we gain freedom from the dark season, and every person sees a bright future and sunlight when Tokki-be'a comes off.

In *tookki-be'a,* it is through this ritual that the creator gives the people everything, i.e., peace, greenery, health, and prosperity. When pleading to the Creator in a *tokkibe’a* ritual, elders and the Daanna Mangistto Makura usually recite the following praise to the Creator, turn by turn. This is, then, followed by praise and thanksgiving. The words and phrases recited on this occasion clearly portray the monotheistic nature of the Dawuro belief system.

Daanna Mangistto Makura, my key informant, recited the praise verses to S’oossaa as follows:

Original	**Literal Translation**
Poo’o laytsaa imma godaw galatetta	Oh god, thank you for giving us a light year
Ad’o laytsaa saruwaan ad’eeddo	We passed the past peacefully
Yiyaa laytsaa anjja s’oossoo	Bless what comes next
Biittaa anjja s’oossoo	Bless our land
Haatsaa anjja s’oosso	Bless our water
Mitsaa anjja s’oosso	Bless our plants
Shuchchaakka anjja s’oosso	Also bless our stone
Ha laytsay anjjetto	May this year bless us
Mina mishsho	When we eat satisfied
Ushina alo	When we drink satisfied

Mayina ho’’o	When we close let us warm
Saro siga laytsa gido	Let us have a year of peace, prosperity

These praise expressions clearly indicate that *Med'd'a-s'oossa (the* creator) has all the power and purity with which He blesses the people. It also shows that *Med’d’a-s’oossa (the creator)* can also be affected, and he is never accused of his deeds. He was thus praised for all his capabilities in governing human beings.

My key informant, Doolango Dooshsha, recalled the following *Anjjuwa* (blessing), which is recited on *Tokkibe’a* in the season of the bright future. The elderly give the blessing, and the participants repeat part of the blessing expression to say:

Original	**Literal Translation**
Katsay dolo	Let the grain grow
Dahay duretto	Let the poor prosper
Mank’k’uu mas’o	Poor collected money
Geyay gelo	Satisfy market
Sa’ay shaagatto	Peace be upon

Elderly men in Marak’a give blessings (Anjjuwaaa) and advice (Mak'k'uwaa) to the people so that they will live according to the tradition of the Dawuro. During the blessing, it is remarked that *Med’d’a-S’oossaa* (creator) is the most revered; other forms of nature are also revered so as to raise the respect of S’oossaa. Lessons and pieces of advice are given to the people to abide by the law of Dawuro culture. They are encouraged to follow the route of truth (Tumaa). *Tookki-be'aa* has a significant role for many things: for the Creator, the created, culture, and the whole way of life (Doolango Dooshsha, Daachchu S’oona key informants).

This indicates that in their religious practices, Dawuro have seasonal rituals and pray or bless the land. These blessings and rituals were performed for the good of their lives and

livestock, and thus for soil productivity. These prayers/blessings to the natural resource were conducted whenever the Dawuro gathered for religious rituals, meetings, worship, and negotiations.

4.11.2. Gezziya/Geyuwaa (Women's Thanksgiving Ritual Ceremony) Site

The *Gezziya/Geyuwaa* is a celebration of women's day where women are freed from any housework, resplendent in traditional clothes, gather under a big tree, and freely give thanks to the Creator without any male interference.

According to elderly informants, Belaynesh Mengesha, Omi''oli Oshu, and Agegnehush Minota explain that one of the traditional ceremonies called *geyuwaa or gezziya*, carried out by elderly women, was another conservation method for some plant species like spices, condiments, and medicinal plants in the study area.

As to the explanations of my informants, on this day, men do all the women's work at home, and women show their freedom publicly by singing and performing traditional dances. They celebrate their environmental beauty, their husbands, child rearing, and issues that ensure women's social participation and benefits. These traditional beliefs, practices, and celebrations have contributions to conservation activities in the area besides their main purposes. When people plant trees, diversify their gardens with varieties of plant species, and enclose them for social and cultural purposes, their practices contribute to soil conservation as well as the preservation of plant species.

The same finding was reported by Mathewos *et al*., (2022) in his study, *'geyuwaa' or 'gezziya'* was the ceremony in which women and wives aged over 40 years and above would go and participate in traditional ceremonies far away from their residence with spices, medicinal plants, fragrances, and scent-producing plants, as a result, these plants were established around the house for the purpose of the ceremonies.

From the presentation, we can consider that traditional ritual ceremonies, practices, and celebrations have contributions to conservation activities in the area besides their main purposes. When people plant trees, diversify their gardens with varieties of plant species,

and enclose them for social and cultural purposes, their practices contribute to soil conservation as well as the preservation of plant species.

4.12. Indigenous Knowledge and Practices Related to Water

As to key informants, the Dawuro of Marak'a in the study area view water as one of the essential components for the existence of life. Water is used by all living organisms for drinking, cleaning, and as a living area. This is why they call water the source of life. Hence, they keep water from drying up by refraining from cutting trees around water bodies. This has direct implications for conserving water. Misuse of water is also condemned in the Dawuro of Marak'a culture. It is considered *Nagara* (sin) to use water in the wrong way. The respect accorded to some trees also has some bearing on the conservation of water.

According to the informants, the local people of the study area, the characteristics of water are compared with those of God, in the sense that both have characteristics hidden from human beings. The saying '*Kawuunne Haatsay piilettenna'* means 'God and water are not prohibited' is common among the Dawuro. This means that the mystery of God and water is unknown. It is because the character of water is intangible and mysterious, like that of God. In their indigenous religion, they believe that God is mysterious, and it is beyond their capacity to understand the works of God.

The same informant as well as other informants, Woju Karetso, Dokka Doolango, and Diidanna Dooku, during the focus group discussion, also stated the value of water among the Dawuro, as revealed in their blessings, seasonal celebrations, and religious rituals. Water is used as a symbol of wealth, health, growth, and prosperity in all these social phenomena. For example, in their blessings, the elders hold the fresh grass (*irs's'a maata) and* take honey and say,'sigaa *saro gido, irs's'o'*, which means may you be fresh and prosperous throughout your life. Implicit in this blessing is the wish for individuals to become wealthy and prosperous throughout their lives. Thus, in their blessings, they said, "*Marotaa laytsa gidoo, dichanne Abbadan akoo laytsa gidoo*". This is wishing individuals to multiply and become large in their lineage, like the ocean. Moreover, water among the Dawuro in

Marak'a is used as a symbol and resource to be exploited in their socio-cultural and spiritual lives.

Aduwa-haatsa (hot spring water) is among the places where the Dawuro of Marak'a District practices as medicine. According to the explanations of *Daanna* Mangistto Makura and *Guudaa* Ute Dolango, people use spring water (*Aduwaa*) as medicine. According to their indigenous beliefs, they drink their own cattle twice a year. It is believed that a cow that has drunk hot spring water for a year is more fertile and has higher fertility. On the other hand, it is believed that if a person bathes in spring water, he will be cured of the disease. Because of this, people go and bathe and have a high healing capacity.

This indicates that people believed that the cattle drank the *Aduwaa-Haatsa* to be healthy, strengthen them for plowing, and become fertile and productive. Hence, the community utilized their indigenous knowledge to protect the *Aduwaa* for sustainable utilization. The surrounding forests of this particular area have been protected to preserve the *Aduwaa-Haatsa*. As reflected in their knowledge, natural resources have protection impacts for both underground water and soil erosion, in which water, plant/forest, and land dynamic management have been practiced.

