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Indigenous agroforestry knowledge transmission and young people’s participation in agroforestry practices: The case of Wonago Woreda, Gedeo Zone, Southern Ethiopia

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Abstract
Research was conducted in the Wonago Woreda in Gedeo Zone, Ethiopia, to examine the transmission of indigenous agroforestry knowledge (IAK) from elders to young people. The study participants (elders, young people, and development agents) were purposely chosen from three kebeles in the woreda based on their sex, age, and status in the society. In-depth interviews and group discussions were held, observations were made, and participatory methods, including card sorting, cognitive mapping, neighbourhood walks, free listing, and informal discussions, were employed to collect necessary data from the participants. Thematic content analysis and case summaries were used to analyse and interpret the data. The findings revealed that the level of articulation regarding the IAK being practised in the area varied with age, gender, everyday experiences, and exposure to worldviews. Some young Gedeo participants were unable to articulate IAK. Young females were found to be better than males at articulating IAK. Young people attending school and fully engaged in off-farm activities were found to be less knowledgeable, while those whose daily activities depended on farming and related tasks articulated IAK adequately. Despite changes in social, economic, and cultural phenomena, the traditional practice of parents transmitting indigenous knowledge (IK) to youths still occurs. However, the rate of transmission is reduced compared to how it was in the past. The transmission rate is declining due to internal and external factors, such as schooling, religion, poverty, land fragmentation, weakened child-parent relationships, and mass media. Ultimately, the decline in the transmission of IK is likely to result in total loss of IK, as there will be few or no generations holding such knowledge and passing it on to younger generations. Therefore, it is of paramount importance to strengthen the local institutions, belief systems, and rituals that give young people an opportunity to appreciate their culture, value, and norms and hence show an interest in passing their knowledge to the next generation.

Keywords: agroforestry, indigenous agroforestry knowledge, knowledge transmission

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Introduction

Indigenous knowledge systems and natural resource management have been of interest to researchers, but the systematic study of such knowledge and its recognition as a distinct field of scholarly inquiry is relatively new (Brokensha et al. 1980). Indigenous knowledge systems did not gain recognition among the scholars until the 1980s. In recent years it has been claimed that indigenous knowledge (IK) is essential for sustainable development (Warren et al. 1988), yet most scholars are unaware of this need. However, following various international workshops, development partners have begun to consider IK as an essential element of sustainable natural resource management.

Indigenous knowledge is a relatively new focus in development circles. Increasingly, scientists and organizations are recognizing that it offers cheap, locally adapted solutions to development problems or it can be combined with scientific knowledge to boost productivity and living standards. Nonetheless, such knowledge has rarely been recorded and documented. IK is commonly held by elders. Hence, the death of knowledgeable elders means the loss of IK if it is not transferred to the next generation.

The Gedeo, an ethnic group in southern Africa, have a long history of traditional land-use systems (Tadesse 2002), and hence it is assumed that their IK has a long history. The local people have been using IK for different purposes, among which traditional agroforestry practices are prominent. The traditional agroforestry system is known to be an exemplary land-use system in the region (Tadesse 2002; SLUF 2006). It has been practised in almost all parts of Gedeo Zone because almost all of the people are entirely dependent on it for their livelihood. All members of the community in the study area (i.e. Gedeo Zone) practise at least a home-garden type of agroforestry, whereby subsistence crops are grown mixed with trees. Accordingly, all members of the community are supposed to have IK that can be used for traditional agroforestry practices. However, the diversity and depth of IK that individuals possess varies according to age, education, gender, social and economic status, everyday experiences, outside influences, roles and responsibilities at home and in the community, profession, available time, level of curiosity and observation skills, ability to travel, degree of autonomy, and control over natural resources.
(Grenier 1998). The variation in people’s level of IK can also be explained by differences in intergenerational transmission of IK.

IK is transmitted orally from generation to generation (Grenier 1998) and consequently it is vulnerable to rapid change, especially when people are displaced or when young people acquire values and lifestyles that differ from those of older generations. More importantly, the exposure of young people to modern lifestyles, including formal education, has resulted in them giving less credit to traditional local practices and knowledge acquired by older generations. It is becoming a common phenomena to see that most young people who travel to towns on a daily basis to attend school, look for work, or sell farm products are no longer interested in traditional values and norms or do not have the opportunity to learn about them. Consequently, it is becoming harder for older generations to transmit their knowledge to young people (Grenier 1998). Hence, IK is at risk of disappearing (Hens 2006).

When visiting some parts of the study area, we recognized that members of the young population were less interested in acquiring IK, although the knowledge was widely held among local elders. The purpose of the research was therefore to investigate the intergenerational differences in the transmission and acquisition of IK pertaining to traditional agroforestry, focusing on the young people of Gedeo. We aimed to find answers to the following research questions:

1. Do young people in Gedeo possess indigenous agroforestry knowledge?
2. How have elders in Gedeo traditionally transferred their indigenous knowledge to their children? What challenges do they face in the process of indigenous agroforestry knowledge transfer?

Concepts, development, and dynamism of indigenous knowledge
Indigenous knowledge was widely used by people who engaged in hunting and gathering in early historical times. Since then, such knowledge has been utilized worldwide.

