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The Eco-cultural Shift in the Gede'o and Sidama Indigenous Agroforestry System

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Abstract

The Gedeo and Sidama are neighboring communities well known in Ethiopia for their indigenous agroforestry system. Both communities have strong attachments to the indigenous agroforestry system. However, in recent years, there has been a dramatic change in the agroforestry system of both communities: a shift in the value system and economic engagements that reflects a departure from the culturally embedded local knowledge, belief, norms, and environmental ethics of regulating the human-nature relationships. This paper attempts to show the eco-cultural shift in the indigenous agroforestry systems of the Gedeo and Sidama communities. The paper specifically addresses the relationship between nature and culture, and their dynamics and the challenges related to the eco-cultural shifts in the everyday lives of the communities. Methodologically, qualitative research methods such as in-depth interviews, observation, focused group discussions; narrative interview and review of secondary sources have been employed to collect data. Purposive and snowball sampling techniques have been used to find key informants in the study areas. The results have shown that various factors such as disease to native crops, erosion of traditional social structures, urbanization, modernization, modern schooling and expansion of mainstream religions have been inducing adverse effects in the indigenous agroforestry system of Gedeo and Sidama communities. In addition, with the "monetization" of the production system in the area, the indigenous agroforestry system of the Gedeo and Sidama is now shifting towards cash-oriented cropping system. As a result, the communities have started to experience ecological, social and institutional challenges. Ecologically, the communities have started to experience loss of biodiversity, infertility of soil and food insecurity; socially, uncommon and abnormal behaviors such as beggary, snatching and prostitution are on the rise; institutionally, the decay of indigenous social institutions that preserved society-nature symbiosis is quite visible. The paper recommends necessary preventive measures to reduce drivers of eco-cultural shift in the indigenous land use systems of Gedeo and Sidama and their adverse effects on the harmonious relationship between society and nature in the areas.

Keywords/Phrases: Agroforestry system, Eco-culture shift, Gedeo, Sidama

1 Introduction

The relationships between human society and its natural environment are mediated by interrelated facets of culture, namely, the society's ontology, epistemology, normative orientations and practices. Nature and culture converge on many levels that span values, beliefs, norms, livelihoods, knowledge, and languages. The natural environment provides a setting for the development of cultural processes, activities, and belief systems, and the landscapes form a diverse cultural archive of human endeavors (Jules *et. el*., 2009). This close connection between nature and culture has helped indigenous or local communities to develop knowledge of the ecology around them

(Jules *et. el*., 2009). The traditional values, myths, taboos, beliefs and practices that local people possess relate them to nature. According to Cobett (2006), cultural contexts influence how we perceive, experience, and value the natural world and ultimately influence our entire belief systems. These harmonious relationships hold for the indigenous people who believe that humans are at an equal standing with the rest of the natural world; they are kindred relations. Agroforestry system is one type of indigenous ecological knowledge that depends on an integrated approach to land use characterized by deliberate maintenance of trees and other woody perennials in fields ingrained in the traditions and culture of the local communities (Miller & Nair, 2006).

The Gedeo and Sidama are two neighboring communities that speak Highland East Cushitic languages of the Afro-asiatic phylum. They share several linguistic and cultural features, and have a long history of interdependence and friendship. Their relationship ranges from sharing adjacent geographical landscapes, economic transactions and cultural practices. Most of their members living in vicinities that allow closer interactions are bilinguals, fluent both in Gedeo and Sidama languages.

The Gedeo and Sidama are well known in Ethiopia for their traditional agroforestry system that basically evolved from forest. The oral traditions of Gedeo and Sidama account that both ethnic groups have inherited the agro-ecological knowledge from their respective ancestors. This ancestral ecological knowledge has enabled the Gedeo and Sidama to develop knowledge about plants, animals, soils and water including rain, seasonality and so forth. They use this knowledge to manage the agroforestry system holistically in the sense that the practices involve the domestication of natural forests and the intensification of agriculture, and the tolerance of wildlife in general and weedy herbaceous vegetation in particular (Tadesse, 2002; Peter, 2008). At the heart of the land use system of the agroforestry is the presence of enset (*Ensete ventricosum*) with organic coffee (*Coffea arabica*) as a major cash crop. This indigenous agroforestry knowledge fits into what Natalia (2006) describes as eco-cogitation, a set of mental constrictions in specific ecology knowledge about plants, animals, soils water including rain, seasonality, and others which are used to manage agroforestry.

