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An Investigation of Indigenous Knowledge and Institutions Contributing to Natural Forest Conservation in Yayo and Gechi Woreda, Illuababor Zone, Oromia National Regional State, South West Ethiopia

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Moreover, the findings indicated that the government has been undertaking various activities that contribute to the local communities' indigenous knowledge and institutions with regards to natural forest conservation, however, still many things are left to be done in linking the formal government and the local communities' effort to ensure the sustainable use of these resources. Therefore, the continual implementation of the already started community mobilization and participation in conservation of the existing natural forests, creating other income generating sources for the local communities and the integration of indigenous knowledge and institutions in government activities intended to conserve natural forest were recommended based on the study findings.

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I. Background and Justification

Indigenous knowledge also known as traditional knowledge refers to the practical experiences originated from a given community and sustained for a long period of time. According to Gadgil et al. (1993) indigenous knowledge is defined by as "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." "Traditional environmental knowledge is a body of knowledge and beliefs transmitted through oral tradition and first-hand observation. It includes a system of classification, a set of empirical observations about the local environment and a system of self management that governs resource use. Ecological aspects are closely tied to social and spiritual aspects of the knowledge system. With its roots firmly in the past, traditional knowledge is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socio-economic changes of the present" according to Dene Cultural Institute 1995 cited in (Stevenson, 2005).

The indigenous/traditional institutions on the other hand refer to the social norms, values, beliefs, rules, regulations and principles of a community in a specific area. Indigenous institutions guide human behaviour and interactions with each other as well as their environment including forest resources. For instance, in environmental pro-culture where environmental resources are highly valued, the individual members of the society do not engage in the indiscriminate destruction of the resources as the existing societal values, rules and regulations do not allow them to do so. Because the existing social institutions and values dictate that the indiscriminate destruction of natural resources including a forest is

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taboo. Such taboo serves the function of distinguishing between the profane and sacred. Places and species in the environment are classified into profane and scared accordingly. The sacred natural site is reserved space, established by a community, a group of people or an individual, following the conventions based on specific phenomena and requiring the respect of engagements taken at this place in order to satisfy the spiritual, cultural and socio-political needs while focusing on the harmony and wellbeing of the native community, as well as of the whole humanity according to Kamga-Kamdem(2008) cited in (Negi,2010:186).

Theses social taboos are in most cases informal, unwritten and invisible rules and regulations which are based on cultural norms that do not depend on government either for their promulgation or for their enforcement. They include any form of shared constraint that human beings devise to shape their daily interactions and transactions with each other as well as with their environment. They are decentralized, commonly shared and self-enforced themselves even in the absence of the external formal authority (North, 1990; Knight, 1992).

For decades, these traditions have encouraged community driven nature conservation attitudes and have ensured the conservation of native biodiversity (Udeagha et al, 2013:696).

Because, these social institutions put restriction on the type, the place and amount of natural resources extracted from environment. They also put restriction on human interactions with environment by regulating who should be involved in natural resource extraction, how, when, which type and what amount of the natural resources have to be used to meet the various human needs. Violations of these institutions are considered as violation of the law of creator (Negi 2010:190-195). Hence, if the taboos are transgressed, expiation and ritual ceremonies are undertaken to reconcile the violators to their creator. A breach of such law is believed to bring divine wrath on the entire society. In so doing, the taboo institutions reduce the withdrawal or harvesting pressure on particular subsistence resources. Thus, they have much contribution to the conservation of habitats, and of biodiversity, both temporally and spatially (North, 1990).

Conservation of natural resources is the wise use of the earth's resources by humanity. It is the management of valuable natural resources such as timber, fish, topsoil, pastureland, and minerals, forests, wildlife, parkland, and wilderness and watershed areas (Rim-Ruke, Irerhievwie and Agbozu, 2013:426). Smith and Wishnie (2000) describe that conservation involves institutions and actions that prevent or mitigate biodiversity loss and are designed to do so. Thomas (2003) on the other hand argues that conservation involves the sacrifice of immediate rewards of natural resources in return for future ones.

Natural resources in general and natural forests in particular have immense contribution for the socio-economic development of any society. Because human being depends on natural resources especially on forests for a number of his/her competing needs. The various inputs we need to produce different types of goods and services directly or indirectly come from forests. Forest is a source of our shelter, food, water, clothes, fresh air, energy and clean environment. Forests and the benefits they provide in the form of wood, food, income, and watershed protection have an important and critical role in enabling people to secure a stable and adequate food supply (Badege, 2001).

