



Forest Resources Utilization Constraints and their Trend in Bale Eco-Region, Southeast Ethiopia

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Abstract:

A Forest resource Usage to meet the demands of human being has an impact on the forest resources. Forest resources are critically declining because of population growth, environmental hazards and poverty in developing countries. The Bale Eco Region in South-Central Ethiopia has also experienced massive degradation of natural resources due to their unwise use and population pressure and agricultural livelihood strategies strongly depend on natural resources resulting in decreasing trend of forest coverage. The purpose of the study was to investigate the forest resource utilization constraints and their temporal change in Bale Eco Region, Southeast Ethiopia. Both qualitative and quantitative cross sectional study designs were employed. Data was collected using HH survey, in depth interview, focus group discussion and field observation. Data analysis, descriptive and inferential statistics were implemented by using SPSS software version 20. Chi-Square test, frequencies and percentage were used to compare differences among variables with respect to the three agro-ecologies and statistical significance was decreased at $P \leq 0.05$. Qualitative data was first transcribed to texts in local language then retranslated to English for writing the report. Data analysis was done after categorizing the transcripts. The information obtained from quantitative and qualitative sources were triangulated to ensure the relevance of the results of the study. Based on the finding of the study trends of Forest coverage probability ($p=0.00$) and Forest Species diversify = (0.00), were significantly difference. Physical, technological and extension services were

among the constraints that are identified to influence forest and other natural resources utilization in the three agro-ecologies of BER. Lack of technology and lack of science based knowledge were among of the critical constraints that reported by majority of the respondents that limit them from utilizing their forest resources. Almost in all agro-ecologies, low and scarcity of rainfall, Agricultural expansion, Illegal settlement, inaccessibility, Unwise utilization lack of water sources Weak laws & regulations enforcement High demand on forest products was the common constraints of. It is recommended that concerned bodies should minimize constraints of responsible forest resource utilizations and temporal forest resources degradation in BER.

Keywords: Agro-ecology, Constraints, forest Resource, Trends, Usage of forest Resource

1. Background

Natural resources (NRs) are at the core of human civilization. They are the engine for economic advancement and societal well-being.

Everything we need and everything we use, as an individual or as a society, in processed or unprocessed form are their extracts. Indeed, they are our food, shelter, energy, medicine, raw materials, etc. The role and importance of NRs in economic development and societal well-being is nowhere else appreciated than in developing countries like Ethiopia whose populations are predominantly rural in structure and directly dependent on natural resources for subsistence. Today, the NR bases of the country are heavily suffering widespread, improper and unwise utilization resulting in their rapid degradation. Deforestation, desertification, loss of biodiversity, soil erosion, and decline in soil fertility, soil acidification, Stagnation, environmental pollution and climate change are some of the major expressions of problems of NRs in contemporary Ethiopia, in general, and Bale Eco-Region (BER), in particular.

The forest resource is experiencing serious human pressure mainly through free grazing system (Godantu system), agricultural expansion, illegal settlements, and human interference for coffee management. Consequently, declines in land productivity and soil fertility in the midland strongly influence communities living in the highland areas.

In most of the African countries, forest cover change is the main driver of land degradation; and its effect even more obvious in highland and mountainous landscapes (Mohammad and Adam, 2010)¹.

Constraints to execute proper natural resources management could be physical, technological, economic, institutional, legal, cultural, or environmental in nature (Easterling, 2003)². For example, challenges of natural resources management such as urbanization and pollution can influence systems directly and indirectly through their effects on climate variables such as soil-moisture system. Socio-

economic processes, including land-use change (e.g., forestry to agriculture; agriculture to urban area) and land-cover modification (e.g., ecosystem degradation or restoration) can also result on temporal change. Due to the strong influence of non-climate factors on agriculture and, to a lesser extent on forestry, especially management practices and technological changes, as well as market prices and policies related to subsidy result in change in species composition (Easterling, 2003)².