During an in-depth interview, Doolango Dooshsha explained that water is also the place where peace is requested. As the elderly men among the focus group discussants at *Daanna* Mangistto Makura and *Guudaa* Ute Dolango described, water serves cultural, religious, and economic purposes. As to the explanations of my key informants, they explained that:

> *Nu wogan haatsaw daro go''ay de'ee. Itti assay hara asana walak'ettoppe irk'k'ettiya wodiyan hatsaynne irs's'a maatay yee. Dubba gido diraw oyk'k'i maaretiino. Haray k'assi itti gollen golliya ayssiya aawu bare golle asana wolk'k'aama walassan geloope maariide maata, eessanne hatsaa oyk'k'ii mare.*
>
> **Translation**
>
> *Water has many uses. According to our tradition and beliefs, when a reconciliation ceremony is held, the abuser and victim stand together and take wet grass and water to forget the wrongdoing and make peace with wet grass and water. Another one is that if there is great hatred and threats in the family and the father is angry, he curses the family and the children in front of a mediator, taking water, honey, and wet grass and*

confessing to forgive him. Finally, he forgives him by touching his navel with wet grass and water (Daanna Mangistto Makura from Yamala-meso Kebele and Guuda Ute Dolango Mada-kuyli Kebeles, May 15 may 2023).

This indicated that people in the area consider water to be the source of life among the Dawuro. Like the land, it is used for everyday life activities and as a site for religious practices.

Generally, in the Dawuro worldview, the physical, human, and spiritual worlds are interconnected phenomena. These different worlds have maintained balanced relations, which form the cosmos. In their knowledge about this cosmic order, the Dawuro have different indigenous knowledge, which regulates their relations with the other world. This knowledge includes the knowledge that the spirit is a supernatural cause believed to reside in everything and determine the relationship between the creator and creation. In their knowledge, the Dawuro of Marak'a are aware of the values of natural resources and have normative practices and relations to each resource to sustain balanced coexistence. They are aware of their actions in relation to natural resources and God, whether their actions are positive or negative. The study reveals that the Dawuro of Marak'a have indigenous knowledge, which is part of their worldview in their relations to natural resources, and have maintained relations with their environment for generations. They have indigenous knowledge and practices of natural resource management and relations with land, plant/forest, and water resources that encompass the entire aspects of their lives. These natural resources (land, plant/forest, and water) form the skeleton around which the environmental knowledge of the Dawuro is organized. Above all, these resources are the reservoir of their comprehensive ecological knowledge and the repository for the cultural traditions and identity of the Dawuro of Marak'a.

All the preceding discussions are related to indigenous knowledge and practices and natural resource management. The following sub-title analyzes how indigenous knowledge and practices contribute to the conservation of natural resources..

5. The Contribution of Indigenous Knowledge and Practices to Environmental Conservation and Sustainability

This sub-title is intended to answer the contribution of indigenous knowledge and practices to environmental conservation and sustainability, as well as the practices and belief systems of the Dawuro of Marak'a woreda. The first part presents a brief overview of the major findings. Then, the relevance of knowledge and practices to the conservation of the environment and sustainability in light of manifest and latent functions is expounded. Finally, the interactions of belief systems, knowledge, and practices with the natural environment are briefly described.

5.1. Manifest and Latent Functions of the Indigenous Knowledge and Practices

According to the study, Woreda affirms that the community of the area has been protecting the surrounding areas by using their indigenous knowledge for many years. Coming to Dawuro of Marak'a Woreda, the indigenous natural resource conservation mechanism was started in their respective areas. According to key informants and Focus Group Discussion (FGD), the traditional knowledge of the community preserves natural resources like plant diversity around the church, local graves and spiritual ceremonial places, and the forests, or *kaashaa* in Dawuro. Similar to this finding, the study by Taybela (2013) shows that the initiation into conserving natural resources was taken by the community and the respected and protected areas like *kaasha,* the indigenous management of the *kaasha,* an area where they practice the traditional religion. They are respected and protected by *kaasha* and big trees as elderly members of the community and cultural leaders. This is because they believe that 'God' destroys them and the whole community if they cut down big trees and *kaasha* from culturally protected areas. All cultural practices that are conducted within the *Kaashaa* have a very special value for the Marak'a community. It is used for various purposes, including preventing soil fertility, preventing soil erosion, and even being used to mitigate degraded land. Indigenous knowledge is the local knowledge that is unique to a given culture or society.

Indigenous knowledge contrasts with the international knowledge system generated by universities, research institutions, and private firms. It's the basis for local-level decision-making in agriculture, healthcare, food preparation, education, natural resource management, and a host of other activities in rural communities (Warren 2011). Indigenous knowledge is developed and adapted to gradually changing environments, passed down from generation to generation, and closely interwoven with people's cultural values. Indigenous knowledge is the social capital of the poor. Their main asset is to invest in the struggle for survival, to produce food, shelter, or to achieve control of their own lives. Indigenous knowledge (IK) is gaining increasing attention, and its importance in sustainable development is well recognized (Warren 1996). Policymakers and natural resource planners are beginning to recognize the need to understand indigenous knowledge systems and have shown renewed interest in this type of knowledge.

In the study area, the importance of integrating indigenous knowledge into contemporary conservation and sustainable management of natural resources has been well reviewed. Recognizing indigenous knowledge means acknowledging locally developed solutions based on existing culture, values, beliefs, and practices, which otherwise could be a barrier to development efforts.

According to data from FGD sources, Indigenous knowledge is a valuable national resource to enhance the sustainability of development. Invention communities develop and designate land use systems closely intertwined within their culture and well adapted to their ecosystem. There is a need to consider indigenous knowledge as a means to develop situation-specific and sustainable soil and water conservation measures.

The Dawuro of Marak'a indigenous knowledge system contributes to gaining lessons on ecological management and climate change adaptation and leads to incorporating indigenous practices with natural resource development to ensure sustainability. Although a vast heritage of indigenous knowledge about ecosystems and their use exists, it does not appear in world literature.

The local community has much indigenous knowledge and practices for sustainable use of their environment. Indigenous people have good experimentation and ways of knowing, which allow them to innovate in local practices and systems. Recognizing, empowering, and incorporating traditional practices in participatory rural development activities has been considered a means of ensuring socially, environmentally, and economically sustainable natural resource management (Amare, 2009). It is clear that the community needs assistance and training in indigenous natural resource management to develop their knowledge and skills so that they can conserve resources in a better way.

According to FGD, many indigenous people have extensive knowledge of the management of natural resources in their traditional landscapes. Indigenous people have experimented with ways of knowing that allow local knowledge to be innovated in local practices and systems. Recognizing, empowering, and incorporating indigenous knowledge in participatory rural development projects has been considered a means of ensuring socially, environmentally, and economically sustainable natural resource management. There is trainable indigenous knowledge that has the potential to be applied to other sites.

It is obvious that protecting natural resources from damage will have multi-dimensional benefits for the community. In the study area, elders assure that indigenously managed natural resources are benefiting society in many aspects. The benefits of natural resources are to keep environmental balance, serve as recreation areas, be used as a last resort food for animals and humans in times of drought, thatch and make household and farm implements like ropes and whips, be used as construction materials, protect soil erosion, be used as a habitat for wild animals (both endemic and non-endemic), and others. In general, natural resources are everything human or animal, like their life, food, shelter, and any others.