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4 In this context, a modern lifestyle refers to a lifestyle that is completely different from local, indigenous, and traditional ways of life.
Prior to the 1980s, particularly in the colonial period, indigenous and/or traditional knowledge was neglected and marginalized by Westerners. It was considered backward (primitive), simple, and static. Colonizers did not want to adopt the same practices as local communities, and instead developed their own ways of exploiting natural resources, which ultimately proved destructive and damaging. The attitude towards indigenous knowledge and indigenous people among the colonizers was thus negative.

The widespread use of IK by scientific and non-scientific communities started around 1980s following the growing awareness of the need for environmental protection. Today, however, governments and international development agencies are increasingly recognizing that local-level knowledge and organizations can provide the foundation for participatory approaches to development that are both cost-effective and sustainable. Furthermore, such knowledge offers new models for development that are ecologically and socially sound (Posey 1985, 139–140).

Following various international conferences held by the UN and other organizations, attitudes toward IK have changed to some extent. Today, scientists and indigenous scholars are endeavouring to uncover the potential of IK for environmental protection and resource management.

Currently, much effort is being invested in understanding the basis of indigenous natural resource management. The importance of IK is now well recognized and its contribution towards sustainable development is readily apparent. As a result, various international organizations have taken part in this re-assessment and paid attention to people who possess IK. For example, the Earth Summit (United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992 passed a declaration stating that governments must support indigenous communities because they can contribute highly to sustainable environmental protection and sustainable development. Principle 22 of the Rio Declaration states:

Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and
enable their effective participation in the achievement of sustainable development (Rio declaration).

Since the term ‘indigenous knowledge’ has emerged in the literature, it has been used widely but inconsistently by indigenous and other scholars. Ellen & Harris (1996) looked at the terms used by scholars critically and found that the term indigenous knowledge is by no means clear. In their article ‘Concepts of indigenous environmental knowledge in scientific development studies’, they critically assess the various terminologies, definitions, and concepts through their geographical, local–global, and various historical and disciplinary traditions. The knowledge is diversely labelled indigenous knowledge, indigenous technical knowledge, ethno-ecology, local knowledge, folk knowledge, traditional knowledge, traditional environmental knowledge, people science, and ethno-science, among others, depending on the approach followed and the assumptions made about it (Ellen & Harris 1996). According to Ellen & Harris (1996), among all the various terms, ‘indigenous’ is the least useful way to describe a particular kind of knowledge because it is ambiguous and morally loaded. One of the ambiguities relates to the meaning of ‘indigenous’ itself: indigenous knowledge is attributed only to indigenous people and communities. Hence, IK refers exclusively to knowledge specific to people that are indigenous to a specific locality. In this respect, the identification of who is indigenous should be based on prior occupancy and length of occupancy.

Ellen & Harris (1996) found the term ‘traditional’ more appropriate because it is less morally loaded. They find that it appears to be more credible and one of the most common ways to describe a particular kind of anthropological knowledge. To date, ‘traditional’ is the most common term used by many scholars. However, there is still no universally accepted definition of the concept. Berkes (1993) points out that using the term ‘traditional’ is ambiguous and raises questions regarding the cultural dynamics of such knowledge systems. Berkes (1993, 3) provides the following working definition, which takes into account various meanings and elements of traditional ecological knowledge (TEK), as emphasized in the major works on the subject and its most salient attributes:

Traditional Ecological Knowledge (TEK) is a cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings
(including humans) with one another and with their environment. Further, TEK is an attribute of societies with historical continuity in resource use practices; by and large, these are non-industrial or less technologically advanced societies, many of them indigenous or tribal.

By contrast, indigenous knowledge (IK) refers to a body of knowledge that is unique to a given society or culture (World Bank 1998). IK is embedded in community practices, institutions, relationship, and rituals. It is the basis for local-level decision making in agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in rural communities (Warren 1991).

Like other forms of knowledge, IK is neither static nor uniform. It is dynamic and changes through creativity and innovativeness as well as through contact with other local and international knowledge systems (Warren 1991; Joshi et al. 2004; Sillitoe & Marzano 2009). Due to its dynamic nature, new knowledge is continuously added to existing knowledge, and knowledge is modified or lost. Such systems innovate from within and also will internalize, use, and adapt external knowledge to suit the local situation (Grenier 1998).

Indigenous knowledge has developed over generations and its continuity depends on its transmission and the ability of younger generations to acquire and practice it (Atteh 1980). It is a transactional and community-relevant phenomenon (Cristancho & Vining 2009). As it is oral in its nature and its transmission appears to be highly personalized. In other words, the transmission of IK depends on the skills and abilities of both the transmitter and the recipient. Its transmission and hence acquisition may vary according to the exposure of both transmitter and apprentice to schooling, media and other influences. The proximity of transmitters and recipients to urban centres is also a determining factor in the effective transmission of IK.

