

ECOTOURISM POTENTIALS OF THE MAJANG FOREST BIOSPHERE RESERVE. GAMBELLA, SOUTH WEST ETHIOPIA

Selemon Thomas Fakana^{1*}, Chiranjib Kumar Choudhary² and Alemken Berihun Mengist¹

¹ Department of Wildlife and Ecotourism Management, College of Agriculture and Natural Resources, Gambella University, P. O. Box 126, Gambella, Ethiopia

² Professor, Principal investigator, Department of Tourism Hospitality and Airlines, Lovely Professional University Punjab, India

*Corresponding author: selethom36@gmail.com, chiranjib.23606@lpu.co.in

Article History: Received on 01st January, Revised on 15th February, Published on 25th February 2019

Abstract

Purpose – the purpose of this study was to identify ecotourism potentials of the Majang Forest Biosphere Reserve.

Methodology – The study employed qualitative research approach using an exploratory research design. Data was collected through in-depth interviews and focus group discussion besides to field observations. Accordingly, key informants interviewees were held with 12 villages senior leaders (n=60), key informants from 6 departments (n=30) and NGO experts (n=5). Altogether, 95 respondents were involved in this study

Findings – The results of this research revealed that fauna and flora (87%), water bodies (waterfalls, rivers, and lakes) (82%), cultural attractions (54%), manmade attractions as well as historical sites are found to be the major ecotourism potentials of the Biosphere Reserve.

Originality – The study provides complied information of ecotourism potentials of the Majang Forest Biosphere Reserve, which has not been explored before. It enhances the concept of ecotourism and level of understanding of stakeholders in ecotourism potentials of the biosphere. Its findings contributes to better conservation of the biosphere reserve through creating awareness and commitment to decision makers, politicians, experts, leaders, eco-tourists, local community, etc.

Social Implications - Majang Forest Biosphere Reserve has endowed numerous ecotourism potentials. However, the flow of eco-tourists to the destination and ecotourism activities are very weak. As a result, local communities living around biosphere reserve are less benefited from the ecotourism development. This study promotes ecotourism potentials of the biosphere reserve. It enhances the benefit of local communities through ecotourism activities like tour guiding association, beekeeping, souvenir shops, cultural shows, horse riding services, offering cultural foods, drinks and dressings.

Limitations – Further deep study is vital to identify more ecotourism potentials. Promotion and marketing strategies need to be adopted and promoted wherein using internet, big hoardings, billboards, posters, and travel desks. Infrastructures should be improved eco-friendly to facilitate ecotourism activities.

Keywords: *Ecotourism; Ecotourism Potentials; Majang Forest Biosphere Reserve; Gambella; Ethiopia*

1.0 INTRODUCTION

Tourism has increasingly been center of attention as an alternative strategy of economic development in the world (Binayew and Yihevis, 2016). Like many other countries, Ethiopia has also taken tourism as an effective instrument for poverty alleviation and to its integration into the world economy (MoCT, 2012). Currently, tourism is one of the largest, leading and increasingly recognized growing industries globally that make significant contribution for economic development (Ketema, 2015b; UNWTO, 2013). Ecotourism is a recent concept that emerged in the 1980s, as an alternative form of tourism to reduce the deterioration at the tourism destinations caused by mass tourism, and to maintain the sociocultural and environmental condition of the attraction areas (Aynalem, and Simane, 2016).