However, in recent years, the Gedeo and Sidama agroforestry system has demonstrated a dramatic change: shifts in the value system and economic engagements that reflect a departure from the culturally embedded local knowledge, belief, norms and environmental ethics of regulating the human-nature relationships. Scholars have already pointed out to the growing evidence of eco-cultural shifts in the Gedeo and Sidama agroforestry system. For example, Abiyot (2013) notes, that the exogenous western cultural values and attitudes have been critically changing the indigenous worldview, social organization, behaviors, traditional ecological knowledge and attitudes toward the culture-nature relationship. Asebe *et. el*. (2017) also states that the socio-economic values of tree in the Gedeo agroforestry system have been monetized and shifted from "a tree is life" to "a tree is cash in the pocket". Gessesse (2008) has also shown that the meaning, knowledge, understanding, philosophy, value and practice associated with the traditional agroforestry system have been dramatically declining among the Sidama due to excessive inflow of exogenous cultural practices like intensification in the cultivation of a mono-cash crop like chat, and clearing native trees and crops in the agroforestry system in favor of commercial trees and plants.

Although scholars have clearly expressed their concerns about the shifts in Gedeo and Sidama-environmental relations, they mainly focus on the context of tree/forest aspects instead of comprehensively investigating the eco-cultural shifts. Moreover, the scholarly works often focus on either the Gedeo or Sidama agroforestry system separately rather than looking at the Gedeo-Sidama agroforestry continuum and what both communities have and experience in common in the human-nature relationships. Thus, this takes us to the main objective of this paper: focusing on the traditional agroforestry system that holds many components together among the Gedeo and Sidama in order to understand the holistic way of eco-culture notions and practices, on the one hand, and the eco-cultural shifts within the agroforestry system, on the other. We have identified the main drivers of change in the traditional agroforestry system, and the potential consequences regarding the

socio-political, cultural, and economic and livelihood aspects for local people. To fully and comprehensively understand the human-nature relationships and the eco-culture shifts in the indigenous agroforestry system of the Gedeo and Sidama, the paper addresses such issues as how the Gedeo and Sidama agroforestry system has evolved; the components and level of integration, management practices and traditional values and belief systems that the Gedeo-Sidama indigenous agroforestry system comprises; the driving forces responsible for the eco-cultural shifts in the in Gedeo-Sidama agroforestry system; the consequences associated with the eco-cultural shifts in the study area.

Following the introduction, this paper presents the description of the study area in section two. Section three presents the methodology of the study. Section four provides the analyses and discussions of the data. Data for this paper were collected in 2021.