Indigenous knowledge is dynamic and evolutionary in perspective, as well as being inherently conservative in the manner in which it is handed down from generation to generation. It is a form of knowledge that changes through time due to the creativity and innovativeness of the people who use it and through contact with other local and international knowledge systems (Warren 1991). IK tends to adapt to ever-changing socioeconomic aspects. It is often elaborated and
adapted to local cultural and environmental conditions tuned to the needs of local people and the
quality and quantity of available resources.
Despite the critiques raised about the term Indigenous Knowledge by various authors, we will
thereafter use it instead of Traditional Knowledge; the reason being that TK seems static and
somehow backward while the IK’s concept includes its dynamics and therefore more appropriate
for our purpose..
Due to its dynamic nature, the IK system has been rediscovered, reproduced, modified, and even
lost since its inception. Indigenous people around the world have been engaged in discovering
new knowledge and in the reproduction and modification of existing knowledge. However,
tremendous amounts of knowledge have been lost. Consequently, indigenous societies worldwide
has been suffering and continue to suffer from a profound loss of indigenous people and rural
groups and their knowledge about the natural world constructed from their intimate ties to land
and places. As Cosata-Neto (2000) indicates, IK is as much threatened by extinction as biological
resources. The loss of IK has been accompanied by the neglect and marginalization of practices
and beliefs often regarded as inferior forms of knowing that should be replaced by universalized
knowledge derived from the Western scientific tradition.

Researchers have noted that IK changes due to socio-economic, cultural, and institutional factors.
Some of the possible reasons for the changes have been identified as schooling (Nabhan et al.
1993), occupation and market exposure (Brodt 2001), ecological change (Ross 2002),
technological transformations (Medin et al. 2002; Reyes-Garcia et al., 2006), and acculturation
(Zent 2001).

The most common factor accelerating the gradual disappearance of numerous IK system related
to the management of natural resources is rapid population growth (Rajasekaran et al. 1991;
Grenier 1998). Some possible factors contributing to the loss of the IK systems around the world
include changes in the educational environment, indigenous people’s diminishing amount of
time, changes in value systems (Berkes 1997; Ohmagari et al. 2007), as well as the growth of
international markets, increased environmental degradation, and increased development
processes pressures related to rapid modernization and cultural homogenization (Grenier 1998).
In addition, the introduction of market-oriented agricultural and forestry practices based on mono-cropping is associated with losses in IK and IK practices as a consequence of losses in biodiversity and cultural diversity (Zweifel 1997 cited in Grenier 1998). Above all, the disruption of traditional channels of oral communication and transmission processes is the major contributing factor to the gradual disappearance of IK. Neither children nor adults spend much of their time in their communities: some people travel to urban areas on a daily basis to attend school, look for work, or to sell farm produce. In addition, many young people are no longer interested in or have the opportunity to learn traditional methods. Therefore, it becomes harder for older generations to transmit their knowledge to young people (Grenier 1998).

**The setting**

The research was conducted in Wonago Woreda, Gedeo Zone, located c.365 km south of Addis Ababa, the capital of Ethiopia. Gedeo Zone is situated on the western escarpment of the east branch of the Great Rift Valley. The zone borders Sidama Zone in the north and Borena Zone and Gujji Zone in the east, west, and south (Fig 1).

![Maps showing Agro-ecological zone, administrative division, and location of Gedeo Zone](image)

**Fig. 1:** From left to right: a) Agro-ecological zone of Gedeo Zone; b), Administrative division by *woreda*; and c) Location of Gedeo Zone in Ethiopia

Agro-ecologically, 70% of the land in the Gedeo Zone is categorized as *woina dega* (mid-altitude moist, cool), 28% as *dega* (highland, cool), and 2% as *kola* (lowlands, warm), whereas 75% of
the study area, Wonago Woreda, is sloping and highly exposed to erosion (Gedeo Zone Agricultural Department 2005). Demographically, Wonago Woreda is experiencing high rates of population growth, with population densities up to 1300 persons per square kilometre. Consequently, there is shortage of land and there are land fragmentation problems. Wonago Woreda is among the places in the region known for the production of organic coffee. It is also typically known for its widespread production of enset (Ethiopian banana), the staple food of the community.

**Methodology**

A qualitative research approach was used. Specifically, a participatory research approach was used to collect the necessary data to enable us to answer the research questions.

Three *kebeles*\(^5\) were chosen from Wonago Woreda for the study, on the basis of their cultural intactness, proximity to urban centres, agro-ecology, neighbouring ethnic groups practising different farming methods, and differing cultures and ways of life. Accordingly, Mokkonis Kebele was chosen because it is ecologically intact and has high population pressure; Kara Sodit was chosen both because it shares boundary with the Oromia region (i.e. people with a different culture) and because of its agro-climatic diversity; and Sugale was selected based on its proximity to Wonago town.

The study participants were chosen from the above-mentioned three *kebeles*: Mokkonisa, Kara Sodit and Sugale, and comprised elders of who were aged 50 years or above, young people of in the age range 15–30 years, and children (8–14 years), of both sexes. They were selected using purposive and quota sampling. Different methods were used to collect data from all three groups. Semi-structured interviews, focus group discussions, and informal discussions were employed to generate data pertaining to the existing indigenous agroforestry knowledge, the historical premises for the land-use systems, the farming systems, the early settlements, and ways and modes of transmission of IAK from parents to children.

\(^5\)Kelele is the basic administrative unit in Ethiopia
The sampling method took into consideration the age–sex composition, educational status, roles and responsibilities in the community. Young people who took part in the research were chosen from schools (i.e. were youths attending school) and the respective communities (i.e. youths not attending school). The parents of the youths were contacted through their children.