According to data from FGD, sources assess the role of indigenous natural resource management for sustainable development. In a study (Marak'a), the area believes that indigenous natural resource management has a very high role for sustainable development in a given area. The opportunities for indigenous natural resource conservation are the communities 'awareness of the importance of conserving the area, and they consider the conserved area as their own property so that they do not compromise on it.

The significance of Indigenous knowledge has been recognized in eco-system management and in its contribution to the advancement of knowledge in modern science. Indigenous knowledge of land management contributes to sustaining ecosystem services. Indigenous knowledge systems in natural resource management have played a vital role in ecosystem management for generations in the study area.

Generally, Indigenous natural resource management practices are the tested practices with the circumstances on the ground; thus, it is really important to assess the Indigenous knowledge that helps natural resources continue in production and that also insures resource security. On the other hand, it has been observed that the knowledge and beliefs people claim to have and what they practice have a latent function and indirect implications for environmental conservation. This refers to the knowledge and practices that the actors are not so conscious of about their effects. In the following sections, indigenous knowledge and practices are analyzed in terms of their manifest and latent functions in conserving natural resources.

5.1.1. Land (Soil) Conservation

The study revealed that the Dawuro of Marak'a have due respect for their land. Land is conceived as the foundation of man and other creations of Godaa/S'oosa (the Creator). The indigenous knowledge and practices of these people have direct and indirect bearing on conserving land and other forms of nature as well. Some forms of land are used as a place for worshipping many types of gods. Mountains are among such areas that are primarily respected for their religious significance. It is a sacred area and, hence, deserves respect. It is immoral to cut trees, leave land bare, and cultivate the land.

Burial land (Duupuwa biitta) is another form of land that has a role in conserving land. This area is respected, as it is believed that the spirits of the deceased dwell there. If the land is used for cultivation and the trees on it are cut down, the spirits are offended and affect the one who destroys it. Out of this fear, the trees and the land are protected. This has the latent function of strengthening the effort towards conservation of land, trees and animals. It was observed that in the study area, burial places in the community were planted with species of

trees. Planting in graveyards as well as over tombs was a common traditional practice, implying that the dead are from a famous family.

Perceptions of people on land and its management: the study revealed that the land was life for them. As the informants stated, they all depend on land, and what they eat, drink, wear, and shelter all come from what they work on or invest in and gain from it. Their domestic animals depend on what is gained from land or soil. What they used to prepare their food, which was fuel, was from land. So, all activities of human and animal life on earth are dependent on the land.

The people of Marak'a District are aware of the fact that God created human beings from land, and when humans die, they also turn back to the land. This shows there was a big relationship between human beings and the land. They also stated that God also ordered man to work on it and use it. As people believe, 'if people don't work and take care of these resources, they are hungry'. People don't participate in social, cultural, political, or any other institutional or individual activities. So, people work on it and use it for many purposes. This means that even if they do not work on land, they will not get anything and cannot live in general.

Land was very important and a major thing for human beings. So, land was created before man, and man created from land, so land and people are relatives for them. People who don't care about the gift (land) do not live at all, and God himself blames us. This shows that they protect the land to live and to protect it as a gift from God. In this manner, people under the study feel like God's grievances were considered the main reasons for land degradation. That means that when people passed God's command and committed sin, God aggravated and gave very high rain or did not give any rain. Then, during high rains, the land becomes dry and there's no working on it, and life's on it becomes dead, and people become hungry. Then poverty can be speeded up, as they stated.

The culture of Dawuro of Marak'a was a very dignified resource that was passed from father to son physically. So, everyone protects this resource for thinking of future generations. People in the study area protect their land by undermining what to get today and for

tomorrow and what and how the next generation succeeds in their lives. By assuming this, they protect their land and survive their lives and those of the next generation. They believe that after leading the current life, it has a role to play in the sustainability of the life of the future, unless and otherwise lacking understanding of land management practices affects all people's lives on earth.

The farmers also supposed that land was good and would be protected because it was the only thing that was the main asset for humans. As they stated, if they do not protect the land, they do not get what they need to eat, drink, shelter, wear, and others in general to succeed in life. They teach their children up to a degree or any level by farming and investing in land. They pay government tax and also participate in social, cultural, institutional, political, and personal possessions affairs, depending on what is invested and produced.

Due to the fact that the Dawuro of Marak'a terrain is mostly mountainous, soil erosion is prominent, so the people have been protecting the soil since ancient times. The witnesses to this effort are *Yippaa* and *Keelaa*. When sowing grain, especially teff, grass or plant residues and straw are occasionally used to protect the soil from flooding and to protect its fertility. If the shortcomings of this system are properly identified and reformed, the benefits will not be easy. *Keela* is made by stacking stones in rows, and the stones are placed in rocky and low-lying areas that are now uninhabited and uncultivated. Thus, the beginning of ancient technology seems to be related to the civilization of the Omotic people. Because it is believed that *Keela* is built following a straight line, the power to reduce soil from flooding is weak, so it is called *Dank'k'a* (curved) in local pronunciation. Straight follows the landscape that works in the technological world; it is possible to understand that the work is effective by comparing the *Keela* method with the modern step works, which are done in different ways, called half-moon and table.

Traditional Stone and soil bunds (*techchaa)* are making soil, and stone bunds on the slope of the land are one of the indigenous conservation mechanisms in the study area. These bunds are made with stones where stones are sufficiently available or with soil. People traditionally practice it to reduce the speed of runoff step by step and consequently reduce soil erosion. Most of the people who employ this are people who live in the study area. They state that by

increasing the water and moisture retention capacity of the soil, the stone bunds are helpful in allowing some crop yield even in drought years, i.e., bananas and the like are planted that are resistant to both drought and flood.

Another basic point is that the distance between two checkpoints shows that there is an awareness among the society since ancient times that the distance between two checkpoints is closer in hill order to use the agricultural soil under the *keela*, people remove the existing *keela* from the place and build a new one a few meters away. This is done when the existing fence is old and begins to be demolished by it, or when there is too much soil in it and a tree grows on it. *keela* work is laborious and time-consuming, instead of covering the entire farm, it is mainly used for food and market crops (garden vegetables, coffee, etc.). The *keela* is also used to protect crops from wild animals (such as hedgehogs and pigs), so in some places it can reach up to one meter in height. On the other hand, in rocky areas, the work of *keela* helps to reduce the amount of stones and to use the land for agriculture. Traditional conservation of natural resources should be appreciated and developed for its value.

Although the people of Dawuro are aware of soil conservation work, various modern soil and water conservation works that have been implemented, including terrace work, have rarely been compatible with society. As a result, most of Dawuro's mountain areas are vulnerable to soil erosion. Among the points that can be presented as the reason for the problem, it can be said that the new technology is not compatible with traditional soil care to be successful.

Generally, the interpretation of the study and the data gathered and realized through the different sources of the study also show that every activity on earth is dependent on land, not only for today but also for the future. This means, if not, it could affect life at all on the land. So, land was a free asset that was given to humans to build today and tomorrow. So, these people should protect their land to fulfill their needs. Therefore, for this study, it was important to take care of these assets and invest in them.

5.1.2. Water Conservation

Water is one of the most important resources for human life. Water is used by all living organisms for drinking, cleaning, and as a living area.