2 Materials and Methods

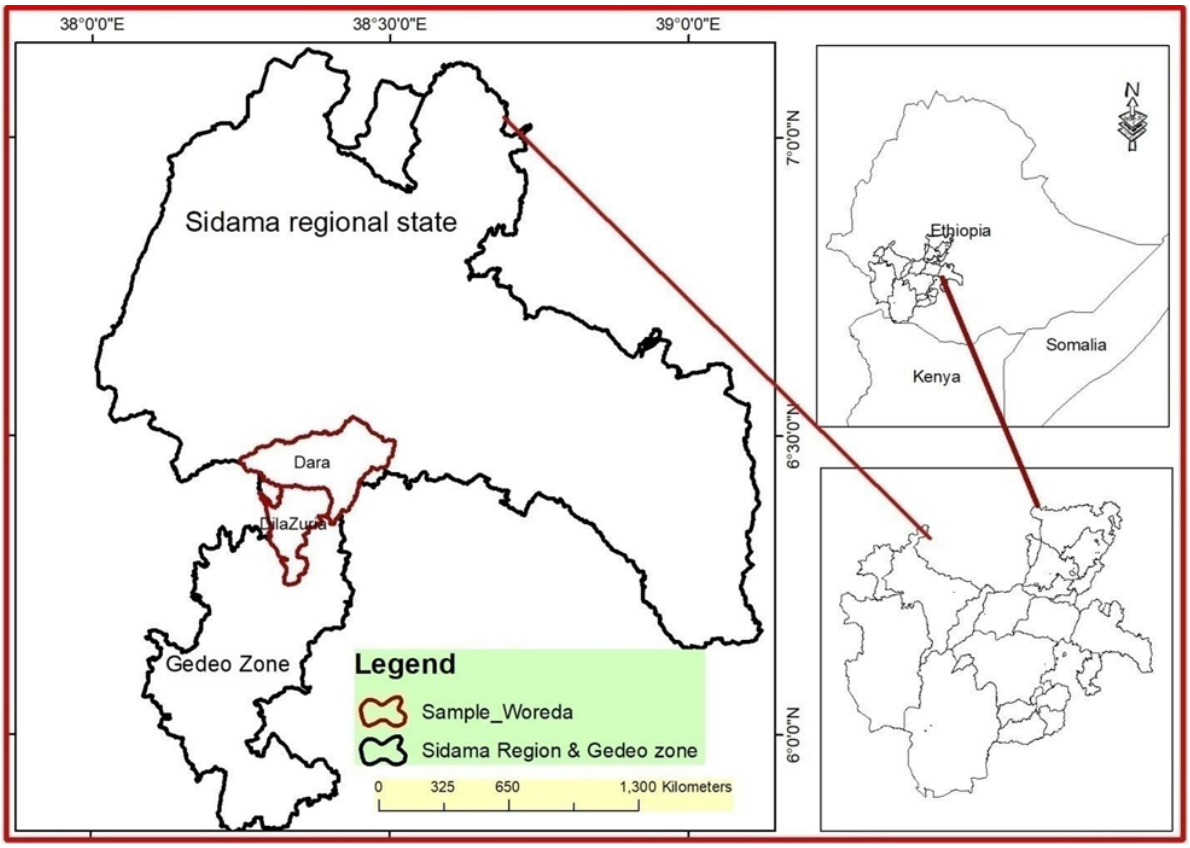
2.1 Description of the Study Area

The Gedeo and Sidama are found in the southeastern escarpment of the Great East African Rift Valley. Both Gedeo and Sidama share boundaries with each other as well as with the Oromia National Regional State (Beyene *et. el*., 2018). Moreover, as neighbouring communities, the Gedeo and Sidama share quite a number of linguistic and cultural features. For certain specific information, we briefly describe the Gedeo and Sidama communities separately below.

The majority of the Gedeo live in Gedeo Zone in the Southern Nations, Nationalities and Peoples' Regional State. The Gedeo Zone is located at 365 km from Addis Ababa, and at 5^o50'26"– 6^o12'48" N and 38^o 03'02"–38^o18'59" E. The zone has a total area of 1347 km2. The climatic condition in Gedeo is classified into three climatic classifications. The majority (62%) of the Gedeo land falls within the sub-tropical climate. This is followed by a high-altitude climate covering 37%. The hot tropical climate covers only 1% of the area. Rainfall ranges from 800 to 1800 mm while the mean annual temperature varies from 12.5^oC to 28 0C. March to May is the first rainy period while the second rainy season is from July to December (Getachew & Mulugeta, 2017).

Most of the Sidama live in Sidama National Regional State. The main town of the Sidama National Regional State is Hawassa located at 270 km from Addis Ababa. The coordinates of the Sidama National Regional State are 5^o45'–6^o45' N and 38^o15'–39^o E. The region has a total area of 7672 km2 with latitude ranges from 1800 to 2250 m a. s. l. The climate is semi-humid with the mean annual rainfall ranging between 1200–2500mm. The mean annual temperature ranges from 12 to 20^oC. The short rainy season lasts from mid-February to April whereas the long rainy season is from June to September (Tesfaye, 2008).

Both the Gedeo and Sidama are predominantly agriculturalists whose economic values are heavily dependent on agroforestry system. Both communities also have indigenous socio-cultural and political governance system and executing institutions. Moreover, both communities share many other similarities in terms of language, culture, values, and psychological make-up with their fellow Cushitic neighbors. Furthermore, they share the common history of conquest by the army of Menelik in the late nineteenth century. Resource exploitation was at the centre of the feudal system, and laid the foundation for the eco-cultural shifts. The eco-cultural shifts were sustained and even expanded in the subsequent regimes through modernization, monetization and commercialization of environmental resources.