Hence, human being has developed institutions that contribute to the conservation and sustainable use of natural resources including forests. Indigenous institutions and knowledge are part and parcel of the institutions. According to Negi, such social institutions exist in invariably in all cultures throughout the world and define the human behavior towards the exploitation of the natural resources. However, the role of these informal institutions in conservation of biodiversity has not been given its due emphasis (Negi, 2010:187).

In Ethiopia, forests play a considerable role in the maintenance of environmental stability (soil erosion control, soil fertility maintenance, catchment protection, and micro-climate amelioration), provision of fuel wood, saw logs, building, and construction materials (Teshome, 2009). Deforestation and land degradation, however, have been impairing the capacity of forests and the land to contribute to food security, and to provide other benefits, such as fuel wood and fodder in Ethiopia. Ethiopia has been facing rapid deforestation and degradation of land resources. The continuous increase in population size has resulted in extensive forest clearing for agricultural use, overgrazing, and exploitation of existing forests for fuel wood, fodder, and construction materials. Consequently, forest areas of the country have been reduced from 40% a century ago to an estimated less than 3% in the past four to five decades (Badege, 2006). However, currently with the afforestation, environmental resources protection and prevention measures taken, the forest coverage of the country has become 15 per cent (FDRE Ministry of Agriculture, 2014).

Persistent failure to address the underlying causes of deforestation and forest degradation, and fundamental issues related to the rights and interests of local and (especially) indigenous peoples have hindered past efforts to slow deforestation and forest degradation, and to promote conservation and sustainable use of forest resources (Parrotta, 2012).

Indigenous knowledge and institutions may often contribute many things to the conservation and the

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enhancement of biodiversity; however, in most cases these indigenous communities, their knowledge and institutions were neglected in the past by development planners (Cooper, 2010; Negi, 2010:187).This day, however, there is a growing interest among governmental, non-governmental and scholars for the recognition of traditional knowledge, values and cultural practices for sustainable management of forest resources and improving human well-being (Parrotta, 2012).

Deforestation is believed to be low where there are environmentally pro-cultures, institutions, knowledge, taboos and practices. Although many parts of Ethiopia are highly deforested even recently, still there are also areas with densely natural forests in the South and South West of the country. Illuababor zone in Oromia National Regional State is one of the areas known for its evergreen densely natural forests today. This indicates there might be indigenous knowledge and institutions that helped the local communities to live harmonious economic, spiritual, and cultural relationship with their environment in general and their natural forest in particular. However, no study has conducted yet in this area regarding the indigenous knowledge and institutions contributed to the conservation of the natural forests as far as the knowledge of the researchers are concerned. These knowledge and institutions has to be identified through empirical evidence based studies and further strengthen for sustainable natural forest utilization and conservation of the area. Therefore, this study will be conducted to answer the following research questions.

a) Research questions

- What are the indigenous knowledge and institutions that contributed to natural forest conservation in the study area?
- How do the indigenous community and their knowledge contribute to sustainable forest conservation?
- To what extent the indigenous knowledge and institutions contributed to natural forest conservation have got government policy recognition?

b) Research objective

i. *General objective*

The general objective of the study is to explore the indigenous knowledge and institutions contributed natural forest conservation in the study area.

ii. *Specific objectives*

- To investigate the community perception about the benefits of natural forests
- To explore the meaning attached to natural forests by the local community
- To identify how the community classify and use different types of plant species of natural forests
- To examine the indigenous institutions contributing to natural forest conservation in the study area.
- To examine the government policy supports given for the indigenous knowledge and institutions contributing to natural forest conservation.

II. Methods of Data Collection

a) Study design

120 households were randomly selected from four kebeles namely Bondao and Waboo from Gechi woreda, Imbro and Yemboo kebele from Yayo woreda. Then, a cross-sectional survey and in-depth interviews was conducted zone from March, 2015-May, 2015 to collect data in order to answer the research questions mentioned above. These woredas are purposively selected because much proportion of their land is covered by densely natural forests according the information from Iluababor Zone Natural Resource Office.

The data collected was analyzed using quantitative and qualitative methods of data analysis. Quantitative data was analyzed using percentages and chi-square specifically to investigate the association between the respondents' gender, occupation and the mechanisms to conserve natural forests in their surrounding while thematic and descriptive narrations were used to analyze the qualitative data.