Prior to collection of data, preliminary visits were made to the study area and relevant offices. Before each field visit, discussions were conducted with the zonal, woreda\(^6\) and kebele representatives to brief them about the objectives of the project and to obtain their permission as usually required when conducting any research. During each visit, an attempt was made to identify key informants mainly among the most respected elders of the community and among young members of the population. Subsequently discussions were held with the elders and young people.

The key informants were selected based on the length of time they had spent living in their community, the level of their IK, and their ability to articulate the functioning and historical development of IK-based natural resource management. After selecting the elders, a brief discussion was held on the purpose (objectives) of the research, roles and responsibilities of the elders in the studied areas, and the benefit that might be gained from the research. In addition, the general background to the studied areas was explored through the discussions.

As the main goal of the study was to explore intergenerational transmission of indigenous agroforestry knowledge (IAK), talking to multigenerational groups was indispensable because it helped us to explore intergenerational differences. Accordingly, the participants of both sexes were chosen from three different age categories: elders whose age ranges from 50–65 years and above, young population (15–30 years) and children (8–14 years). Some of the young population and children were from school while the others were from the local community (those who are not attending school).

\(^6\) Several kebeles make a woreda, several woredas make a zone.
After collecting the necessary data from the key informants, instruments were developed to assess the status of IAK among the children and young people. The participants were first asked to list as many names of indigenous trees, fruits, practices pertaining to agroforestry, rivers, and coffee and *enset* varieties, as they knew and could remember. Later, they were asked to put the listed names into categories.

Card sorting was also used in the study. Cards with the names of indigenous trees and their products, indigenous names of river, practices, fruits, crops, and varieties of coffee and *enset* were prepared and given to those in the group ‘young people’, to sort into meaningful categories or groups according to local knowledge of natural resources and categorize them on the basis of their similarities. This method generated information about the young people’s understanding of traditional classification of natural resources.

Other methods used in the study were photo essay and cognitive mapping, whereby the participants were given a camera to take a photograph of their locality and then had to explain briefly the picture they had taken. The participants were also given pens and A3 sheets of paper and asked to prepare map of their locality. The maps were used to establish the patterns and relationships between phenomena.

In addition, we accompanied young people on neighbourhood walks, as they led us around their farmland and homestead. The purpose of the walks was to check the extent to which young people in the study area were accustomed with their environment. The information gained from the walks was substantiated by informal discussions and participatory observations.

Attempts were made to understand the way how IAK is transferred by parents and acquired by young people through participant observation. We engaged in some of the local people’s activities and stayed with them for days in order to monitor how the children and young people acquired the knowledge of their ancestors.
The data were analysed using case summaries and thematic content analysis. In the latter case, the data were coded and then categorized based on their similarities. The categorized data were subsequently developed into themes in order to perform further analyses.

Results

Indigenous agroforestry practices: a brief overview

The Gedeo agroforestry system is a well-known land-use system supporting a wide range of plant species (Fig. 2). The system comprises diverse species of annual and perennial crops, which have ecological, social, and economic benefits. It is a self-reliant and resource-conserving land use system that uses both tree and non-tree components (Tadesse 2002; SLUF 2006). Some of the non-tree components are enset (Ensete ventricosum), coffee (Coffea arabica), Boyina (Dioscorea abyssinica), Godere (Collocasia esculenta), avocado (P. americana Mill.), and mango (M. indica), whereas the tree components include Birbira (Milletia ferruginea), Bisana (Croton macrostachys), Wanza (Cordia africana), Warka (Ficus sp.), Kerero (Aningeria adolfifriedereci), and Zigba (Podocarpus gracilior) (Tadesse 2002; SLUF 2006; Bogale 2007).

Together, coffee and enset make up the largest proportion of the agroforestry system. Both crops play a significant role in the livelihoods of Gedeo people, as their economy and social life depends on them. Hence, people place a very value on coffee and enset. It is very difficult to find a farmer in Gedeo who does not cultivate both coffee and enset.

The products obtained from the various components of agroforestry system are used for subsistence and economic purposes. The agroforestry system provides at least one or more harvestable products at any season. In one season, the local community may produce coffee for their livelihood, while at other times, when there is no coffee production, they depend upon edible wild fruits such as banana, avocado, mango, and gishita (Annona reticulate). In addition, other annual crops are used as staple foods and source of income.

Thus, the economic and subsistence demands of the community in the study area depend on the components of the agroforestry, which in turn are function of the IK embedded in the culture.
The Gedeo people have acquired close knowledge of how to harness the natural resources. They have a very close connection with their environment, as their life is dependent upon the agroforestry system.

Fig. 2: Gedeo agroforestry at glance

Gedeo people are very much aware of their environment. They know how to live with the natural environment without causing significant damage to it. They do not want to lose the natural setting because they assume that the tree canopy protect them from any natural calamity and related worries.

Most farming practices in Wonago Woreda are predominantly based on knowledge of the people who have the knowledge about maintaining biodiversity. They are capable of identifying suitable indigenous trees that can grow alongside coffee and *enset*. Their IK of managing and increasing soil fertility is also worthy of mention. Above all, the people are known for their intensive use of their land through intercropping.