The Map showing the study areas (developed by one of the authors)

2.2 Methodology

In order to carry out the fieldwork, the researchers purposively selected two districts (i.e., one district from each community): Dilla Zuria and Dara districts from Gedeo zone and Sidama National Regional State, respectively. The main reason for selecting these districts was that they have similar weather conditions, agro ecological zones, socio-cultural and economic ways of life, and are located at the border areas of the two administrations. We collected data from our key informants using a snowball sampling technique. Because our methodology is purely qualitative, the number of participants was determined by the level of data saturation. We first did in-depth interviews with key informants who have deep knowledge about the indigenous agroforestry system, and understand the trajectory and impact of the eco-cultural shifts. This method gave us the opportunity to gather detailed information on the traditional beliefs and belief systems, practices of ecological maintenance and regeneration, the dynamics of livelihood practices, perceptions of relations with nature, and shifts in eco-cultural meanings (O'Reily, 2012; Asebe *et. al.*, 2017). In addition to collecting data through in-depth interviews, the researchers conducted field observations to understand the practices, activities and emerging phenomena related to the study topic. Focus group discussions were also used to collect data basically to further examine information collected during in-depth interviews. This method is crucial because it helps researcher to collect information that cannot otherwise be well documented, and possibly missed from, individual in-depth interviews (Riesman, 2002). Information from secondary sources on the Gedeo and Sidama indigenous agroforestry system was consulted from published and unpublished materials.

In addition to what the data from the fieldworks and secondary sources show, this paper has benefited from the composition of the researchers. The first author is a native member of the Gedeo community who has been interacting with both communities since his childhood. His birthplace is located on the border between the Sidama and Gedeo. From his

life experiences, he knows that the multi-cropping culture is shifting to mono-cropping; the culture of substituting old and big trees with seedlings of their species after cutting is vanishing; monetization of cash crops like chat, eucalyptus and coffee, profaning of intruding to sacred spaces and so forth. The other three co-authors are non-native members of either community. However, as senior academic staff members of Dilla University, weekly commuters between Hawassa and Dilla, and their extensive research activities and personal contacts with the members of both communities, their observations and insights have contributed to understanding the views of the study participants, and the realities on the ground.

3 Results and Discussions

3.1 The Genesis of the Gedeo and Sidama Indigenous Agroforestry System

Oral traditions state that the Gedeo and Sidama were governed by a kind of Queen Dom governance system called *Akkomannoye/Furra* system. During that governance system, hunting and gathering activity was the dominant livelihood of these two communities. According to Christine & Pauline (1979), the practice of hunting and gathering economy goes back to around 9000 BC. If we adhere to this assumption, the Gedeo-Sidama hunter-gatherer livelihood must have started at the same time.

When we come to the genesis of the indigenous agroforestry system of the Gedeo and Sidama communities, we find no written document that provides an accurate time. Scholars (Paulina, 1974; Tadesse, 2002) estimate that the Neolithic period is generally thought to have occurred about 10,000 BC. During this period, humans learned to cultivate crops, keep domestic livestock and settle in permanent villages. Moreover, during the fieldwork period, our key informants also stated that parallel activities like domestication of animals and edible plants like enset were introduced when hunting and gathering began to decline.

The emergence and full-scale utilization of the agroforestry system helped the Gedeo and Sidama to produce surplus, and trade the agroforestry products with different communities such as the Arsi, Guji, Halaba, Wolayta, Konso, Borena, Hadiya, and the Kambata (MCllelan, 1988; Betena 1991; Taddese *et. al*., 2008). Originally, the mode of commodity exchange was bartering. Money was introduced to the communities in the late 19th century after they were incorporated into the Ethiopian empire.

3.2 The composition and management practices of the Gedeo and Sidama agroforestry system

The main characteristic feature of the Gedeo and Sidama agroforestry system is that it is a multi-species cultivation complex in nature and having multi-layered crop structures (King, 1989). We have mentioned earlier that the genesis of the Gedeo and Sidama agroforestry system is embedded in the identification and domestication of animals and plants. According to the key informants, '*enset*' is the first domesticated plant in the agroforestry system of Gedeo and Sidama. Coffee is the second most essential plant in the Gedeo and Sidama agroforestry system. Fruit bearing plants such as avocado, pineapple, banana, mango etc, and root crops such as yam also came into the agroforestry composition.