The huge forest resources and rivers flowing within BER are unwisely utilized by the local communities due to constraints in the use of different natural resources.

Those constraints that hinder utilization of the major natural resources (land, water, forest and soil) available in the area can be categorized as biophysical, socioeconomic, technological, management, and policy gap and law enforcement constraints.

According to the result from the house hold survey, conducted in 2016, the temporal trends of natural resources in the BER show declines in forest coverage, and water availability and, deforestation and destruction of the wild habitat.

2. Methodology

Data were collected using semi-structured interviews from 384 sample household heads, 15 focus group discussions (four with men, three with women and three with youths, and five with Woreda experts) and key informant interviews with 30 individuals who are knowledgeable about the BER. Moreover, field observations were also used for ground verification of the current status of forest resources and their constraints.

Quantitative data were analyzed using descriptive statistics and the chi-square test at $\alpha=0.05$. Qualitative data were used for triangulation. By multistage random sampling from highland, midland and lowland clusters of the BER, 384 sample households (359 male-headed and 25 female-headed) were selected.

3. Findings from the study

3.1. Constraints to utilization of forest

The scarcity of rain, climate variability, soil fertility, drought, lack of water sources, agricultural expansion, illegal human settlement, unwise utilization, high demand on forest product, weak laws and regulations enforcement and weak institutional setup were the main problems

of forest utilization in the three agro-ecologies (Table: 1).

Major constraints factors	Agro-ecology					
	Lowland		Midland		Highland	
	Yes %	No %	Yes %	No %	Yes%	No %
Scarcity of rainfall	88.5	11.5	55.1	44.9	31.7	68.3
Climate variability	79.4	20.6	66.9	35.1	54.7	45.3
Soil fertility	75.8	24.8	22.5	77.5	22.9	77.1
Drought	72.9	27.1	54.9	45.1	26.8	73.2
Lack of water sources	85.8	14.2	58.2	41.8	26.6	73.4
Agricultural expansion	54.1	44.9	70.6	29.4	79.3	21.7
Illegal settlement	53.5	46.5	73.3	26.7	82.2	17.8
Unwise utilization	55.7	43.3	55.2	44.8	35.3	64.7
High demand on forest products	76.2	23.8	69.0	31.0	66.2	33.8
Weak laws & regulations enforcement	57.3	40.1	56.6	42.4	60.1	39.9
Weak institutional mechanisms	56.0	44.0	75.4	24.6	68.2	31.8

In this study 88.5%, 85.8% inhabitant of the lowland agro ecology stated, that scarcity of rainfall and Lack of water sources was significant determinant for their utilization of the forest natural resource respectively. However, 73.3% and 82.2% of the midland and highland inhabitants respectively described that illegal settlement was the major constraint that affected forest resource utilization. This finding is similar to the report of FARM Africa (2009)⁴ that

shown absence of legal settlement was among significant determinant factors for forest resource utilization. However, this finding is different from FARM Africa report of 2009⁵ in terms of scarcity of rainfall, because scarcity of rainfall was identified as one of the major influential factor that affects forest resource utilization in this study. Similarly, Andel (2006)⁶ noted that if extractors harvest wild plants from forests where they have no formal ownership or user rights, they would take

little responsibility for the management of the resource to ensure a sustainable harvest Terefe (2003)⁷ indicated that, lack of water is one reason that inhibits the people participation in participatory forest management

According to some informants, the policy value and regulation that enforce to take an action on illegal users and traders are very weak.

According to respondents, the major natural resource use constraints as reported by the local communities in BER are the extensive agricultural production systems, inadequate technological skills, inadequate research support on forest resources use, lack of trained manpower and frequent staff turnover, unstable institutional setup, inadequate extension services, limited rules and regulations, and weak law enforcement on forest resource use.