III. Results and Discussions

This section is concerned with the analysis of empirical data obtained through household survey, semi-structured observations, key informants and in-depth interviews.

a) Socio-demographic characteristics of the respondents

Table 1: Age, sex and religious backgrounds of the respondents

Socio-demographic characteristics	frequency	Percentages
Age		
18-24	8	6.7
25-34	31	25.8
35-44	60	50

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45-54	9	7.5
55-60	7	5.8
>60	5	4.2
Total	120	100
Sex		
Male	105	87.5
Female	15	12.5
Total	120	100
Religion		
Orthodox	13	10.8
Protestant	27	22.5
Islam	77	64.1
Catholic	3	2.5
Total	120	100

Source: 2015 Own field survey

As it is table 1 indicates, 8(6.7%) of the respondents are between 18-24 age, 31(25.8%) 25-34, 60(50%) 35-44, 9(7.5%) 45-54, 7(5.8%) 55-60 and 5(4.2%) >60 years of age. Regarding their sex, 105(87.5%) of them are males and 15(12.5%) of them are females.

Table 2: Educational and occupational background of the respondents

Education	frequency	Percentages
Can't read and write	2	1.7
Read and write	44	36.7
1-4 grade	30	25
5-8 grade	31	25.8
9-10 grade	9	7.5
11-12 grade	4	3.3
Total	**120**	**100**
Occupation		
Private employee	6	5
Government employee	4	3.4
Farmer	109	90.8
student	1	0.8
Total	**120**	100

Source: 2015 Own field survey

Concerning their educational background, 2(1.7%) of the respondents cannot read and write, 44(36.7%) of them can read and write, 30(25%) of them were 1-4 grades, 31(25.8%) of them were 5-8 grades, 9(7.5%) of them were 9-10 grades, 4(3.3%) of them were 11-12 grades. Likewise, 6(5%) of them were private employee, 4(3.4%) of them were government employee, 109 (90.8%) of them were farmers and 1(0.8%) of them was a student.

b) Community knowledge about the benefits of natural forests

One of the objectives of this study is to investigate the community knowledge about the benefits of natural resources. Accordingly, the 120 local communities or household heads in the four kebeles in the two woredas of Illuababor zone covered under this study described that forests in general and natural forest in particular is a source of life as it gives the following benefits for them.

Table 3: Respondents' knowledge about the benefits of natural forests

Benefits obtained from forests	frequency	Percentages
House and fence construction	113	94.2
household furniture	115	95.8
Agricultural equipments	118	98.3
Fuel	117	97.5
Serves as sources of various types of medicines	95	79.2
food	87	72.5
Serves for recreation	66	55.0
Balancing weather conditions	89	74.2
Serves as shelter for wild animals	73	60.8

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Serves as sources of clean air and water	64	53.3
Serves as source of rain	92	76.7
Total	1029*	857.5*

Source: Source: 2015 Own field survey

N.B: * The total number in table 3 is greater than the actual 120 household interviewed because the respondents have given more than one response for this specific question. Similarly, the corresponding percentage to each response is calculated out of the 120 households interviewed for this study and its summation is greater than 100% due to more than one response given by respondents for the specific question.

As indicated in table 3 above, 113(94.2%) of the 120 household heads interviewed responded that forests are used for house and fence construction, 115(95.8%) making household furniture such as table, chairs, bed, box…etc,118(98.5%)agricultural equipments,117(97.5%) fuel(firewood), 87(72.5%) food, 66(55%) recreation, 89(74.2%) keeps the balance of weather condition, 73(60.8%) serves as shelter for wild animals, 64(53.3%) serves as sources of clean air and water and 92(76.7%) serves as source of rain.

The qualitative data obtained from the in-depth interview also revealed that forests in their localities provide various types of benefits for them. Two of the informants have described the benefits of forests as follows.

c) Community knowledge about the type of trees in their surrounding natural forests and their use

The respondents not only know the benefits obtained from natural forests but also they identified the types of tress from which the specific benefits are obtained. The following table shows the types of trees and their corresponding benefits according to the respondents.