Ecotourism focuses on responsible travel to natural areas that conserves the environment and improves the well-being of local people. It obtained the attention of developing countries due to both its importance in promoting conservation and its significance in economic development (Kumar, and Aditi, 2016). Nature based tourism is newly emerging industries and increasingly important source of income and wealth in many countries. It has been emerged as one of the effective tool in eradicating poverty (UNWTO, 2013; Blom, Sunderland and Murdiyarso, 2010). It enriches education to tourist and host community, conservation of biodiversity, culture maintenance, promotes shared leadership, balances power within communities, emphasizes community well-being through maximizing profit and generating livelihood opportunities (Fetene, 2012; TIES, 2006). It is socially sustainable tourism which is initiated and almost always operated exclusively by local people, primarily focuses on the benefits to the local communities, strengthens active participation of local community in ecotourism development and conservation (UNWTO, 2013). Ecotourism is a conservation tool around protected areas and biosphere reserves that were building environmental awareness and allows the major proportion of the benefits to remain within the community (Bushell, and Eagles, 2006). In case of Ethiopia because of the majority of its population are engaged in agricultural activities instead of on off-farm activities like ecotourism, natural resources are exposed to extreme degradations (Sintayehu, Afework and Balakrishnan, 2012). Ecotourism could be alternative income generation and off-farm activities which benefit local communities while achieving the conservation goals of natural resources (Kumar, 2017; Fetene, 2012).

Nowadays, Ethiopia has 5 biosphere reserves; namely Majang Forest biosphere reserve, Lake Tanabiosphere reserve, Sheka Forest biosphere reserve, Kaffa Coffee Forest biosphere reserve and Yayu Coffee Forest biosphere reserve. South western Ethiopia is the home of for many plant and animal diversity ([Woldemariam, 2003](#)). Gambella Region is one of the beautiful ethnic cultural destinations which have marvelous ecotourism potential to attract tourist from various part of Ethiopia and World ([Chiranjib, 2016](#)). It has more ecotourism potential to compete with country like Kenya, Tanzania and Gambia in terms of eco-culture, wildlife watching, bird watching, mountain climbing, forest walking and eco-trekking ([MoCT, 2012](#)). The Majang zone is one of the three zones of the Gambella Region endowed with rich bio-cultural diversity. It has great ecotourism potential to attract ecologists, environmentalists, naturalist, explorers and other segments of eco-tourists towards its unique biodiversity ([Kumar and Aditi, 2016](#)). Nevertheless, limited studies were conducted in identifying ecotourism potentials of the Majang Forest Biosphere Reserve. Hence, this study was intended in conducting inventory of ecotourism potentials of Majang Forest Biosphere Reserve.

2.0 LITRATURE REVIEW

Man and the Biosphere Programme of UNESCO reflect a shift towards more accountable conservation. Biosphere Reserves attempt to reconcile environmental conservation with sustainable development ([Deprez, 2011a](#)); they explicitly acknowledge humans, and human interests in the conservation landscape while still maintaining the ecological values ([Blom, Sunderland and Murdiyarsa, 2010](#)). The biosphere reserves are intended to fulfill 3 basic functions, which are complementary and mutually reinforcing: a conservation function - to contribute to the conservation of landscapes, ecosystems, species and genetic variation; a development function - to foster economic and human development which is socio-culturally and ecologically sustainable; a logistic function - to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development ([UNESCO, 2010b](#); [UNESCO, 2011a](#)). It has three interrelated zones that aim to fulfil three complementary and mutually reinforcing functions: core area(s) comprises a strictly protected ecosystem that contributes to the conservation of landscapes, ecosystems, species and genetic variation; buffer zone surrounds or adjoins the core areas, and is used for activities compatible with sound ecological practices that can reinforce scientific research, monitoring, training and education and transition area is the part of the reserve where the greatest activity is allowed, fostering economic and human development that is socio-culturally and ecologically sustainable ([UNESCO, 2011b](#); [UNESCO, 2012](#); [Deprez, 2011a](#)).

Ethiopia holds a massive ecotourism development potential since it has a unique biodiversity, spectacular topographic features and rich cultural resources ([Kumar, 2017](#); UNWTO, 2013). In Ethiopia, biosphere reserves, protected areas, national parks, natural forests, game reserves, wildlife sanctuaries are most suitable for ecotourism development ([Fetene, 2012](#); [SDPASE, 2008](#)). Ethiopia's mountains, lakes, fauna and flora, colorful ethnic groups, historical and man-made sites, unusual geological features, local arts and artifacts of the country are among the major ecotourism potential resources ([Chiranjib, 2016](#); [Asfaw, 2014](#)). There is a general agreement among UN member countries for "Promotion of ecotourism for poverty eradication and environment protection". Moreover, member countries are advised to devise policies that enable them to use ecotourism as a means of income generation, job creation and education (UNWTO, 2013). Like many other members, Ethiopia accepted the UN resolution and the country has now making a good effort to boost community based sustainable ecotourism as a strategy to poverty reduction ([Sintayehu, 2014](#); [MoCT, 2012](#)). However, ecotourism is still in its infancy stage even though it gets increasing interest attention. In terms of job creation and foreign income generation, the sector's contribution is still very low. The country is not effectively using its rich and endemic wildlife species for ecotourism ([Alemneh, 2015](#)).