The introduction of agroforestry system and the subsequent domestication of plants shifted the livelihood strategy of the Gedeo and Sidama communities: from gather-hunters to settled agriculturalists. Enset guaranteed food security given its capacity to yield surplus in a small land (Tadesse, 2002). Coffee was originally grown for domestic consumption and small-scale exchange. At present, coffee produced in Gedeo and Sidama is one of the chief export commodities earning foreign currency for the federal government, and generating revenue for the Gedeo and Sidama administrations. Fruits and root crops are used for food diversity, and economic values in local and national markets.

The management practices of the Gedeo and Sidama indigenous agroforestry system fully depend on the indigenous knowledge that maintains the fertility of land, and sustains livelihoods, ecology and belief systems. In order to ensure the soil fertility, and sustain livelihoods, ecology and belief systems, there are various complementary types of the management practices of the Gedeo and Sidama agroforestry system. The first one is the ko'a practice. This practice

involves the digging of the soil to harvest rainwater, and, at the same time, protect soil erosion caused by flood. Key informants explained that this human intervention supports mulching- a natural process which protects the runoff of minerals from soil and erosion of upper fertile soil. '*Horehiribeesisa*' is another agroforestry management practice which involves allowing cattle, sheep, goats and other domestic animals to walk on tillage farms. The study participants explained that this practice is done because it is believed that the place or site trampled by the animals can hold rainwater and protect the runoff of fertile soil. The other agroforestry management practice is the '*worqa*' practice. This involves the mowing of unwanted grass, mainly when the coffee beans are ready for harvest. '*Qurqura*' is another practice. This involves the reduction and/or removal of many branches from large trees in overcrowded vegetations. Our study participants explained that this practice is conducted to allow middle and lower canopy trees and crops to get sunlight and free air. The '*followassa*' is another practice within the management of the Gedeo and Sidama agroforesty system. This agroforestry management practice involves the complete removal of crops or plants that refuse to grow, and affect the survival of other crops or plants in the system. According to the key informants, this practice gives the farmers the opportunity to learn the nature of compatibility between the nature of soil and the species of crops, plants and trees that the soil needs. Moona system is the practice of fertilizing infertile soil that is mostly practiced around the highland region of Gedeo and is not common in Sidama (Focus Group Discussions, Michele Holena kebele, Dilla Zuria district, 10 January 2021; Olticho kebele, Daara district, 15 January 2021).

3.3 Traditional values and belief systems and their association with agroforestry system

Gedeo and Sidama ancestral values and belief systems have a close connection with not only native trees/forests of agroforestry system but also with land, grass and water (Tadesse, 2002; Abiyot, 2013; Zerihun, 2014; Asebe *et. el*., 2017; In-depth interviews at Anidida and Oticho kebeles, 19 and 21 January 2021). The Gedeo and Sidama believe that maintaining harmony with their environment pleases the Creator (Mageno in Gedeo, and Magano in Sidama) who is source fertility, abundance, peace and health. They also believe that destroying the environment makes the Creator hold back rain, inflict death, cause diseases and famine upon people and animals (see Asebe *et. el*., 2017; Tesfatsion *et. el*., 2021). According to the key informants, any violation in the human-nature relationship requires performing ritual activities under the tree, in and around the river, mountain or forest. They added that the selection of the ritual site depends on the nature of the violation of the human-nature relationship. The Gedeo and Sidama believe that human beings as well as nature itself are creations of *Mageno/Magano*. The script of the belief interweaves humans into the fabric of nature, making the separation of human beings from nature impossible. This is vividly understood from the following expression:

'*dada duuchikaanna*'
father nature
'father to all nature'

In the expression, the Creator is perceived as father, and that nature entails human beings, vegetation, soil and terrain. Key informants expressed that any inappropriate nature and behavior between and among these components of nature make the Creator angry. They added that angering the Creator through violating the environmental harmony is not without consequences. He allows the land and human beings to experience unwanted phenomena. What is more, The Gedeo and Sidama elders state that the land is the mother, and clearing forests/trees from it is like "*removing clothing from a mother for rape*". (Focus Group Discussion, Michilegrisa and Dara, 13 and 15 January 2021, respectively).