The respect accorded to some trees also has some bearing on the conservation of water. Trees used for different purposes also grow near water bodies. The traditional medicines are collected from shrubs and plants that grow near water bodies. Trees for beekeeping also grow near water bodies. Thus, water is protected from destruction for its benefits that indirectly function to conserve the environment.

A spring is a place on the earth's surface where groundwater emerges naturally. The water source of most springs is high rainfall that moves down into the ground through soil or cracks in rock, finally forced out of the ground by natural pressure. Traditional people search for those springs and make a well in front of them by placing flat stones in their basements and making rounds to collect flowing underground water from the spring. This is because the amount of water flowing from the spring is, most of the time, not sufficient for direct use, so it should be stored in a particular place. Springs or lakes are water bodies where religious practices usually take place among the Dawuro of Marak'a.

Alaama (the traditional belief leader) takes good care of the spring water wells and places where he drinks. Someone else can use it to their heart's content. For example, *Alaama* was never allowed to see various domestic animals, such as sheep, in the area where water flows. So, whether it is good spring water or running water in the area, It is protected from domestic animals and harmful things. Anyone found transgressing or disobeying this order will be put to death.

Water is seen with respect among the Dawuro, as revealed in their blessings and religious rituals. Water is used as a symbol of wealth, health, growth, and prosperity in all these social phenomena. For example, a reconciliation ceremony is held between old people, abusers, and victims with their blessings. The elders hold the fresh grass (*Irs'a maata*) and say, '*Saro gido, irs'a gido, dure gido'*, which means you may be peaceful, wet, and prosperous

throughout your life. Implicit in this blessing is the wish for individuals to become peaceful and prosperous throughout Touch Water.

The natural hot spring water, *Aduwaa,* is a historical natural hot spring found in the Dawuro. People believe that this water is bestowed with medicine, which helps to heal livestock ailments, makes them strong and productive, or gives them more milk. They also use this water to treat humans infected with any type of illness. Persons who are infected with any type of illness go to this Aduwaa and swim or wash in the Aduwaa water. It is believed that the Aduwaa kills any type of virus or bacteria in the body, and the victim will be healed from the disease. It is also believed that this particular *Aduwaa* heals patients suffering from bacterial-caused diseases and physical deterioration. *Aduwaa* is a natural hot spring to which people bring their cattle. They themselves also drink from it. In addition, they use the *Aduwaa/huluk'k'uwa* water for rituals of purification. It is believed that the cattle drink the Aduwaa to be healthy, strengthen them to plough and give more milk, and to become fertile and productive. Hence, the community utilizes their indigenous knowledge to protect the Aduwaa for sustainable utilization. This implies that the places are sacred and therefore respected**.**

5.1.3. Tree/ Forest Conservation

Tree/forest resource conservation practices of the Dawuro of Marak'a people are based on the people's indigenous knowledge. The Dawuro of Marak'a conserves their local tree/forest resources, for they earn a livelihood from such tree/forests. Conservation practices are being done in a multitude of ways that are greatly based on the relationships between indigenous events. In most cases peoples in and around forests base their protection on religious concern, ritual and customary laws and its attachment with social norms. Furthermore, the protection and or conservation practices have been carried by mechanism of categorizing forest lands around them.

The traditional beliefs attached to some of the indigenous tree species are very much constructive. According to my key informants, cutting such tree species as *Wola* (Ficus sycomorus L.), *Boo'iya* (Erythrina abyssinica), and *Soyd'd'uwa* (Phytolacca(dodecandra),

among others, which are commonly known for their wide branches and broad leaves as well as medicinal purposes, is often labeled as just like killing a milking cow since these trees are used as community gathering venues, traditional courts, medicines, resting places during the winter season, shelter for other smaller tree species, and profoundly needed for their wider branches, providing possibility for placing beehives to produce honey.

The traditional belief known as Allaamaa (local witches) has a customary practice of conservation. The traditional curer or prophesy teller mostly preserves a sizeable portion of forested land where they pay annual sacrifice for their spirit, let alone cutting trees, access to those sacred places is even forbidden for those who do not belong to their family or beliefs. Consequently, there are a number of forested places under the strict protection of local traditional beliefs.

In Marak'a District, trees are used for a number of purposes. They are used to give the environment a cooling effect. The people are also aware that trees are connected to rainmaking (gaytttiyaa kaashsha). For example, they stated that if there are no trees, there will be no rain. According to them, a tree attracts rain. They also relate trees to protecting land. When a tree is cut down from or around a given area, the land is more susceptible to erosion. All these directly encourage people to keep trees around their homes and on their farmlands. In this regard, trees are used directly for maintaining the environmental balance and protecting land from destruction.

Beekeeping is considered one of the oldest professions of Dawuro in Marak'a district. According to information given by the elders who participated in FGD, the service of the culture for tree conservation has a direct relationship to traditional beehives. As the bees need flowering plants, clean water, and favorable weather, they take their beehives to distant trees. Among the districts of Marak'a District, the study area is known for its good weather, trees, and plants that produce flowers for making honeycombs. This again encourages protecting trees from destruction. If destroyed, the people who benefit from the honey can be disadvantaged. Thus, it has an economic value that contributes to the conservation of trees.

Generally, the findings reveal that trees/forest resources are sources of shelter, food for humans and animals, traditional medicine, and firewood. For the Dawuro of Marak'a, tree and forest resources have sociocultural and ecological values. Some plant species have symbolic values. The symbolic value of the tree/forest resource, for the Dawuro, is revealed in their indigenous religion, like Kaashsha. This kaashsha has direct linkage to the Dawuro indigenous religion (Gaytttiya), used as places of worship. The socio-cultural importance of tree/forest resources is manifested in their daily shores and facilitates their sociocultural and spiritual life, including cultural material objects and related significance. Hence, these cultural material objects are the manifesto of Dawuro of Marak'a: cultural property and identity. The majority of material objects used for house construction and clothing, traditional farming objects, and household furniture, which could be traced to Dawuro cultural knowledge, are products of tree/forest resources.

5.2. Maintain Environmental Conservation and Sustainability

It is clear that all living organisms, including people, depend on their surroundings to survive. Certain environmental characteristics are more significant to subsistence activities than others, which makes them more influential in influencing cultural development. This is because certain cultural characteristics are more strongly linked to how a community uses its environment than others (Milton, 1996). According to my fieldwork data, the Dawuro of Marak'a's value as a plant is due to its eco-friendly nature because it preserves soil fertility, prevents soil erosion, and is even used to mitigate degraded land. Furthermore, plants like *Wola* (Ficus sycomorus L.), *Borttuwaa* (Erythrina abyssinica Lam. ex DC), and *Wooshsha* (Bamboo) served to preserve sources of water. This plant keeps moisture, which enables water sources to regenerate from the ground in a lasting manner. A plant or forest is capable of holding wet and moisturized soil and has the ability to prevent erosion. The environment in general terms entails components such as land, water, plants, and other substances like air and even the ecosystem. There are factors that determine survival. Besides, there are systematic methods that are employed by people in order to secure their wellbeing, depending on agro-ecological conditions. As stated by Ashenafi *et al.,* (2019), the agro-ecological data of Marak'a ranges from 500 to 2900 meters above sea level and comprises

29% highlands, 41% midland, and 30% lowland. Given this, Marak’a people established their own modes of systems to determine their relationship with nature, depending on the agro-ecological domain in which they dwell.