3.0 METHODOLOGY

3.1 Study Area

The study was conducted from September, 2017-June, 2018 in Majang zone of Gambella People's National Regional State. Majang zone, with capital town Meti, located over 600 km away from Addis Ababa, Capital city of Ethiopia ([Wondachew, M. and Muchie, N., 2017](#)). In terms of relative location, it is bordered with Sheka and Bench Maji zones of Southern Nation Nationalities and Peoples Regional State (SNNPRS) in its Southeastern part, Ilubabor zone of Oromiya regional state in its Northern and Anyuaa zone of Gambella in its Western part ([Mathewos, M., 2017](#)). In terms of absolute location the Zone is located in 7°4'2.41"N -7°46'47.79" N latitude and 34°36'30.54"E- 35°38'48.00"E longitude ([Lema, et al., 2017](#)). It encompasses two districts; namely Godere and Mengeshi which have 32 administrative villages together ([Wondachew, M. and Muchie, N., 2017](#)). The average annual rainfall of the area is 1500mm to 1800mm and the mean annual temperature is 27.5°C to 32.5°C ([Wondachew, M. and Muchie, N., 2017](#)). Geographically, Majang Forest Biosphere Reserve is located in between 07°08'-07°23' N latitude and 35°04'- 035°19' E longitude. It has an altitude ranging from 796-1335 m.a.s.l. ([Lema, et al., 2017](#)). It is registered under UNSCO Man and Biosphere (MAB) in 2017 and has total area of 224,924 ha. It has core area, buffer zone and transition zone of 43,882 ha, 73,397 ha and 107,645 ha respectively (Figure 1).