People avoid planting tree such as Bisana (*Croton Macrosachys*) on their farmland, as it is harmful to other plants. They know that fallen leaves from the tree affect the emerging and fruiting parts of the lower canopy of crops such as coffee and *enset*. Moreover, the farmers have recognized that edible fruit such as avocado and trees such as eucalyptus and Setamo (*Celtis* sp.) can hamper the growth of plants grown close to them, as their roots go deep and spread wide in search of water and nutrients.

The value of Birbira (*Milletia ferruginea*) is well know and all farmers want to grow the trees on their farmland because it is has multiple uses, such as maintaining soil moisture and increasing
soil fertility. Such precious knowledge originated from their traditional practices and interaction with the environment. The cultivation and use of Birbira was developed over centuries and Birbira has allowed those living in the study kebeles to live in harmony with their environment.

The cultural and social institutions and beliefs that have existed in the study area have also contributed to the development of the IK. However, today, cultural beliefs are gradually weakening due to globalization and wide exposure to modern thinking and media. Young people in the study area were not as skilful at articulating IK as their elders, and only a few were able to describe the traditional agroforestry practices. Further, there was a difference between past and present young generations in their transmission and acquisition of IK.

In Gedeo culture, it is strictly forbidden to cut or fell culturally venerated, huge indigenous trees, which are regarded as symbolic representations of the Gedeo elders who planted them. It is taboo to cut down the trees because it would be seen as demolishing the reputation of those who planted them. Such trees were seen in different parts of the study area, where they are regarded as mother trees because they are older than the surrounding trees. Although Gedeo elders claimed that the trees are found everywhere, it is very difficult to observe such trees in most parts the zone. An increasing demand for timber is the major factor behind the loss of mother trees. Gedeo people believe that it is also prohibited to cut down old indigenous trees regarded as Songo trees – trees under which local elders gather to deal with and resolve social matters. All members of the communities respect the cultural values attached to such sacred trees and therefore protect them.

However, the increasing population density is putting the traditional practices at risk. Some of the people we interviewed told us that they had no option to sustain their way of life other than by felling indigenous trees and selling the timber because the land no longer provides them with enough sources of income to feed themselves and their children. Other people are intentionally introducing alien tree species, such as eucalyptus, which are not good for the system. They assume that eucalyptus trees are fast growing and consequently they can earn more money in short time than by cultivating indigenous trees, which take longer to grow.

There is a division of labour among the people in the study area, particularly pertaining to agroforestry practices. Some activities are solely done by men only, and some are exclusively
dome by women. Furthermore, men take responsibility for protecting and maintaining farmland while women take responsibility of home-related activities such as the preparation of food, care for children, and enset harvesting and processing.

In general, it can be implied from the current situation and elders’ views on the status of agroforestry system that the way the agroforestry system is utilized and managed differs to some extent from the past. Some of the farming practices have been modernized and some still practices are still traditional.

The status of indigenous agroforestry knowledge (IAK) among the young people of Gedeo

Apparently, in terms of quantity and quality, the IAK possessed by Gedeo elders is quite different from the IAK possessed by young people in Gedeo. Furthermore, the latter appear to be relatively less knowledgeable than their ancestors.

Different techniques such as free-listing, card-sorting, cognitive mapping, neighbourhood walks led by young people, and focus group discussions were employed to assess the extent to which young people of Gedeo using the IK they acquired from their parents.

First, were asked to list the names of common components of the local vegetation including the names of both indigenous and non-indigenous trees and their uses, coffee and enset varieties, root crops, wild edible fruits, and traditional farm tools. In addition, they were asked to list traditional practices such as farming methods, methods used for soil and water conservation, soil fertility management, and different forms of agroforestry management (i.e. weeding and harvesting system) (Fig. 3).

The majority of young people listed the names of some indigenous trees in the agroforestry system, but some were unable to complete the task. From the results of free-listing, we noted that young people who spent much time on farm activities were relatively better at listing the names of indigenous trees and crop varieties in their locality than those who spent their time on other activities. Furthermore, participants that listed most, but not all, of the tree species, were those
who were supporting their family after school. Also, some young people did not know the proper names of some of the trees, and had spent almost all of their time off-farm.

Fig. 3: Young people doing free-listing (Photos: Abiyot Legesse)

Following free-listing, the participants were asked to identify indigenous trees that are grown with coffee and enset and those that are unsuitable for the proper growth of coffee and enset, and to explain the growth of both crops from germination to harvesting. Only a few of them who were engaged full-time in farm activities were able to explain the process by which the crops were nurtured.

The majority of the participants in the group ‘young people’ did not know which or how crops were farmed in what seasons. They were not familiar with the crop calendar used locally. Only those who had good acquaintance with the land (i.e. spent most of their time on farmland) were fully aware of the crop calendar.

The participants were given cards with the local names of different species of plants, edible wild fruits, root crops, varieties of coffee, enset species, stages of enset growth, enset products, soils, rivers draining in the locality, farm tools, and the farming system. They were asked to categorize the cards based on the unique characteristics of whatever was written on them (Fig. 4). During the process of categorization, some participants were observed wandering around looking for
someone who could help them to categorize the cards. Some of the participants did not even know some of the items written on the cards. The only young people who completed the task correctly were those who kept close contact with their farmland.