According to environmental determinism, there is an assumption that the environment shapes culture (Milton 1996). The environment determines the culture or way of life that a certain society experiences. That includes their means of production, house construction, and the way they dress. This covers their methods of manufacturing, the building of their homes, and their clothing. This position is contested in the modern dynamics of the field, nevertheless, since the earlier ecological anthropologists' theory has limitations when it comes to describing how different things might impact one another and how interdependence and interaction actually exist in phenomena. The relationship between nature and the Dawuro people's lifestyle in Marak'a is connected and has a variety of effects on each other, according to the data collected for this study. The creation, dissemination, and utilization of goods obtained through conventional methods.

CHAPTER FIVE: FACTORS HINDERING OF INDIGENOUS KNOWLEDGE AND PRACTICES IN THE NATURAL RESOURCE MANAGEMENT AND USE IN THE STUDY COMMUNITIES

Introduction

This chapter presents a brief overview of the factors hindering indigenous knowledge and practices in the management and use of natural resources in the study communities of Dawuro and Marak'a District. In this context, the knowledge and practices that challenge the study areas are discussed. Like many other traditionally managed natural resources, Marak'a woreda natural resource is faced with many factors hindering its sustainability, including population increase, increased agricultural activities, large number of livestock, fire, and encroachment. Large numbers of children are also associated with wealth and status in the community. Hence, having more kids in the family gives high prestige to the man of the house. The increased population means increasing demand for settlements, new farms, natural resource services, and increased livestock while land remains the same. Based on the information obtained through interviews, observation in the fields, and FGD, I have presented the factors hindering the formation of some categories as follows:

5.1. The Expansion of Farmlands

According to the informants, the Marak'a area has greatly influenced the economic activities that many indigenous people are now transforming into crop production. This has also influenced their indigenous practices of conserving land, trees, and water through cattle herding and small-scale farming. With the increase in farming, the destruction of trees/forests and water has also increased. In areas where there is more cereal crop production, like bean, peace, and wheat, there are fewer trees/forest cover. The destruction of trees/forests observed in many areas, such as my research site. This is mainly due to the expansion of human settlement, the livestock population, clearance for agriculture, increased demand for firewood, and commercial timber production. They also cut down trees in their surroundings for the extension of building poles and traditional tools.

However, according to my informant, *Oyat Oshu Ashku*, in the middle of this fact, the local people were not concerned with land, water, or forest/ tree management except consuming it for their livelihood all the time. Regarding this, one of the FGD members stated in such a way:

> *We are not concerned about the common resources in our area except to exploit them. We have not been responding for the last many years, even though we were seeing the reality that forest coverage in the community has been declining because of grazing, firewood, and wildfire (Oyat Oshu Ashku, May 8, 2023).*

This indicates that a limited focus on conservation of particular resources and less concern by the farmers about other resources such as tree/forest and land have consequences. It might have influenced the abundance of natural resources and the sustainability of development in the past.

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 agriculture and forest resource management area also needs to work more on how to rehabilitate the vegetation of the area before the land remains bare. Conservation activities should not be limited to government-protected forests. They have to involve patches of forest on community lands. I am heared that the agriculture and forest resource management beareue has begun teaching the people to plant trees even in their own fields. But it has to work hard and bring observable changes to the ground.

For example, one of the community elders commented:

> *Due to population increment, there is a shortage of land, and the community wants to clear the demarcation and lose its protection. In so doing, they seriously affect biodiversity. The reality shows that their benefit has decreased because of the high rate of population growth and the number of cattle (Dokka Doolango, May 15, 2023).*

This indicates that the major concern regarding population density in relation to conservation is that the concentration of people on small land will damage the natural

resources of the area. This should not be a surprise, as people clear woodlands for building shelters, cultivating crops, and other purposes.

For me, rather than destroying the natural resources like land, forest, and water for immediate benefits and bringing lasting damage to the resources and the people of the area, it is preferable to work on how the surrounding community will benefit from the existing resources through different means, such as systematic timber production and indigenous forest coffee production. My argument is that, whatever the activity, due attention must be given to the rare natural resource that the country as well as the region have been left with.

5.2. Weakening of Traditional/ Customary Governance

The weakening of this traditional law of the people may bring more resource destruction. Participants in FGDs mentioned elders as the main custodians of traditional functions performed in natural forests. So far, elders are also responsible for transferring IK to the younger generation to ensure its persistence for all generations. Therefore, the deaths of elders hinder the transfer of knowledge to youth.

My key informant, *Daana* ute Doolango, affirms that IK becomes weak due to the deaths of elders who are custodians of traditional functions. He insists that the elderly perform rituals to seek a creator to create rain. This happens in the village when there is a shortage of rain. On the other hand, *Daana* Ababa Asaro and Abara Dubala assert that the council of elders makes sure that all cultural matters and customary laws of their community are enhanced. In-depth interviews with key informants at Marak'a village revealed that the deaths of elders led to the disappearance of traditional beliefs and practices as part of IK.

In prehistoric times, there was a ruling system in Dawuro. This ruling system is from the Woraaba to the Daana hierarchy. This hierarchy is to manage all political and cultural issues and give more attention to natural resources like land, plants, and waters, which are considered sacred and are not utilized carelessly. Accordingly, the belief system of society seems to have contributed to the conservation of natural resources in Dawuro. The Dawuro understandings of the uses of natural resources in the rearing of animals and the production of crops appear to have played a significant role in the conservation of land, water, and plant

resources. Based on their understandings of the uses of land, water, and plants and their belief system, the Dawuro have developed customary laws and related norms that have helped in the conservation of land, water, and plants. vulnerability to changes, as indigenous knowledge of the local community was transmitted orally, it has been vulnerable to rapid change especially when people are displaced or when young people acquire values and lifestyles different from those of their ancestors. Most of the elderly households of the study stated that youths in the society were no longer interested in, or did not have the opportunity for learning traditional methods. In this case it became harder for the older generation to transmit their knowledge to young people.

According to the elderly informants in the area, more and more knowledge has been being lost as a result of the disruption of traditional channels of oral communication. And also they said that when a knowledgeable old person died, multiple indigenous knowledge systems became disappeared. This indicates that the consequence of little give attention to the Customary Governance/weakening of Traditional of indigenous knowledge systems is that loss of this precious asset of the community.

5.3. Poverty

Poverty is one of the major driving forces behind the destruction of natural resources like forests. It is simple to expect the poor, who have nothing to eat, not to cut down trees to produce charcoal, firewood, or other wood products or not to clear the forest for agriculture or the sake of respecting customary as well as statutory laws. This was witnessed by observations made at the forest/trees in which the poor especially marginalized Manja were cutting and carrying firewood to the woreda Town (Waka) or take zonal town Tarcha. As to the explanations of my key informants, they explained that:

> *The main pushing factors or challenges that exacerbated the challenge of natural resources were drought, lack and absence of rain, lack of animal feed, starvation, poverty, and shortage of farm land. Local people use forests as a source of pocket money, fuel wood, and a means of livelihood. There is a severe shortage of animal fodder in the nearby areas,especially during the drought season, when the problem becomes bottlenecked (Manja Shagech Omato, May 15, 2023).*

Moreover, an interview with Manja Akile (from a marginalized group) from Gozo Bamushi Kebele (March 26, 2023) carrying firewood toward Waka Town confirmed that it was poverty that made them involved in such tiresome and problematic activity. The interview with the inhabitants at Manja Akile showed that the decline in grazing land was a result of the increase in the number of people and their willingness to engage in agriculture for the sake of maintaining their lives, even though their land is not as suitable for agriculture.