Some grasses in the Gedeo and Sidama agroforestry system have social and spiritual values. For instance, when individuals or groups happen to fight in Sidama, community members who believe they are neutral to the fight hold a special type of grass in their hands and head to the fight site to let the fighting parties know that they are neutral, and the fight must stop immediately for the sake of peace. From the perspective of the fighting parties, the individuals holding grass in their hands are perceived as their ancestors. As a result, they are forced to stop the fight. Otherwise, the continuation of the fight after the arrival of the individuals carrying the grass in their hands carries with it the meaning 'fight with ancestors'. In Gedeo, when a family intends to slaughter a domestic animal, they have to first bring a grass called '*gorassanijo*' from the surrounding

forest, and tie it around the neck of the animal. The key informants added that doing this indicates that the family apologizes to the Creator as killing the life of the animal is eminent.

The Gedeo and Sidama perceive that trees give eternal life to human beings. Along this, the study participants explained this notion saying that starting from birth to death, human beings use trees for different socio-cultural, political, economic, ecological and religious purposes. They added that trees are perceived as life (Zerhun, 2014; Abiyot, 2013; Asebe *et. al*., 2017), and that the trees that grow on the burial sites represent dead people. This is, again, linked to the belief that "*there is life after death*". The Gedeo and Sidama believe that presence of a lot of trees is equivalent to having many children or escaping infertility. The key informants also expressed that both communities believe that tree is impartial and does not discriminate. That is why elders sit under big trees to deliberate on community issues such as solving conflicts, blessing members of the community, cursing diseases and evil acts, *etc*.

3.4 Driving forces of shifts in the indigenous agroforestry system

Change is inevitable. The Gedeo and Sidama indigenous agroforestry is no exception. The genesis of the Gedeo and Sidama agroforestry system itself is a result of change. The question now is what the forces behind the change and the impact of the change are. In what follows, we examine the driving forces of the shifts in the Gedeo and Sidama indigenous agroforestry, and the impact these forces present to the agroforestry, the human-nature relationship, and the very community.

3.4.1. Natural and demographic factors

Nature itself is in a constant state of change. The Gedeo and Sidama indigenous agroforestry is undergoing fundamental changes. Some of the changes are attributed to natural and demographic factors. Factors such as soil depletion (due to human activities), diseases and climate change show their impact on the Gedeo and Sidama indigenous agroforestry system (see Bantider, 2007). Because of changes in the weather conditions and climate, the Gedeo and Sidama farmers started to change their traditional mixed land use system to a mono-cropping land use system. Many key informants agree that because of the nature of topography and weather conditions, native plants and crops such as coffee, enset and trees are being replaced by such exotic trees and plants as eucalyptus and chat. Diseases such as '*koreera*', '*we'lo*' and '*xeta*' have spread around more than ever before. The former affects coffee while the latter two affect enset. The spread of '*koreera*' disease poses significant impact on the production of coffee: they damage its leaves and, consequently, its capacity to bear adequate and quality beans. Sometimes, the effect is extended to the dry up of the coffee tree. As mentioned above, *we'lo* and *xeta* are diseases that affect the production and productivity of the enset plant. The study participants were extremely concerned about the loss of coffee trees and enset plants saying:

The loss of these 'assets' that we inherited from our ancestors is suicidal but, then, because we should survive, we are being forced to plant crops and trees even if they are non-native to our land, and given some production.

The Gedeo and Sidama administrative areas are characterized by being densely populated. Put differently, the demographic change that is causing shifts in the Gedeo and Sidama agroforestry is the rapid increasing in the population size in both communities. The study participants explained that this factor is causing fragmentation of land. This shrinks in the land holding capacity per household makes the individual's plots of land unable to support the integration of different crops. This, the key informants added, results in food insecurity. Furthermore, the study participants explain that people are being reoriented to producing cash crops using mono-cropping system. What is worse, they explain, is that people are even forced to encroach into sacred spaces and community land holding (Focus Group Discussion, Dilla Zuria and Dara, 22 and 25 February 2021).