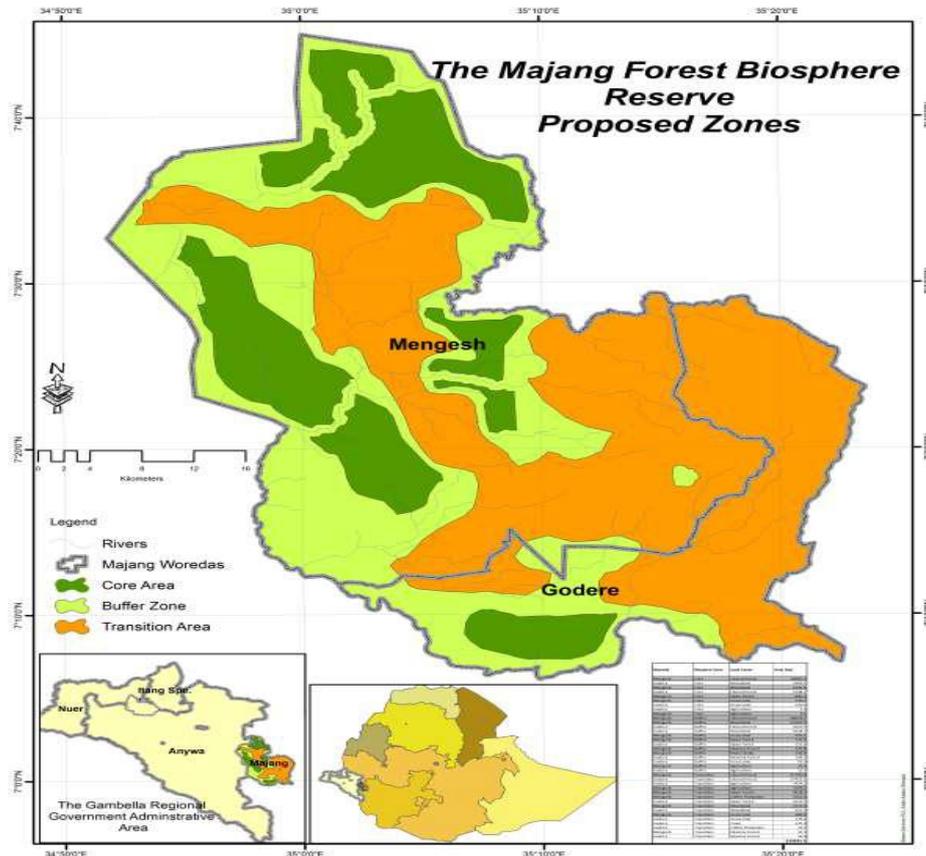


Figure 1: Map of the study area. Source: MELCA office, 2017

3.2 Sampling Techniques

Most of the non-probability sampling technique was employed in order to get relevant data from the respondents. Among the 32 kebeles/villages of the 2 districts of Majang Zone, 12 kebeles were purposively selected. Selection criteria were: a) the expected availability of the ecotourism potentials based on the preliminary survey b) accessibility of the infrastructure (road) c) anticipated opportunities to develop ecotourism. Then after, five respondents from each kebele/village were involved (Village chairman, Youths officer, agriculture extension expert, gender issues officer and school director). Key informants (Gambella Culture and Tourism Office, Gambella Tourism Organization, Gambella National Park Office, Majang Zone administration, Mengeshiworeda administration, Godereworeda administration as well as NGOs experts) were also purposively selected. From each organizations/sectors five respondents were included based on the criteria of: i) their position in zone, districts or kebeles, ii) their level of knowledge to the ecotourism iii) they may give crucial data to achieve the research objectives. Hence, 60 respondents from 12 kebeles/villages and 35 key informants from different organizations/sectors, altogether, 95 respondents were involved in this study.

3.3 Data Collection Methods and Analysis

Reconnaissance survey was made to identify ecotourism potentials of the Majang zone Biosphere Reserve. During field observation of the crew, photo camera capturing, note taking and diary recording was done to enhance qualitative data. First hand data were gathered through in-depth interview from kebeles/villages respondents and key informants. Secondary data were obtained from published materials such as journals, articles, as well as websites to access the information concerning ecotourism potentials in general. Deep interviews were carried out with explaining the concept and objectives of the study. Discussions held with key informants, with unstructured, open-ended questions. Data analysis was done in both quantitatively and qualitatively. Collected raw data were refined, categorized, edited, evaluated, coded and entered in to Statistical Package for Social Sciences (SPSS version 20). Descriptive statistics such as frequencies and percentages were computed for relevant variables and presented using tables, graphs, charts, etc. and described in meaningful content. Information obtained from in-depth interview and discussion was cross-checked and described in text and expressive way.

4.0 RESULTS AND DISCUSSION

4.1 Socio-demographics

As the table 1 show below about 86.32% of the respondents were males. Concerning education level, about 49.47% of the respondents were educated one (first degree holders) and 28.42% of the respondents were diploma/certificate holders.

Most of the respondents (56.84%) were between the ages category of 26-35 whereas a few respondents (6.32%) were in age interval of 46-55 and most of the respondents were married (81.05) (Table 1).

Table 1: Socio-economic characteristics of the sampled population (n=95)

No.	Variables	Sample Categories			Frequency	Percentages (%)	
		Village Officials	Higher officials*	NGO experts			
1	Sex	Male	51	26	5	82	86.32
		Female	9	4	-	13	13.68
2	Education Levels	Master degree	-	5	-	5	5.26
		Bachelor degree	17	25	5	47	49.47
		Diploma	27	-	-	27	28.42
		Schooled	16	-	-	16	16.84
3	Age Categories	18-25	12	-	-	12	12.63
		26-35	26	24	4	54	56.84
		36-45	18	4	1	23	24.21
		46-55	4	2	-	6	6.32
4	Marital Status	Married	47	28	2	77	81.05
		Single	13	2	3	18	18.95
5	Income Levels (in ETB)	<2000	13	-	-	13	13.68
		2000-3000	29	-	-	29	30.53
		3000-4500	11	23	-	34	35.79
		>4500	7	7	5	19	20.00