According to the community members at Gozo bamushi (March 26, 2023), "observing the rapid destruction of the trees and forests by the Manja clan, when the indigenous people applied to the administrators, the administrators said poverty forced them to do so; hence, there is no way out". But the question is: does the Manja clan of poverty-stricken people in the tree or forest worsen the situation or solve the problem? It was also indicated that, due to the shortage of farm land and living in a narrow area, clans are marginalized and are forced to engage in the production of charcoal, firewood, and wood for construction, a situation that aggravates the destruction of natural resources like trees or forests.

This indicates that poverty is one of the major driving forces behind people's engagement in environmentally unfriendly activities. Dawuro in Marak'a land had been rich in natural resources, and it is relatively rich in forest and mineral resources still today. The Dawuro in Marak'a have been living with these resources for so long. Hence, seen in relation to Dawuro in Marak'a society, poverty alone does not seem to have been the single biggest contributor to the rapid destruction of natural resources like forests in the woreda these days. The problem seems to be mainly associated with the improper use of resources by the community. Therefore, the pressures on natural resources like forests by the rich for accumulation of wealth in the name of investment and by peoples for cultivation of cereal crops appear to be greater than what the indigenous poor have done to the forests to get their daily means of subsistence.

5.4. The Influence of Religions

Religion influences the interaction of human beings with their environment. My informants, Doolango Doosha and Daachchu S'oona (8 March 2023), asserted that the Dawuro believed

in different traditional beliefs. The indigenous beliefs of Dawuro have different supernatural beings based on their nature and character. Some of the common deities are *Med'd'a-s'ossa* (which was believed to practice a household manner), Sas'aa-s'oossa (which appeared on young people, women, and even people of outcast groups), and *Tillo-s'oossa,* which is said to have been the truthful god, before the introduction of the major religions, Christianity and Islam, to society (Mamo 2017). The elders suggested that "the influence of the major religions on the indigenous knowledge of the society, particularly in relation to natural resource conservation, was minimal (Doolango Doosha and Daachchu S'oona).

Concerning the influence of Christianity on Dawuro, Dagnachew (2012) argues that both religions have stolen the limelight from the Dawuro traditional faith by violating and overtaking the forces of its natural development. This goes with the ideas of the Marak'a Agricultural and Natural Resource Development Office in that both have a negative impact on the tradition of the society, particularly in relation to natural resource conservation, by weakening the traditional beliefs and norms of Dawuro society, in which they give respect and care for natural resources like trees, land, and water. However, Dawuro's acceptance of these religions does not seem to be based on their needs. Even they resisted these religions for a long time in favor of and defense of their traditional faith (Mamo 2017).

Therefore, from this presentation, it appears that the improper use or destruction of protected areas will bring an end to human beings. This is also true in modern science. The biblical ideas are also good lessons for us on how natural resources are the sources of major rivers in the world. Accordingly, the destruction of natural resources may bring about the loss of waters like rivers, without which life is not possible in the world. Hence, the Holy book, the Bible, which is the guideline of Christianity, seems to support the conservation or sustainable use of natural resources like trees, land, and water.

Thus, religious leaders need to give attention to the conservational values in the tradition of society in their teaching rather than ignoring them because they are part of the traditional system. Their unwillingness to do so is indirectly ignoring their own guidelines or doctrines concerning the conservation of natural resources. Therefore, the traditions of the society in the traditional system concerning the conservation of natural resources, like the great care

given to young trees, big trees, flowering and seed-bearing plants, medicinal plants, and the recognition of forests as sources of grasses, rain, streams, and shade for cattle during the dry season, need to be appreciated and promoted. In general, the idea of being selective in using important aspects from the tradition of society, from religions, and from science in an integrated or coordinated way for the conservation of natural resources and related resources seems useful for sustainable use of resources.

My informants mentioned the natural causes of natural resource degradation, such as heavy rain and storms, although these kinds of events do not occur frequently. Most of the community elders are also concerned about low prestige and readiness among many youth. Once they are educated, most of the youth tend to abandon traditional practices and customs. Most of them became opportunities driven by individual motives rather than communal benefit. For example, one of the community elders commented:

> *Most youth have upheld their traditional values; they are copying practices and lifestyles from other cultures. Most of them (youth) despise their own culture and traditions. But we are trying hard during meetings to make them aware that even though they leave the community to go for better education somewhere else and see how other people live, they should not come back and copy everything. When they come back, they are obliged to obey traditional rules (Ababa Asaro, 12 May 2023).*

The main factors Maintaining cultural practices and making sure that knowledge is preserved for generations to come is challenging in terms of society's needs and lifestyle. The majority of young generations are getting formal education, and however much the elders are trying to transfer the knowledge to young generations, most of them end up somewhere else, far from where knowledge is needed. Those who remain want to have a modern lifestyle. There is also an increasing social transformation in terms of acquiring modern homes equipped with solar panels as opposed to living in traditional huts. All these exacerbate the pressure on natural resources.

More emphasis is given on natural resource protection because it is core to the livelihoods, culture, and traditions of the Dawuro of the Marak’a community. All individuals agreed that once natural resource management plays a large part in supporting livelihoods, most

communities cherish them and participate in their protection. Therefore, it is important for Dawuro in Marak'a communities to find good-natured solutions to knowledge retention among their members for the cultural practices to survive the challenges facing society today. To achieve the goal, collaboration among trust members, community elders, user groups, and NGOs is crucial to strengthening social institutions and building capacity among all community members.

Despite all the challenges, community elders see lots of opportunities if measures to rectify the current situation are put in place. With regards to reducing natural resource management pressure, several solutions were suggested, including finding an alternative enemy source rather than man-made degradation; finding an alternative source of livelihood that is compatible with natural resources like land, plants, and water protection; increasing conservation training and capacity building among community members; and developing a more comprehensive land use plan that takes into account current population challenges.

Furthermore, community elders teach new generations to strengthen their conservation efforts to achieve better results.

CHAPTER SIX

CONCLUSION RECOMENDATION

6.1. Conclusion

This study attempted to describe the role of natural resource management in Dawuro in Marak'a society and the indigenous knowledge and practices of the Dawuro. To attain these objectives, primary sources of data were gathered by using tools, field observations, interviews, and FGD and analyzed qualitatively. Secondary sources of data were incorporated for comparison with field sources and triangulations of discussion.

This study viewed the theory as helpful to explain Dawuro in Maraka society, their natural environment, and socio-cultural value in terms of cultural ecology, political ecology, and symbolic approach. Cultural ecology is helpful to explain how the Dawuro in Maraka, society, and their natural environment interact in the conservation of natural resources like soil, water, and wild life, and how indigenous cultural values and practices have shaped and been shaped by the natural environment and how they have impacted the conservation of natural resources. A symbolic approach is used to explain social interactions, the values that guided them, and the meanings conveyed in the cultural system, i.e., the usefulness of interpreting cultural activities of indigenous knowledge and practice in natural resource conservation and their values from the indigenous people's perspective. Political ecology is the study of interactions or interplay between the political system and sociocultural setting in shaping environmental issues.