3.4.2. Decline of traditional social structure

During our fieldwork in Qawado and Amiba (5 and 7 February 2021), the participants of the Focus Group Discussion explained that the traditional social structure of both communities begins with family and extends to the community level. The social structures are governed by ethics, values, norms and regulations on socio-cultural, environmental and political issues (Abiyot, 20013; Asebe *et. al*., 2017; Tesfaye,

2019; Tesfatsion *et. al*., 2021). At the core of these issues are the ancestral values passed down from generation to generation through practices. Violations are regulated through social sanctions, and the community way of life was guided by social norms and principles.

However, now-a-days, due to contact with non-native ways of life, state structures, advocacy of individual rights, modernization, and expansion of urbanization, mainstream religions and modern schooling, a number of shifts in the social fabric and human-nature relationship are evident. According to the key informants, these factors have resulted in the degradation of traditional social cohesion, the decline in the functions of indigenous institutions such as 'textitSongo', the weakening of the culture of listening to the elders' advice, scrambling sacred spaces and forests, cutting down trees for the production of timber, house construction and charcoal making, etc. Overall, the effect of these factors is shown in the indentation of the traditional social structures. In what follows, we take these factors in detail.

3.4.3. Urbanization

Urbanization is expanding more than ever before in Ethiopia in general and in Gedeo and Sidama communities in particular. As is said earlier about modernization, the development and expansion of urbanization should be rooted in the local philosophies and values. The main resource in rural area is land and the natural resources therein. As urbanization expands without taking into account the preservation of the indigenous knowledge system, the consequences become obvious. Coupled with the very challenges in the rural areas, the economic opportunities in the urban areas attract people to migrate from the rural areas to the urban areas. The key informants expressed that, in addition to exposing children to child labour abuse, the expansion of urbanization creates irregular migration, decline of ancestral value-belief system, involvement in such activities as snatching, begging, burglary, textitetc.

3.4.4. Modernization

Modernization is undoubtedly important but only if it is rooted in the traditional values and evolves from there through natural growth. As it is now in the study area, the evolution of modernization began with weakening indigenous institutions. This fits into the observation made by Spencer (2010) who states that modernization is the process of replacement of local, traditional values and belief systems and practices. According to the key informants, any effect in the indigenous institutions has a direct impact on the community interaction within itself and with nature. In other words, the Gedeo and Sidama traditional belief system that supports the holistic composition of the agroforestry system is undergoing significant shifts.

Commercial transaction with money was introduced to the communities in the late 19^{th} century. As commodities kept exchange with money, bartering, the indigenous way of commodity exchange, began to give way. Money-mindedness gradually followed the use of currency for commodity exchange. According to the key informants, individualism is on the rise. They mention that, for instance, traditionally, requesting a relative or neighbor for materials and physical support cannot be declined (see Asebe *et. al*., 2017). What is more, access to transport and expansion of market centers exasperated the situation, and enhanced mono-cropping system. Currently, the introduction of telephone communication and mobile banking is reshaping business activities and human-nature dynamics (Focus Group Discussion, Michile and Olticho kebeles, 17 and 21 February 2021).

3.4.5. Mainstream religions

All human societies have religious philosophies and practices. The Gedeo and Sidama are no exception. Both communities believe in the existence of a supernatural force and Creator, 'textitMageno' (in Gedeo) and 'textitMagano' (in Sidama). The Creator is perceived as the source of all good provisions, and punisher of all evil acts. Giving thanks to the Creator is the responsibility of elders (Abiyot, 2013; Asebe *et. al*., 2017; Tesfaye, 2019). Their indigenous religions are based on their ancestral spirit, spirituality, culture and nature around them. That is why the traditional religious practices involve the use of native terrains, trees, crops *etc*.

However, the introduction of mainstream religions to the Gedeo and Sidama land in the late 19^{th} century

gradually started to reduce the number of traditional belief system followers. In the 1990s, the number of traditional belief system followers significantly dropped. Along this, Tadesse (2002: 27-28) has the following to report:

According [to] the Central Statistical Authority (1996a), today, 43.2 % of the Gedeo population is protestant Christian, i.e., largely followers of either of the two protestant churches, whereas followers of the original Gedeo religion make up 24.6% of the population. Orthodox Ethiopian Christians, Catholics Christians and Muslims comprise 22.1, 2.8, and 2.8% of the population, respectively. The latter three religions are predominantly professed in the towns. The majority of the rural population (more than 83% of the total) either follows the indigenous religion or is protestant Christian.