The participants were also requested to map their locality, using their homestead as the starting point by sketching their surroundings. Thereafter, they were asked to explain the pattern. The majority of the young people did not produce an accurate map. In some cases, they lacked sufficient drawing skills to produce the map, but gave an oral description of the pattern.

The neighbourhood walks were conducted with the young people to examine the extent to which they are acquainted with IK pertaining to agroforestry. The walks were led by the young people. During the walks, we were able to observe the young people explaining, discussing, and debating the different components of agroforestry. The discussions were mainly dominated by those who spent most of their days engaged in farming activities, while others took a less active part and some were passive listeners.

The participants were asked to show us some of the indigenous trees and wild fruits they had listed during the free-listing exercise. We also asked them to identify types of enset based on the plant’s growth stages. The majority of them were unable to identify the trees and fruits that they

Fig. 4: The participant doing card sorting (Photo: Bogale Teferi, 2009.)
knew of by name and had listed. Some of them knew the names of indigenous trees but they could not distinguish between them in practice. Only those who spent much of their time on farm activities were able to distinguish the tree species. The majority of participants who spent most of their time in school and engaged in off-farm activities were unable to identify wild edible fruits and most of the root crops grown with coffee and enset. Others among the group ‘young people’ were able to demonstrate the knowledge they had inherited from their elders.

The transmission of indigenous agroforestry knowledge

For the majority of indigenous people around the world, indigenous knowledge is exclusively transferred from generation to generation through oral communication and observation. Indigenous people of Ghana (Dei et al. 1889), James Bay Cree women of subarctic Canada (Ohmagari & Berkes 1997), the Warao community of north-eastern Venezuela (Wilbert 2002) Q’eqchi’ Maya communities of southern Belize (Zarger 2002), people in the Sonoran Desert (O’Brien 2008), and the Giriama people of rural coastal Kenya have all transferred their knowledge to their children through oral communication and demonstration (Beckloff 2009). Similarly, Gedeo people transfer their indigenous agroforestry knowledge to their children by through oral communication and demonstration.

Most informants claimed that they had acquired knowledge of agroforestry practices from their parents. However, the teaching appears to have been gender-specific. A Gedeo man is usually responsible for teaching his son by taking him to farmland, whereas a Gedeo woman is responsible for teaching her daughter by taking her to enset fields during the enset harvest. In most cases, farm activities such as land preparation, seedling preparation, slashing weeds, pruning, and cutting trees for fuel wood are man’s tasks. By contrast, the majority of Gedeo women engage in activities in the home, such as preparing food, fetching water, collecting firewood, looking after children, harvesting enset, and marketing Kocho and Bula, both of which are processed from enset). Thus, the transfer of traditional practices to children is done either in the field or at home. Children start by observing their parents and then try to copy them. Thereafter, they gradually develop skills and begin to practice without the support of their
parents. Our observations revealed that Gedeo children learn about the agroforestry system through a process of trial and error.

In addition, there is a common tradition of teaching children by gathering them around homesteads, usually late in the evening. We observed that it was usual for young people and children to gather at specific times of day to discuss values, norms, cultural heritages, folk tales, and traditional values. Such gatherings are intentional and their purpose is to equip children with traditional knowledge, including practices and values. The gatherings enable the elders to share their wisdom with their children. Nevertheless, such gatherings are becoming rare. The children and young people are no longer as interested in hearing the teachings of their fathers and ancestors. Furthermore, the elders are not keen on teaching the younger generations due to the negative reactions they receive from them.

One of the key informants pointed out that their indigenous knowledge had been transferred to them from their ancestors:

Our family inherited it [indigenous knowledge] from their parents and then they handed it down to us and we are trying our best to pass it to our children to keep the continuity of the knowledge and practices. In the past, we used to gather at a place known as ‘Songo’ and around our home to learn and get advice from our ancestors. The situation in the past time appears to have been very conducive for young people to stay around their home and learn from their family or elders. In the past, young people had less opportunity to pass their spare time. There were no alternatives to staying around the home because of limited infrastructure. Consequently, we have had a good opportunity to talk to elders. If you look, you will see that today young people have lots of opportunities. They have no time to stay around the home or time to discuss with their elders.

One of our participants, whom we met while he was slashing a coffee crop in a field, said that his father had taught him about the agroforestry system. From the interview we held with him, we learned that he had a good relationship with his father. He did not attend a modern school, and he could read or write. Nevertheless, he had good knowledge of the traditional agroforestry system of Gedeo. His knowledge had been acquired from his parents and particularly the close attention he had paid to his father when he was engaged in various farm activities. We asked the
Interviewee whether he planned to teach his children in the same way, but he replied that he would not continue the tradition because he wanted his children to become government employees. He claimed that the knowledge he had gained from his father was less valuable than knowledge obtained from formal education. The interviewee gave much credit to knowledge obtained from formal school and less to knowledge obtained from farmers. He assumed that becoming a government employee would be far better than becoming a full-time farmer. Therefore, he wished to see his children graduate from university and secure employment in government offices. Most farmers that we approached and talked to shared the same attitudes.