According to the Dawuro worldview, the physical, human, and spiritual worlds are interconnected phenomena. These different worlds have maintained balanced relations, which form the cosmos. In their knowledge about this cosmic order, the Dawuro have different indigenous knowledge, which regulates their relations with the other world. This knowledge includes knowledge of the concept of *Godaa/s'oossa*. People believed to regulate and maintain their relations with the creator. In their knowledge, the Dawuro are aware of the values of natural resources and have normative practices and relations to each

resource to sustain balanced coexistence. They are aware of their actions in relation to natural resources and their creator or God, whether their actions are positive or negative.

The indigenous knowledge and practices of the Dawuro in Marak'a seem to be aware of the need to conserve the environment. Primarily, they have the knowledge and practices that directly influence the conservation of trees, farmlands, and water. They directly perform activities that protect natural resources from destruction, like deforestation and land degradation. Furthermore, their knowledge and practices have an implied contribution to environmental conservation. In this regard, their religious and social knowledge and practices indirectly influence the conservation of land, trees, and water. This means when they take part in religious ceremonies, their primary concern is to exercise their religion, but the effects they are unaware of influence conservation.

The findings of this study also postulated that the Dawuro of Marak'a have indigenous knowledge, which is part of their worldview in their relations to natural resources, and have maintained relations with their environment for generations. They have indigenous knowledge and practices of natural resource management and relations with land, trees, forests, and water resources that encompass the entire aspects of their lives. These natural resources (land, trees, forests, and water) form the backbone around which the environmental knowledge of the Dawuro is organized. These resources are the reservoir of their comprehensive ecological knowledge and the repository for the cultural traditions and identity of the Dawuro of Marak'a.

As the Dawuro of Marak'a respect and protect ritual areas, there are many shrines and ritual areas with well-protected areas. Sacred groves like *Kaashshaa* play an important role in soil and water conservation. The cutting of trees and other activities that could potentially cause damage to the *kaashshaa* and sacred spots was strictly forbidden by indigenous people. Beliefs associated with lands (mountains) and old trees may grant protection to a wide range of species of animals and plants. Practices such as rituals intended to maintain activities can work to preserve biological integrity. In many cases, taboos apply to such particularly vulnerable sets of natural resources.

Therefore, these indigenous natural resource management practices helped to improve society's livelihood and maintain their lifestyles for a long time. This knowledge helped them adapt to and combat any environmental challenge according to the degree and nature of the problem that might have occurred throughout their lives in the past.

The Dawuro of Marak'a traditionally managed natural resource, Marak'a natural resource, is faced with many factors hindering it, including the expansion of farm lands, weakening of traditional and customary governances, poverty, the influence of religions, population increase, increased agricultural activities, a large number of livestock, fire, and encroachment, which are among the main threats to the sustainability of the natural resource. The major causes of biodiversity degradation are the neglect of local biodiversity relationships through criticism of traditional and indigenous knowledge and beliefs and their significant role in the protection of environments as well as biodiversity.

To generalize, this study has concluded that indigenous knowledge has a significant contribution to natural resource management practice in combating degradation, protecting nature, and improving humans' livelihoods and environmental sustainability.

6.2. Recommendation

- Natural resources like land, plants, and water are very important resources and main assets for humans that were passed from father to son physically. But the knowledge of managing it was mostly passed through orally, which was more effective than that of modern management. The widespread use of modernization has posed a challenge to local cultural practices. So, it is important for the community to raise awareness about the importance of this indigenous knowledge management practice and to transfer this heritage to the next generation. And it is also important for academic researchers to undertake further investigation on the issue.
- The inclusion of indigenous knowledge in formal education and in the daily activity of the people helps youngsters out of schools to learn indigenous knowledge informally and for those in schools to learn both modern scientific and indigenous knowledge. Therefore, government should develop and incorporate in education curriculums indigenous ecological

knowledge to foster acceptance and consciousness of conservation of the younger generations. Providing an extensive awareness and training on sustainable utilization and conservation of natural resources to the indigenous people can preserve both natural resource and indigenous knowledge. This is because communities receiving the most externally driven development assistance become less capable of handling their own affairs.

- Different indigenous knowledge is identified in this study, like environment and biodiversity conservation and some other knowledge that sustained the livelihood. Traditional belief leaders (shareechuwa or alaama) have a very strong connection with natural resources like land, plants, and water conservation practices, i.e., they preserve trees around shrines and control land. Therefore, they should be sensitized for positive impacts and take part in environmental conservation practices as an alternative mechanism, and local knowledge is not incorporated into the knowledge system as an integral part.These indicate for indigenous knowledge management system in the future to incorporate the local knowledge.

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Appendix

Hawassa University

College of Graduate School

Department of Anthropology

Appendix A: Tools for data collection

FGD Guide

Ladies and gentlemen, my full name is Amanuel Alkasa Ashango and I am post graduate student from Hawassa University, Department of Anthropology. I am here to conduct research on the Role of Indigenous Knowledge and Practice in Natural Resource Conservation in Dawuro of Marak'a society. The information is required for academic purpose. The success of this study depends on the data you give accurately. The answers from all respondents will be anonymously. Combined in research analysis and no reference will be made to you in particular. Therefore, you are requested to give genuine data as much as possible. I confirm you that all the data you give will be executed in the manner so that confidentiality are kept.

Before we begin the discussion, your willingness to particular continues giving data for this study? If your response is 'yes' you are kindly requested to sign the attendance.

Signature of Participants

1. Name_____ Sex____ Age____ signature_____
2. Name_____Sex____ Age____ signature_____
3. Name_____ Sex____ Age____ signature_____
4. Name_____ Sex____ Age____ signature_____
5. Name_____ Sex____ Age____ signature_____
6. Name_____ Sex____ Age____ signature_____

7. Name_____ Sex____ Age____ signature_____
8. Name_____ Sex____ Age____ signature_____

I. Focus Group Discussion Guide

1. How do you express the indigenous knowledge and practices in natural resource management?
2. Are there any relationship between the belief system and NRM like land, plants, and water?
3. What are your belief about the uses of NRM like land, plants, and water?
4. Can you tell me the reason that your community protect and conserve the land, plant, and water?
5. What laws and/ or norms of NRM are in the Dawuro of Marak'a people? How are they applied? What will happen to those who transgress the laws?
6. If you look around your environment today, would you say it is the same as the one your ancestors lived in 60 years ago? Why or why not?
7. Does conservation/ management practices among the people declining? If yes what is the reasons for declining Natural resource conservation practices in your society?
8. Do you have more information to add?

II. Questions for In-depth-Interview

For Marak'a community Elders, House holders and key informants

(All personal details will be responded in the field note book)

1. Do you involved in natural resource conservation/management practice?

- ✓ If you involved, why do you participate in NRM practice like Land, plants, and water life?
- ✓ If not involved why don't not?