Table 4: Respondent's knowledge about the major types of trees in their surrounding forests and their respective benefits

S/ No	Name of the trees	Its use	Freq.	%
1	Amababeessa(*Albizia gummifera)*	House construction, shade and firewood. It is also used for curing stomach ache	97	80.8
2	Waddessa(Cordia Africa)	House construction, house furniture and timber. It also used to cure skin rash	83	69.2
3	Bakkaniisa *(Croton macrostachyus)*	Used for blood clotting, honey production, firewood and shade for coffee	85	70.8
4	Geeshoo(Rhamnus prinoides)	For brewing local drinks such as *teji* and *tella.* It also cures tonsillitis	117	97.5
5	Baddeessa(*Syzygium guineense*)	For house construction, firewood and medicine for stomach ache	64	53.3
6	Ulaagaa(*Ehretia cymosa)*	Firewood, house construction , medicine for toothache and livestock shivering	105	87.5
7	Heexoo(*Hagenia abyssinica)*	Medicinal plant used for killing human intestinal parasite such as tapeworm	118	98.3
8	Ceekaa (*Calpurnia aurea*)	Its leaves crushed and used to cure animal stomachache and ecto-parasite	78	65
9	Ulmaayyaa(*Clausena anisata)*	Stick, farm equipments and to cure fibril illness	115	95.8
10	Ejersa(Olea europaea)	House construction, cleaning beehives medicine for headache and asthma	56	46.7
11	*Damakasee(Ocimum lamiifolium)*	Medicine for curing mouth bad smell, headache and cough	113	94.2
12	Arbuu(*Ficus sur forsk.*)	For timber (plank), construction	96	80
13	Qilxuu(*ficus vasta*)	Firewood, shade and fencing	116	96.7
14	Hommii(*Pygeum africanum)*	For timber and fire wood	113	94.2
15	Birbirsa(*Podocarpus procera)*	Fragrance odor, house construction, firewood and timber	103	85.8
16	Doddota	For house building	78	65

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17	Soondii	Firewood, shade for coffee	102	85
18	Sootalloo	Firewood, shade for coffee and preparing farming equipments	107	89.2
19	Lolchiisaa(*Bersama abyssinica*)	Firewood, fence and curing wound	114	95
20	Qaraaroo	For timber	118	98.3
21	Odaa(*Ficus sycomorus)*	Its shade is used for gatherings and discussing all matters especially by the Oromo people	109	90.8
22	Warangoo(*Foeniculum vulgare)*	Firewood and fence	75	62.5
23	Bosoqaa(*Kalanchoe pettitiana*)	For firewood, coffee shade and curing wound	112	93.3
24	Ba'aa	For cleaning and fumigation of bee hives	117	97.5
25	Somboo(Ekeberigia capensis)	Firewood, house construction and fumigation of beehives	113	94.2
26	Mixoo(*Rytigynia neglecta*)	Firewood, fencing and stick	106	88.3
27	Lookoo	Stick and farming equipments	102	85
28	Qolaatii	Stick and farming equipments	103	85.8
29	Laaftoo(*acacia abysinica*)	Firewood, shade for coffee and medicinal for curing skin rash	113	94.2
30	Botoroo(*stereospermum*)	Firewood, hose construction and medicine for snake bite	76	63.3
31	Agamsa(*Carissa spinarum*)	Its fruit is edible. Its root is also used to cure impotence	56	46.7
32	Abayi(*Maesa lanceolata Forssk.*)	Medicinal plant for animal leech infestation. It also cures rabies and body wound due to bat urine	67	55.8
33	Ebicha(*Vernonia amygdalin)*	Fire wood, cleaning beehives, medicinal plant for animal pastrolosis and abdominal pain	96	80
34	Meexxii(*Phoenix reclinata*)	For house decorations and medicine	88	73.3
	Total		**1955***	**2759***

Source: Source: 2015 Own field survey

N.B: * The total number in table 4 is greater than the actual 120 sampled households because the respondents have given more than one response for this specific question. Similarly, the corresponding percentage to each response is calculated out of the 120 households interviewed for this study and its summation is greater than 100% due to the fact that more than one response given by respondents for the specific question.

As it is shown in table 4 above, the majority of the respondents know the major types of tress in their surrounding natural forests and their corresponding specific uses. Most of the respondents frequently mentioned that they use the major types of trees in their natural forests for house construction, firewood, fence and curing different types of human and animal diseases. Moreover, trees like Ejersa (Olea europaea), Somboo (Ekeberigia capensis) and *Ba'aa* are used for cleaning and fumigation of beehives as they have special odor to attract bees from long distance.

d) Meanings and values attached to natural forest by the local community

Because of the different types of benefits they obtain from the trees in their surrounding natural forests, the respondents and informants argued that forest is "a source of life" for them. Thus, they consider it as one of the most precious natural resources endowed to them by nature. The following table summarizes the definitions of a forest frequently mentioned by the respondents.