*Regional, zonal and woreda officials, Source: Field Survey (2017/18)

4.2 Ecotourism Potentials of the Majang Forest Biosphere Reserve

4.2.1 Fauna and Flora Resources

Respondents indicated that Majang Forest Biosphere Reserve has tremendous ecotourism potentials. Most of the informants 83(87.39%) strongly agreed that fauna and flora composition of the Biosphere Reserve could be a good asset of ecotourism potential like bird watching, forest walking, animal watching, mountain climbing, eco-trekking, etc. (figure 2). Recorded evidences also show that the Biosphere Reserve consists of a total of 550 plant species representing 90 families; among 27 species are endemic to the Ethiopia (Table 2).

Table 2: Fauna & flora composition of the Majang Forest Biosphere Reserve

No.	Fauna & Flora	No. of Species in MFBR	Endemic Species
1	Higher Plants	550; 90 families	27
2	Mammals	33	
3	Fishes	-	
4	Birds	180	5
5	Reptiles & Amphibians	20	5

Source: MELCA office, 2017

Majang Forest Biosphere Reserve harbors a variety of wild animal species including *Pantherapardus*(Leopard), *Feliscaracall* (Caracal), *Colobusguereza*(Colobus Monkey), *Papioanubis* (anubis baboon), *Cercopithecusaethiops*(Grivet Monkey), *Cercopithecusmitis*(Blue Monkey), *Potamochoeruslarvatus*(Bush pig), *Oreotragusoreotragus*(Klipspringer), *Tragelaphusscriptus* (Bushbuck), *Synceruscaffer* (African Buffalo), *Phacochoerusaethiopicus*(Warthog), *Ourebiaourebi*(Oribi), *Protelescristatus*(Aardwolf), *Crocutacrocota*(spotted hyena), *Sylvicapragrimmia* (duiker), *Canisaureus*(jackal), *Leptailuruserval* (serval), *Lepusfagani* (Ethiopian Hare) *Hystrixcristata* (porcupine) and *Praomysalbipes*. *Praomysalbipes* is a rodent species which is endemic to Ethiopia. It supports over 180 species of birds including: *Aplopelialaryata*(Lemon dove), *Macronyxflavicollis* (Abyssinian Longclaw), *Oriolusmonacha* (Abyssinian black-headed oriole), *Bucorvusabyssinicus* (Abyssinian ground hornbill), *Dendropicosabyssinicus* (Abyssinian woodpecker), *Agapornistaranta*(black-winged lovebird), *Tauracoleucotis* (White-checked turaco), *Bostrichiacarunculata* (Wattled ibis), *Cyanochencyanoptera* (Blue winged goose), *Parophasmagalini*(Abyssinian cat bird), *Bycanistesbrevis*(Silvery-cheeked Hornbill), etc. According to MELCA office (2017) this biosphere reserve sustains numerous Reptiles and Amphibians like endemic species of frogs (*Ptychadenaneumannii*, *Paracassinaobscura* and *Afrilusclarkeorum*). The other species of amphibians known to be found in and around the Forest are

Hyperoliusviridiflavus, *Hyperoliusbalfouri*, *Xenopusclivii*, *Phrynobatrachusnatalensis*, *Leptopelisbocagii*, *Hyperoliuskivuensis*, *Leptopelisvannutellii*, and *Hemisusmicroscaphus*. This fauna and flora composition of the Biosphere Reserve are important elements for ecotourism development like photo capturing, bird watching, mammal watching, forest waking, hiking, mountain climbing, etc.