Because of the attitude of their fathers, the children in the study area did not show any interest in following in their footsteps. They knew little about the agroforestry system. Instead, they were encouraged to focus on their education. One of the participants, aged 23 years, described his concerns about his relationships with his father:

I don’t remember the day I went to my father’s farmland. I know that my father has more than three plots of land in different parts. To tell you the truth, I do not know where they are. My father does not force me to accompany him. He always encourages me to succeed in my education. He is not happy with his current duty. That is why he let me to be free of farm tasks.

From the above quote, it can be implied that parents make fewer efforts to encourage their children to acquire indigenous knowledge. They assume that their knowledge is less useful than the knowledge their children can gain from attending school, and perceived that formal education would change their children’s lives.

Those living in the study area are clearly cognizant of the importance of education. Consequently, today, the majority of children and young people in rural parts of Gedeo have access to education. Thus, there is increasingly less likelihood of them learning and practising traditional or indigenous lifestyles due to their exposure to modern thinking and different lifestyles.

We met a young man, aged 21 years, who had completed Grade 10 and did not get pass mark for preparatory class. He lived with his parents, his two sisters, and four brothers in Mokkonisa.
Kebele. He was the youngest male in his family. His father was aged 69 years and his mother 54 years. The young man was very close to his father. Since he was single, he did not possess any land, unlike two of his brothers who had inherited land from their father. However, he had the full support of his family. When we asked him about his plans for the future, he informed that he was not interested in farming activities. Instead, he wanted to attend a private school in Dilla town. However, he did not recognize the names of even some of the most common indigenous trees, wild fruits, and root crops grown in the locality. Rather, he was completely ignorant about his locality and the local environment, and was set on living an urban life.

In addition, we interviewed a young boy from Kara Sodit Kebele. He was aged 14 years and a 5th grade student. He lived with his family, whose livelihood was based on farming. He described his relationship with his parents with his parents as follows:

I have good relationship with my parents. I have no problem with my family. They put no pressure on me. They encourage me to be strong in my education. They do not let me work on the farm. My father always told me that the reason why he remained a farmer was that his parents did not allow him to go to school. Therefore, he does want me to miss classes. I rarely go farming with him or carrying farm materials. I’m not as good at farming as him.

We also interviewed a young woman interviewee, aged 18 years, about her relationship with her parents, and she responded as follows:

I live with my parents, whom I love for the support and courage they have been giving. I am much closer to my mother than my father because of the time I spend with her. I do assist her in carrying out home activities and farm activities like coffee and enset harvesting. She taught me how to harvest and prepare enset. By now, I can harvest and prepare enset. I also use to work with her in our home garden. My relationship with her [my mother] is closer than the relationship I have with my father. I have learned a lot from her.

We held an in-depth discussion with a Gedeo elder, who was aged 69 years. He had three sons and four daughters, three of whom (two male and one female) were married and the others were students. Among the siblings, only two had acquired some knowledge from their parents:
As you can see, I am old, and I have lived here for about 69 years. I know each part of my locality and other places as I have visited most parts of the zone. What I can tell you about my children is the way they have grown up, particularly the one born when I was 28. There is a clear difference between today’s children and children of the past. The present-day children do not want to approach us and come to us. They ignore us. My children who were born when I was in my late twenties spend their free time with me discussing their culture, folk tales, stories, ... It was a common tradition among us to gather children of our locality and teach [them] about their history and culture. I use to tell them stories. You cannot do this thing with present-day children. For one thing, they do not stay around home and, for another thing, they assume our advice and teaching are useless. They believe in formal education. Also, we don’t force them to [stay at home and take our advice].

A mother, aged 44 years, who was collecting firewood with her young daughter, was interviewed about her relationships with her children. When we asked her why her daughter was with her, she responded that she was teaching her daughter how to collect firewood (Fig. 5).

Fig. 5: Firewood collection (Photo: Abiyot Legesse)
We found that there has been intergenerational variation in the transmission of IK among members of Gedeo society. In the past, it was not difficult for elders to transfer their wisdom to the next generations. Today, however, it is becoming more difficult for elders to pass on knowledge to their children. For example, a man aged 41 years from Mokkonisa Kebele clearly differentiated between the way that he was taught by his father and the way that his children had been taught by him:

In the past, when I was a young boy, my father and other elders taught us and I had to stay with them for a long time, until midnight. Nowadays, young people are not showing any interest for it [IK]. My elders were courageous in the past. Even my father, who is 73 [years] is showing no interest towards transferring knowledge. He has less contact and relationships with youths and children. I myself do not have the courage and motivation to teach my children and the others. They do not want to learn from the elders because they consider them illiterate. They do not believe in elders’ knowledge. Therefore, I do not care about them. I never took them to farmland. The way we grew up and the way we are bringing up our children are quite different. Look at our locality. In the past, we had no lights, tea or coffee house, clinics, playgrounds, transport, schools, televisions, radios, and so on. Today, our children and we are enjoying it. Why would I force them to be farmers like me? I do not do that. Let them learn and get employment in urban centre.