Table 5: Respondent's definition of a forest

S/No.	What does natural forest mean for you?	Frequency	%
1	Land covered by a giant trees	25	20.8
2	A source of water and air	21	17.5
3	A home for various animal species	13	10.8
4	Everything for human beings	18	15
5	A source of life of all living things	16	13.3
6	A security of our life	11	9.2
7	A source of freedom, love and respect	9	7.5
8	It is a source of life for human beings	7	5.8
	Total	**120**	**100**

Source: Source: 2015 Own field survey

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As indicated in the above table, the respondents define forests in different ways. Accordingly, 25 (20.8%) said that a forest is land covered by giant trees, 21 (17.5%) a source of water and air, 13 (10.8%) a home for various animal species, 18 (15%) everything for human being, 16 (13.3%) a source of life of all living things, 11(9.2%) a security of our life, 9(7.5%) a source of freedom, love and respect and 7(5.8%) it is a source of life for human beings.

The qualitative data also confirms the fact that forest is most precisions and valuable resource equated with the base for human life. One of the informants participated in in-depth interview for this study described the meaning and values attached to forest among his community as follows.

Informant 1: Male, 37 years old. Forest is everything for our community. It is the main source of our basic needs and means of livelihoods. We make household furniture and construct houses with wood from forests; we use the roots, leaves and fruits of some trees in our surrounding for food and medication to cure ourselves and livestock from disease. We use the shades of trees to take rest, recreate and discuss all matters related to our economic and social life under it. We also prepare agricultural equipments from the trees. Hence, shortly stating, forest is the source of our life without which we cannot even survive.

Another informant further described the benefits of forest as follows.

Informant 2: Male, 42 years old. For me forest is a source of life because we get many things such as food, air, shelter, water and various types of medicines to protect and cure ourselves from disease. We also plant various types of cash crops such as coffee, ginger and various types of spices under the shade of trees in our surrounding forests. These things are very crucial for our life as we cannot exist without them. For these reasons, for me forest is the source of life.

e) Indigenous knowledge and institutions among the local community to conserve natural forests

The other objective of this study is to identify the indigenous knowledge and institutions available among the local communities to conserve forests. As forests fulfill almost all of the basic things required for the survival of human being, the local communities in the study area protect forests from destruction through their various indigenous knowledge and institutions. The following table depicts the various mechanisms which those communities use for this purpose.

Table 6: Respondent's knowledge about traditional mechanisms to conserve natural forest

S/N	Mechanisms to conserve forests	Frequency	%
1	Delineation of intact sacred forests	21	17.5
2	Selective use of plant species	37	30.8
3	Limitation of the amount of natural forest use	34	28.3
4	Fluctuation of the use of natural forest species based on seasons	28	23.3
	Total	120	100

Source: Source: 2015 Own field survey

As table 6 indicates, respondents gave different mechanisms used by the local communities to conserve their natural forests in general and the various species of trees in their surroundings. Accordingly, 21(17.5%) said delineation of intact sacred forests, 37(30.8%) said selective use of plant species, 34(28.3%) and 28(23.3%) of them said fluctuating the use of natural forests based on seasons.

Chi-square was calculated in order to investigate the association between the respondents' sex and their knowledge about the various traditional mechanisms to conserve the natural. The chi-square result found that there is a significant association between male and female respondents with respect to their knowledge about the mechanism to conserve natural forests with ($X^2(1) = 12.668$, $p=0.000$) at ($\alpha=0.05$). The lambda coefficient with the value of 0.65 indicated that the association is moderate. Males relatively know more of the traditional mechanisms to conserve natural forests than females. In the same manner, the chi-square result with ($X^2(3) = 67.568$, $p=0.000$) at ($\alpha=0.05$) showed that there is a significant association between the respondents' occupation and their knowledge about the traditional mechanism to conserve natural forests. The lambda coefficient with the value of 0.71 indicated that the association has strong influence. These traditional mechanisms of conserving natural forests are widely known among farmers compared to other groups. The qualitative data obtained from the informants also supports these empirical evidences as analyzed below the matically.

i. *Delineation of intact sacred groves and trees*

One of the mechanisms by which the local communities protect forests from destruction is through separation of intact grooves and trees from the ordinary one. Most of such groves and trees are those planted over places where ancestors were buried. These trees are never cut down by anybody else. Rather, they serve as sacred areas where rituals are exercised for the past many years to get reconciliation and blessings from ancestral ghosts as one of the informant described it. The second informant interviewed for this purpose has described this scenario as follows.