2. Can you tell me the reason that your community protect and conserve the land, plant, and water?

3. Is there any spiritual and or/ and social benefits that your community gain out of land, plants, water, and wild life protection and conservation?
4. How important are plants, animals, and rivers to you and your community? Why?
5. What are your belief about the uses of NRM like land, plants, and water?
6. Is there any relationship between the belief system and NRM like land, plants, and water?
7. Is there traditional belief that are represented by the worship of nature in its varied aspects; God, land, plants like forest and trees, mountains, and water?
8. Does this play a direct role in the protection of NRM of local ecosystem?
9. What is the overall function of the natural resource like land, plants, for the community; (spiritual, social, cultural, and medical?
10. How do you explain the relationship between human with the natural resource like land, plants, water, and wild life?
11. What laws and/norms of NRM are in the Dawuro of Marak'a people? How are they applied? What will happen to those who transgress the laws?
12. What are the social and spiritual norms, taboos, and values attached to NRM? What will follow if someone violet these norms?
13. What kind of skills are men and women thought in relation to the environment? Are these specific skills that only they can learn? What are they?
14. If you look around your environment today, would you say it is the same as the one your ancestors lived in 60 years ago? Why or why not?
15. Does conservation/ management practices among the people declining? If yes what is the reasons for declining Natural resource conservation practices?
16. What are the problems in protecting the natural resource that you face currently?
17. What kind of mechanisms do you use to protect the natural resource from human exploitations?

III. Questions for key informant Interview

For experts from Marak'a woreda Natural Resource Management and Development Agents

(All personal details will be recorded in the field note book)

1. What tradition of NRM in there in Marak'a society?
2. Can you tell me your belief about Natural resource protection and conservation practices in the community?
3. Do you think the indigenous knowledge of the society on NRM like land, plants, and water?
4. At what level is that indigenous knowledge and practices these days? What made it to be at that level?
5. What kind of protecting/conserving practices do the local people employ? If they did not do that, what would happen
6. Does conservation/ management practices among the people declining? If yes what is the reasons for declining natural resources conservation practices?
7. What are the problems in protecting the natural resource that you face currently?
8. What kind of mechanisms do you use to protect the natural resource like land, plants, and water from exploitation?
9. Do you have more information to add?

IV. Observation checklist

This study covers the Role of Indigenous Knowledge and Practice in Natural Resource Conservation in **Dawuro of Marak'a society**. Thus, four kebeles from Marak'a woreda, targeted for empirical data to collect.

Themes to observe

1. Are there any observable facts about benefits of indigenous knowledge and practice in NRM? The observation includes soil, plant, and water conservation and utilization practices, natural beauty and land scape conditions etc.
2. Cultural aspects: what cultural situations are there in relation with land, plants, and water conservation in the study area (Religion practices places like *shareechuwa/Alaama kaashsha* and Geziya rituals)
3. How important are Land, plants/tree, and Water to community and community participating daily kind of protecting/conserving practices to use.
4. What empirical aspects of indigenous knowledge system are available in the study area

Table: 2 Appendix B: Informants profile (interview)

No	Name	Age	Sex	Occupation	Address
1	Ababa Asaro Maje	70	M	Healer/Farmer	Yamala meso
2	Abara Dubale	77	M	Healer/Farmer	Gobo shaman
3	Abara Wondimu	65	M	Alaama	Gozo bamush
4	Abnet Gosalo	54	M	NRM	Waka/Woreda center
5	Agize Abara Abaye	55	M	Healer/Farmer	Waka/Woreda center
6	Agize Abera Dekkafo	41	M	NRM	Gozzo bamushi
7	Agize Alanche Dode	63	M	Alaama	Yamala meso
8	Alemayehu Chonu	29	M	NRM	Gobo shamana
9	Almayyo Ashanggo	55	M	Water Sanitation	Waka/Woreda center
10	Chernet Bazabe	35	M	NRM	Waka/Woreda center
11	Chufa Chudara	88	M	Merchant	Madda kuyli
12	Daachu s'oona	90	M	Healer/Farmer	Yamala meso
13	Daniel Zanaba	35	M	Culture& tourism	Waka/Woreda center
14	Doolango Dooshsha	93	M	Healer/Farmer	Gozo bamushi
15	Gadena Gezumu	41	M	Culture &tourism	Waka/Woreda center
16	Maamo Ushechcho	66	M	Teacher/Tutor	Waka/Woreda center
17	Mangisttu Makura	67	M	Healer/Farmer	Yamala meso
18	Meseret Mengesha	35	M	NRM	Madda kuyli
19	Selemawit Milkiyas	27	F	Culture &tourism	Waka/Woreda center
20	Taadassa Biraga	75	M	Healer	Arusi Mogis
21	Tagagne Taadasa	42	M	Water sanitation	Waka/Woreda center
22	Tariku Beyene	35	M	NRM	Gobo shamana
23	Ute Doolango	72	M	Healer/Farmer	Gobo shamana

24	Yohannis Falttamo	32	M	Culture tourism	Waka/Woreda center

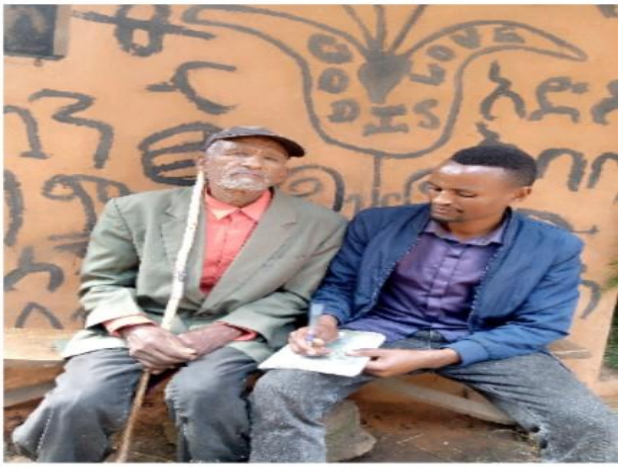
Table: 3 Informants profile (Focus Group Discussion)

FGD1					
NO	Name	Age	Sex	Address	Occupation
1	Afango Azazo	45	M	Yamala-Meso	Farmer
2	Ageno Ashango	55	M	Yamala-Meso	Farmer
3	Wojju Karetsoo	40	M	Yamala-Meso	Farmer
4	Balaynne Daachchu	40	M	Yamala-Meso	Farmer
5	Dokka Doolanggo	46	M	Yamala-Meso	Farmer
6	Gantta Gabre	62	M	Yamala-Meso	Farmer
7	Sabire Sada	63	M	Yamala-Meso	Farmer
8	Almayo Ashsngo	57	M	Yamala-Meso	Farmer
FGD2					
1	Didana Doku	73	M	Gozo -Bamush	Farmer
2	Masresha Markine	44	M	Gozo -Bamush	Farmer
3	Gotoro Golbe	54	M	Gozo -Bamush	Farmer
4	Otoro Okantso	46	M	Gozo -Bamush	Farmer
5	Ababa Asaro Ante	56	M	Gozo -Bamush	Farmer
6	Timara Tigiro	64	M	Gozo -Bamush	Farmer

FGD3

1	Abarash Karetsoo okee	50	F	Gobo-Shamana	Farmers wife
2	Agegnehush Minota Tigiro	60	F	Gobo-Shamana	Farmers wife
3	Ayalach Ayanna Anjjajo	48	F	Gobo-Shamana	Farmers wife
4	Belaynesh Mengesha Lota	65	F	Gobo-Shamana	Farmers wife
5	Omi’’oli Oshuu Ashiku	57	F	Gobo-Shamana	Farmers wife
6	Oyati Oshu Ashiku	59	F	Gobo-Shamana	Farmers wife

picture 1: Appendix C: Some pictures of Focus Group Discussions and Interview with local elders from different research areas



Researcher conducting FGD with informants and interview with Guuda ute Dolango, Dachu S'oona &Balanesh Maanagasha

Researcher conducting interview with Doolango Doosha &Dachu s'oona