The expansion of the mainstream religions gradually began to adversely affect the indigenous ways of practicing it. The key informants reported that converts think that they are superior to nature. With this new mindset, the converts claim that they have the right to dominate nature. And as a result, they began to encroach into cemeteries and sacred sites. They added that the functions of the Songo institutions are being replaced by the religious institutions (see also Abiyot, 2013; Asebe *et. el*., 2017. Tesfatsion *et. el*., 2021).

3.4.6. Modern schooling

Education is crucial for cognitive development as well as societal transformation. To that end, the content and context of education is crucial. According to the study participants, institutionalized education was introduced to Gedeo and Sidama areas in the 1960s. This institutionalized education replaced the indigenous education process and content. The traditional education system is transferred from generation to generation through oral mechanism. The *Songo* is a primary traditional institution where elders narrate stories to children about the traditional perceptions and practices in the evening through storytelling. On the contrary, government education system requires a formal setting with deliberately structured content. This kind of content fragments the holistic understanding of the indigenous knowledge system. The concern of the key informants is that the government education does not incorporate indigenous norms, knowledge, ways of life and values. In this manner, it detaches children from indigenous ways of thinking and knowledge acquisition (see Asebe *et. el*., 2017). This concern is also supported by Shiva (2002) who explains that scientific knowledge ignores and marginalizes local knowledge and posits itself as universal while ignoring its local origins.

3.5 Adverse effects of the shifts in indigenous agroforestry system

The indigenous management practices, belief system, values and ethics of the Gedeo and Sidama peoples related to nature and its diverse components help them to preserve and conserve different species of trees, crops, plants and animals (domestic as well as wild) in a sustainable way. However, any change in this system that adversely affects its nature and composition dooms to being unable to support the vitality and sustainability of the indigenous agroforestry. In what follows, we briefly present the adverse effects of the shifts in the Gedeo and Sidama agroforestry system.

One of the adverse effects of the shifts in the Gedeo and Sidama indigenous agroforestry system is a growing trend of mono-cropping. On the other hand, there is a fast-growing population and shrink in the creation of job opportunities. As a result, the Gedeo and Sidama communities are facing food insecurity. The key informants mentioned that cash gained from cash crops is not enough to cover the increasing price of food to meet household food and nutrition requirements.

Because of the decline in using the indigenous strategies of maintaining soil fertility, the government imposes the use of chemical-based fertilizer upon farmers. As a result, the key informants assert, the soil refuses to give adequate product if the farmers are not supplied with the “modern fertilizer”.

The health benefits of the Gedeo and Sidama indigenous agroforestry system is also significantly endangered. In other words, the traditional medicine, produced by using indigenous practices from the products of the agroforestry, is accessible, affordable and friendly. However, the loss of plant diversity in the agroforestry, negative attitude towards traditional healing practitioners and practices, spike in

the 'modern drug' prices etc. are exposing so many families to being unable to afford their medications.

4 Conclusion

Various societies in the world are known for certain unique heritages. In this respect, the Gedeo and Sidama communities in southern Ethiopia are known for the indigenous agroforestry system. This indigenous agroforestry system is a comprehensive system that combines social, political, economic, ecological and spiritual aspects of both communities. However, since their incorporation into the Ethiopian state building project in the late 19th century, this indigenous agroforestry system has undergone various stages and forms of change. The leading factors that contributed to the dynamics and transformation in the Gedeo and Sidama agroforestry system include modernization, urbanization, spread of mainstream regions and modern schooling. Consequences include the weakening of the native social structures and institutions, rise of monetization (intensification of cash crops production), signs of food insecurity, introduction of exotic and socially unacceptable behaviors in the urban areas, degradation of conservation systems and people-environment relationships, etc.

The impacts of the eco-cultural shifts are enormous. However, it is not too late at all to reverse the negative impacts of the eco-cultural shifts. Our proposals include promoting employment, indigenous based innovation, and off-farm activities that improve livelihoods and sustain local knowledge, practices, and resources. Moreover, maintaining fair prices for farm products like coffee, honey, livestock, and vegetables is critical for long-term traditional agricultural inheritance systems. Furthermore, using indigenous structures and institutions, techniques, knowledge etc. as alternative forms of food production is crucial for policy makers and government bodies.

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Conflict of interest

The authors declare that they have no conflict of interest.

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