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Informant 2: Male, farmer, 42 years old Various types of tress such as Qilxuu (ficus vasta), harbuu (ficus sur), Ejersa (prunus Africanum), Laaftoo (Acacia abyssinica) and Birbirsa(Podocarpus procera)were considered as sacred trees in the past. Hence, they were worshiped and served dhibaayyuu (drink offering) by the devotees. These kinds of trees were not cut down for simple purpose in the past rather they are given special care and nurture from the communities. However, the sacred belief associated with such trees and the subsequent care and protection provide for them (the trees) has been declining from time to time as the key informant further elaborated. Due to this, currently very few people know the sacred meanings attached to such areas and hence, these trees have become a target for meeting various human needs.

ii. *Selective use of plant species:* A part from delineation of sacred forests from the profane, the other mechanism by which the local communities in the study area conserve forests is through selective use of the various plant species. The communities have their own normative ways of avoiding indiscriminate destruction of natural forests. One of the informants interviewed has described how this patterned selective use of plant species work as follows.

Informant 3: Male, farmer, 39 years old. We have traditional knowledge inherited from our fathers and mothers concerning the use different types of trees in our surroundings. For example, it is strictly forbidden to cut down a tree at its infant stage as it cannot rejuvenate. Only matured and old trees are used for various purposes such as house construction, fencing, charcoal, firewood …etc. Some trees are also used only for specific purposes. Trees like Heexoo (Hagenia abyssinica) are never used other than medication purposes. For instance, they are not used for house construction, fencing…etc. Medicinal needs involves taking little amount of any part of that tree and hence has little pressure on that tree species.

iii. *Limiting the amount of natural forest used and its purposes*

The third mechanisms by which the communities reduce the pressure over their natural forest is by limiting the amount of different types of trees in their environs. The third informant mentioned above described what does this mean as follows.

Informant 3: Male, farmer, 39 years old

The amount of different types of trees and their parts withdrawn from natural forests is informally limited and internalized at household level. Only those trees permitted are used for specific purposes which are basic for the survival human being. These include house construction, fencing, firewood, medication, making household furniture and agricultural equipments. Nobody dares to use trees and their parts for commercial purposes which put much pressure over the various species of plants and subsequently paves the way for destruction of natural forests. There is a traditional norms handed down to us from our parents and grandparents not to do that. Hence, selling natural trees and their different parts to get income or profit is considered shameful among our community. However, currently, these norms and values have become declining and hence losing the power they had once upon a time in influencing people's behavior due to poverty, unemployment and the conversion of many people from indigenous religion to other religions such as Christianity and Muslims which do not give recognition for traditional beliefs.

The fourth informant also holds similar position with the third key informant regarding the current status and power of the local communities' indigenous institution in restricting the purpose for which natural forests have to be used.

Informant 4: Male, farmer, 47 years old. Especially, as people have become unable to sustain their life with the meager income that they get from agricultural activities, many of them are turning their face to natural forests to prepare charcoal, timber and other household furniture in order to get additional income. These activities are damaging the natural forest resources of this area currently. Unless some measures are taken by the community urgently, I fear this situation may result in destruction of this resource which or indigenous knowledge and norms survived it for many years.

iv. *Fluctuation of the use of natural forest species based on seasons*

Moreover, the local communities in the studied area use fluctuation of natural forest species use based on seasons. One of the informant interviewed described how the community had been fluctuating the use of plant species based on seasons as follows.

Informant 4: Male, 47 years old. Some trees are not cut down during winter or dry seasons because their capacity to regenerate is very low in dry season since there is shortage of water or rain. Of course, such practice is not only limited seasons but also applies to days in a week. For example, it is strictly forbidden to cut down a tree on Wednesday and Friday. Because it is believed that a tree cut down on these two specific days will decay instead of rejuvenating again. Thus, special care is being taken even today in this regard.

f) Government policy support for the indigenous knowledge and institutions contributing to natural forest conservation in the study area

This study also tried to investigate the extent to which the existing government policy on natural forest conservation recognizes and gives support for the local communities' indigenous knowledge and institutions in efforts made to protect natural forests from destruction. This objective aims at understanding how the formal

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government policy and the informal indigenous knowledge and institutions support each other on mutually beneficial and common goals. Identification of such issues is very important because natural forest conservation may not be realized without full participation of government and the community. The following table shows respondents' view on this issue.