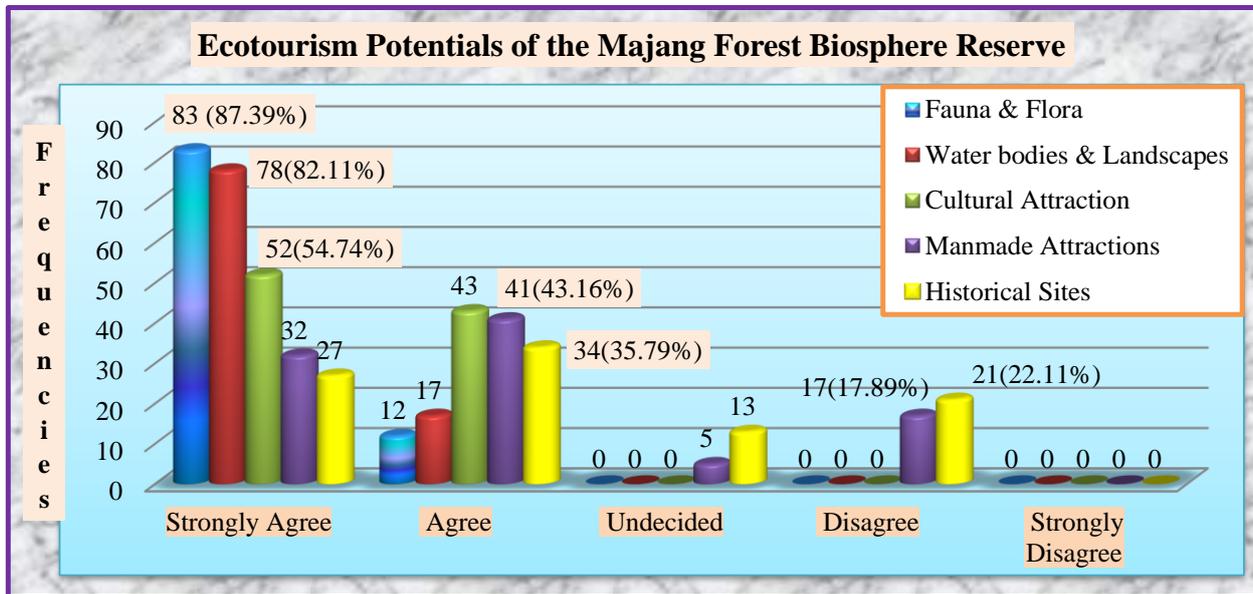


Figure 2: Perception of respondents concerning ecotourism potentials of the Majang Forest Biosphere Reserve

4.2.2 Water Bodies, Natural Bridges, Caves and Landscapes

There are several water bodies (waterfalls, rivers and lakes) in the Majang Forest Biosphere Reserve (figure 2). Informants strongly agreed that 78(82.11%) water bodies could be crucial ecotourism potential (swimming, beach recreation, fishing, water sport recreation). The waterfalls contribute to the scenic beauty of the landscape. In addition, many life forms associated with cliffs and fast moving waters, especially birds occur in these areas. Likewise, respondents 41(43.16%) informed that there are some manmade attractions like bridges that could be ecotourism potential. There are also historical sites, caves and natural bridges 34(35.79%) which are important homes and habitats for many wild animals, especially bats and nightjars. They were also used by people during periods of war and have historical importance. In general, all water bodies, historical sites, caves and natural bridges with many life forms, add to the scenic beauty and diversity of the landscapes and ecosystems.

Buray Lake: This is the unique natural lake found at MengeshiWoerda about 13km north-west from Meti town. It is said to be the source of worshipping and an implementation area of tradition believes (figure 3).

Natural Bridge: This exiting natural concreted bridge sometimes named (God’s bridge) is built on the River Yobe or Gilo at it passes through Gog Woreda (figure 7).