3.1. Trends of forest status in BER of the last 20 years

In this study, The majority of the households pointed out that the natural forest resource in the midland, lowland and highland (76.1%, 84.7%, and 77%) were respectively decrease with forest coverage versus agro- ecologies (Table:2). This finding is similar to Gaffar *et al.* (1998)⁸

that stated, the ongoing deforestation particularly in developing countries is the worry of world community because its consequence is dangerous to all the countries. According to FAO estimate, Africa's 6.5 million km² of forest area in 1980 had shrunk to 6 million km² by 1990, losing about 51,000 km² annually. The threat of deforestation varies widely between regions but is most serious in the densely populated areas of Western, East and Southern Africa. The average forest decline between 1990 and 2000 in Ethiopia was 1 % (FAO, 2007).⁹

Between 2000 and 2005, this value declined by 1.1 %, which exceeds the average value of east Africa (0.97), total Africa (0.62), and the world (0.18 %) (FAO, 2007)¹⁰. Currently, natural forests in Ethiopia mainly occur in the south-western part of the country while the forests that originally existed in central and northern Ethiopia have almost disappeared (Bekele 2003).¹¹

Hence, there is a need to initiate environmental services of woody species including those plants. slashed in forest coffee through carbon payment/carbon trading mechanisms so as to save those species and to improve the livelihood of the local communities in and around the forest

areas.

In the lowland agro ecology of the BER, most of the natural forest was damaged due to an uncontrolled charcoal production system.

Respondents explained that lack of different technologies is a constraint to the use of forest resources; thus, technologies like

Statistical analysis of a sample household survey indicated that the Species, destruction of wildlife habitat and water quality shows significant variation in the BER over time

energy

saving stoves, irrigation schemes for agricultural, livestock-rearing technologies, and improved varieties need to be disseminated to pastoralists and farmers in the area, who in turn need to be trained on the use of new technologies.

magnitude of the dynamics of forest cover, diversity dynamics of

Table 2: Trends of forest status response of respondent in BER over the last 20 years

Agro-ecology	Forest coverage				
	No change	Decreasing	Increasing	X ² /df	P-Value
Midland	5 (7.0%)	54 (76.1%)	12 (16.9)%	9.58,4	0.48
Lowland	11(7.0%)	133(84.7%)	13(8.3%)		
Highland	20(14.4%)	107(77%)	12(8.6%)		
Natural forest fragmentation					
Midland	3(4.2%)	21(29.6%)	47(66.2%)	16.34,4	0.12
Lowland	11(7.0%)	64(40.8%)	81(51.6%)		
Highland	2(1.4%)	73(52.2%)	64(46.0%)		
Forest Species diversify					
Midland	1(1.4%)	52(73.2%)	18(25.4%)	32.66,4	.000
Lowland	14(8.9%)	128(81.5%)	15(9.6%)		
Highland	5(3.6%)	130(93.5%)	4(2.9%)		

Natural forest fragment lands are delineate areas in your community that provide habitat for plants and animals. Division of Fish and

Wildlife has identified some sensitive habitats where species are listed as threatened, endangered, or of special concern. The identification of the most

fragile lands in your town will help you with the prioritization of lands during the open-space planning process. This prioritized list will help to focus the lands targeted for open-space acquisition (SMDNR, 2004)¹². State ownership of land, forests, and lack of forest property rights are also identified as causes of forest degradation in Ethiopia (Bekele, 2003)

According to the response from key informant interviews and Focus Group Discussions (FGD), there are rivers flowing throughout the year in the lowland, and midland agroecology of BER without wise utilization by the local communities. Hence, awareness creation is crucial for local communities and experts on utilization of the available forest source for irrigation, and human sustainable utilization. On the other hand, adoption of forest harvesting technologies to natural forest of the lowland agro ecology will help the local communities to better tolerate future climatic variability.

References

- [1] Mohammad, A. and Adam, M. (2010). The impact of vegetative cover type on runoff and soil erosion under different land uses. 81: 97–103.
- [2] Easterling, W. E. (2003). Observed impact of climate change in agriculture and forestry. IPCC Workshop on the Detection and Attribution of the Effects of Climate Change, GISS, New York, 54.