Table 7: Respondents' perception on government support for indigenous knowledge and institutions forest conservation

S/No.	Is there government support for indigenous knowledge and institutions forest conservation?	Frequency	%
1	Yes	117	97.5
2	No	3	2.5
	Total	120	100

Source: Source: 2015 Own field survey

As table 7 shows, 117(97.5%) of the respondents responded that there is government policy recognition and supports for the community indigenous knowledge and institutions on natural forest resource conservation while 3(2.5%) of them said that there is no support. Those, who responded that there government support were also asked further question about in what ways the existing government policy supports their indigenous knowledge and institutions. These respondents forwarded the following different ways by which government supports the local communities' efforts to conserve the natural forest.

Table 8: Respondents' response about the mechanisms by which government support their indigenous knowledge and institutions of conserving natural forests

S/No.	Mechanisms by which government supports indigenous knowledge and institutions forest conservation	Frequency	%
1	Awareness raising activities on natural forest conservation	113	94.2
2	Provision of various plants species seedlings for planting	111	92.5
3	Afforestation and reforestation activities	116	96.7
4	Introducing alternative energy sources not depended on forest	97	80.8
5	Creating alternative income generating sources not based on forest	89	74.2
		526*	438*

Source: Source: 2015 Own field survey

*N.B: ** The total number in table 9 is greater than the actual 120 sampled households because the respondents have given more than one response for this specific question. Similarly, the corresponding percentage to each response is calculated out of the 120 households interviewed for this study and its summation is greater than 100% due to more than one response given by respondents for the specific question.

As table 8 shows, the respondents identified the different mechanisms by which the existing government policy indirectly supports the local communities' indigenous knowledge and institutions of natural forest conservation. Accordingly, of the 117 responded that there is a government support, 113(94.2%) of them said awareness raising activities on natural forest conservation, 111(92.5%) provision of various plants species seedlings for planting, 116(96.7%) afforestation and reforestation activities, 97(80.8) introducing alternative energy sources not depended on forest and 89(74.2%) creating alternative income generating sources not based on forest are the various mechanisms through which existing government policy has been providing support for the communities indigenous knowledge and institutions.

The respondents and key informants argued that these activities support the indigenous knowledge and institutions of the local communities' effort to conserve and protect the natural forests from damage. However, both respondents and key informants have also revealed that the government is not undertaking these activities with the specific objective of promoting the local communities' indigenous knowledge and institutions rather we mean on its way it has been undertaking activities that augment the long existing community values for sustaining natural forests. Therefore, still many things are left in linking the formal activities of government and that of the local communities to ensure sustainable use of natural forest.

g) Discussions

This study attempts to investigate the local community perception about the benefits of natural forests, explore the meaning attached to natural forests by the local community, examine the indigenous

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institutions contributing to natural forest conservation in the study area, identify how the community classify and use different types of plant species of natural forests and the government policy support for the indigenous knowledge and institutions contributing to natural forest conservation.

From the findings it is understood that the studied communities have their own indigenous knowledge of classifying the various types of trees in their surrounding natural forest including the benefits they obtain from these resources. They know the name of each tree and its corresponding benefits.

They have also special meaning that they attach to forests. Their meaning for natural forest goes beyond the commonly held definition of forest mentioned in many literatures. For instance forest refers to Food and Agricultural Organization or FAO (2001) forest is "land with a tree crown cover (or equivalent stocking level) of more than 10% and an area of more than 0.5 hectare; the trees should be able to reach a minimum height of 5 meter at maturity in situ". FAO (2006) defined forest as a minimum land area of 0.05-1 ha with tree crown cover more than 10-30% and tree height of 2-5m at maturity. The communities in the studied area also accept the fact that forest refers to land area covered with various species of plants. However, their definition and meanings of forest goes beyond that. The respondents and the informants argued that forest is everything for them. It is "a source of life" for them because it is the source for food, water, clean air and shelter which are very crucial for the survival of human being and without which life is impossible.

As forests fulfill almost all of the basic things required for the survival of human being, the local communities in the study area protect forests from destruction through their various indigenous knowledge and institutions.

One of the mechanisms by which the local communities protect forests from destruction is through identification of intact grooves and trees from the ordinary one. Most of such groves and trees are those planted over places where ancestors were buried. These trees are never cut down for ordinary purposes by anybody else. Rather, they serve as sacred areas where rituals are exercised for the past many years to get reconciliation and blessings from ancestral ghosts as one of the informant described it. Trees like Qilxuu (ficus vasta), harbuu(ficus sur), Ejersa(prunus Africanum), Laaftoo(Acacia abyssinica) and Birbirsa(*Podocarpus procera)were considered as sacred trees.* Hence, they were worshiped and served *dhibaayyuu (drink offering)* by the devotees.