Local institutions, meeting, and ceremonies are some of the means through which IK and practices are transmitted to young people. They are also the means through which young people and children acquire IK and knowledge of practices. An elder, aged 76 years, explained the situation as follows:

In the past we use to gather in place known as ‘Songo’ to conduct local meetings to discuss various matters … I remember, when I was young I used to go with my father to observe the way the meeting was conducted. At that time, young people like me went to the meeting to observe, although they had no say.

Thus, evidently, such traditional meetings are not common among the young people today. According to the elders, it is uncommon to observe young people attending local meetings organized by the local people, because they consider that such gatherings do not benefit them.
Discussion
We have investigated the indigenous agroforestry knowledge of Gedeo people and its transmission from generation to generation. The data gathered indicate that the transmission of indigenous knowledge from elders to young people is continuing but only at slow rate. IK is now threatened by the advancement of modernization and globalization. Young people’s level of interest in acquiring cultural values, IK, and the wisdom of their ancestors is relatively low. The findings published by Beckloff (2002) attest that modernization, schooling, and gender impacts are all shaping the acquisition of IK.

Schooling is one of the potential factors affecting the transfer of IK in the community. A study conducted by Beckloff (2009) indicated that school attendance has an impact on the transmission and acquisition of IK. Farmers are biased towards schooling, particularly by placing strong emphasis on knowledge gained from formal education. The young people, particularly those who have attended school and who reside close to urban centres are becoming less interested in adopting local lifestyles and local wisdoms. As noted by the elders, they do not believe in knowledge gained from elders whom the young consider as illiterate. There is a general belief among the young that proper knowledge is obtained only from schools, professors, lecturers, and other qualified professionals. The local elders themselves do not acknowledge their knowledge; rather, they assume that development agents are far superior, simply because they have had a formal education. The knowledge held by local farmers and indigenous people is considered as being important by most people. Such beliefs affect the transmission of IK among the Gedeo community. As Berkes (2008) noted, when children and young people begin to adopt different lifestyles and have different cultural practices from the traditional ones, they tend to disregard local teaching and local wisdom.

Most children and young people in the study area do not participate in local meetings organized by the local elders. The children prefer to attend school. However, the school curriculum does not cover the local setting or how cultural values as issues pertaining to the local environment and social setting should be valued and integrated.
In addition, it may be claimed that the role played by formal education in the national education curriculum for all grades does not have a place for the study of local situations, local environments and social settings. The contents of the textbooks for all grades do not help the children to understand their own local environment. Issues such as the traditional agroforestry systems of the Gedeo people, their cultural values, their customs and the traditional ruling “Gada” system practised in the study area are not included in any school textbooks. Neither the national curriculum, nor what is taught in schools reflect the local situation and social settings. It tends to bias the students to conditions different from their local environment and social setting.

Currently, relationships between elders and young people are becoming weaker. Young people do not visit their elders regularly. At the same time, elders do not encourage their children to spend time with them and take over responsibility for caring for the environment. Instead, there are strong desires for children to attend school and find formal employment instead of staying at home and becoming farmers. Being a farmer has economic and social implications. In Gedeo, culture, it is traditional for plots of land to be shared among sons upon marriage. However, the tradition is leading to shortages of land and land fragmentation. Most people in the study area are unable to feed their family due to land shortage. Therefore many Gedeo people want to secure employment for their children after graduation, in order to try to ease the burden on the land. For this reason, almost all people in the study area sent their children to school without hesitation.

The influence of protestant missionaries has also partly contributed to young people’s reduced levels of interest in acquiring and maintaining traditional belief systems. The missionaries advocate that any teaching about beliefs other than from the Gospel is worthless. There is still a widely held view that any aspect of life associated with cultural and traditional values is pagan and thus backward, as reflected by the vast numbers of young people who feel embarrassed about associating themselves with their own cultural background. Hence, the pressure from missionaries has forced local people to assimilate a culture that is quite different from their own traditions and cultural background. Modern schools as well as some churches are therefore participating in the acculturation of young people.

\textsuperscript{7} \textit{Gada} is an age-based social organization.
The transmission of IK is also threatened by the expansion of petty trade such as sales of coffee and enset by young people. Most young people who have completed Grade 10 and failed to join preparatory school engage in off-farm activities, such as selling firewood and timber. Only a few young people remain at home to shoulder the responsibility of nurturing the local environment and maintaining traditional wisdom.

**Conclusion**

The transmission of indigenous knowledge from parents to young people is still continuing but at a very slow rate in the study area. Only a minority among young people are well versed in the IK of agroforestry. The majority of young people are not equipped with a level of IK that is required for the sustainable use of agroforestry. Today, young people that attend school are no longer interested in becoming farmers. Instead, they want to find employment in government offices upon completion of their education. Even those who have completed basic school education (at grade 10) and who have no opportunity to study at higher education institutions are eager to engage in off-farm activities that provide them with an immediate income. They do not regard farming tasks as their top priority. This implies that the rate at which indigenous knowledge of agroforestry is transferred is slowing down. If the rate continues to slow, the indigenous knowledge of the Gedeo people may ultimately disappear. The younger generations are responsible for maintaining such knowledge. As a responsible citizen of the nation, young population in Gedeo Zone need to make more efforts to preserve the precious indigenous knowledge of their ancestors. Failure to do so could have implications for their future.

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