Moreover, the local communities in the studied area use fluctuation of natural forest species use based on seasons. Concerning this, some trees are not cut down during dry seasons because trees cut down during this season cannot regenerate. Similarly, trees are not cut down on specific days of a week such as Wednesday and Friday because trees cut down on these days are vulnerable to decay and being dried instead of rejuvenating.

The other mechanism by which the local communities in the study area conserve forests is through selective use of the various plant species. For instance, trees are not cut down for various purposes at their infant or young stage as it is believed that it cannot rejuvenate at this stage. Instead the matured, old and dried ones are used. Moreover, some trees are used for only special benefits such as medicinal purposes which do not involve the withdrawal or collecting much amount of that tree or its parts and hence reduces its vulnerability to extinction.

Apart from these, there are internalized informal norms handed down from generation to generation among the community to limit the purposes for which trees in natural forests have to be used. Regarding this, for instances, it is shame to use naturally endowed trees for commercial purposes which impose pressure over the trees and consequently more susceptible for destruction.

These indigenous knowledge and institutions have far reaching implication for the conservation of natural forests in general and the various types of trees in such areas. Hence, they have paramount importance in helping the community to live harmonious life with the natural forests in their surrounding since a long time. Even though natural forests had been diminished or eliminated from other parts of Ethiopia especially before the past two decades, the south western part of Ethiopia particularly the communities in this study area were able sustain their natural forests. As understood from this study, the indigenous knowledge and institution of these communities are secret behind the survival of natural forests in these areas. But the power of these traditional knowledge and institutions have become declining and hence unable to regulate the appropriate behaviors people should follow in interacting with their natural forests due to poverty, unemployment and the rejection of the traditional beliefs and its values.

IV. Conclusions and Recommendations

a) Conclusion

In this study, an attempt was made to investigate the local community perception about the benefits of natural forests, explore the meaning attached to natural forests by the local community, examine the indigenous institutions contributing to natural forest conservation in the study area, identify how the community classify and use different types of plant species in their surrounding natural forests and the government policy support for the indigenous

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knowledge and institutions contributing to natural forest conservation.

Accordingly, from the findings it is understood that the studied communities have special meaning and value for natural forests in their surroundings which goes beyond the commonly held definition of forest mentioned in many literatures. Generally, forest is considered as "a source of life" for these communities as it provides them with food, water, clean air and shelter which are very essential for the survival of human being. In other word, natural forest is a source of livelihood as it serves them for many agricultural and equipments.

As the natural forests are their sources of livelihood, the communities had been providing special care and protection for their natural forests through their indigenous knowledge and institutions. Informally internalized knowledge and norms that focuses on delineation of intact sacred groves and trees, selective use of plant species, fluctuation of the use of natural forest species based on seasons, limiting the amount of natural forest used and its purposes are the major indigenous knowledge and institutions serving this purpose. Though natural forests had been diminished seriously from other parts of Ethiopia before the past two decades, the south western part of Ethiopia particularly the communities in this study area were able sustain their natural forests. Theses indigenous knowledge and institution of these communities are secret behind the survival of natural forests in these areas.

However, the power of these indigenous knowledge and institutions in shaping people's interaction with their natural forest has been declining these days due to poverty, unemployment and the abandonment of indigenous knowledge, values and beliefs among many people as a consequences other religions influences.

Though the government has been making efforts to strength the local communities' indigenous knowledge and institutions with regards to natural forest conservation, still many things are left to be done in linking the formal government and the local communities' effort to ensure the sustainable use of these resources.

b) Recommendations

The following points are recommended based on the findings of the study to strengthen the already existing indigenous knowledge and institutions of the local communities with respect to natural forest conservation.

- The government has to continue its awareness raising education as well as community mobilization and participation in conservation of the existing natural forest and rehabilitation of the degraded areas through afforestation and reforestation program as these activities have significant contribution in supporting the already existing indigenous knowledge and institutions to ensure sustainable use of the natural forest in the study area.
- Though government has been undertaking various activities that support the indigenous knowledge and institutions of the local communities' efforts to conserve and protect the natural forests in the studied area, these activities are not integrated and coordinated with the local communities' knowledge and institutions. Therefore, it is better if government policies identify and include the local indigenous knowledge and institutions in their plan and activities to protect and better sustain the benefits from these resources as sustainable use of natural forest involves both government and community participation.
- It is also important to expand other alternative income generating activities for the local communities in order to reduce their currently increasing demand to use natural forests for commercial purposes to support the meager income obtained from agricultural activities.

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