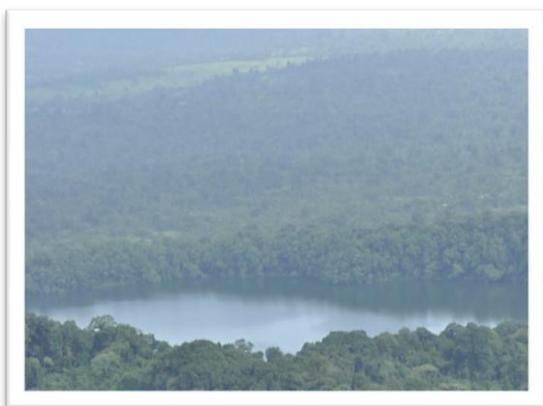


Fig 3: BureyLake(GubetiKebele)

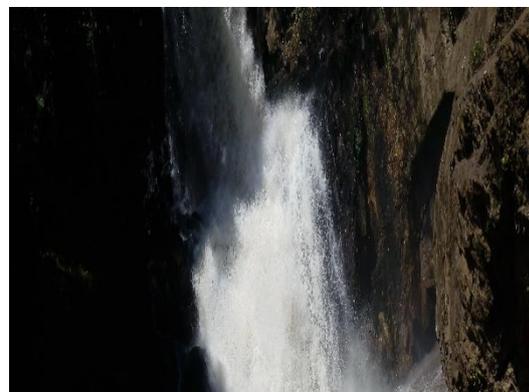


Fig.4: Jay Waterfall (GeleshaKebele)



Fig.5:Deretek Water Fall (SemuyKebele)



Fig.6: Dike Waterfall (GeleshaKebele)



Fig.7: God's/mot bridge (in GeleshaKebele)



Fig.8: Manmade bridge (Godere Mission Kebele)

4.2.3 Cultural Attractions

Besides to natural ecotourism potentials, there are also potential cultural attractions for ecotourism development around Majang Forest Biosphere Reserve. Among the respondents about 85(89.47%) indicated that cultural music and dancing styles are major potential ecotourism attractions followed by cultural clothes and dressing styles 79(83.16%). Likewise, cultural artifacts 71(74.74%) like materials used for drinking, jewelries, eating, musical instruments, etc. are also undeniable ecotourism potential of Majang Zone and its vicinities. They have been experiencing different arts and craft works like 'palie', 'taji', 'pidhie', 'mintaro', 'tang', 'kanta', 'jangi', 'pottery', 'motegey', 'guboy', 'joloka', 'kebetkario', 'metekoy', 'phieyin', 'lewie', 'kondi', 'wient', 'mintaro', and so on. During field survey it was found that sampled villages were rich in saving their cultural heritage and inherited their art and craft skills to the present generation and is interested in transferring it to next generation. They were also willing to showcase and sell their art and craft to the prospective tourist or visitors by participating through ecotourism programmes and have a good potential to become "cultural village". In general, this Zone is rich in cultural products such as art & craft, folk dance, folk music, folklores, ethnic food 69(72.63%), cultural drinks 65(68.42%) weavers, artisans, costumes, fairs and festivals and other elements of culture. See also figure 9 below.

5.0 CONCLUSION

Nowadays, tourism is increasingly recognized growing industries globally in spite of its impacts economic, cultural social and environmental aspects. Ecotourism has been emerged as one of the effective tool in minimizing negative impacts and emphasizes community well-being through maximizing livelihood opportunities as well as conservation of host community's culture. Biosphere reserves attempt to reconcile nature and people to live in greater harmony. The role of biosphere reserves in fighting against the current global warming and climate change can't be ignored. Each biosphere reserve has its own unique value in regard to environment protection and biodiversity conservation. Findings of this study has revealed that Majang Forest Biosphere Reserve endowed with various ecotourism potentials to attract eco-tourists, environmentalists, naturalist and other segment of tourists towards its unique biodiversity. It is rich in natural ecotourism potentials like (fauna, flora, landscapes, waterfalls, lakes, rivers, bridges, etc.), manmade and historical sites (bridges, caves, dams). There are also untouched and unique cultural ecotourism potentials (cultural music, dancing style, food,

handicraft and artifacts work, etc.). Native peoples of Majang zone are good and believe in living with nature in harmony. Their indigenous knowledge of conservation is valuable assets that need to be transferred from elder to younger generations and they were able to save their rituals and culture. Hence, in order to ensure the sustainability of Majang Forest Biosphere Reserve, practicing ecotourism activities (tour guiding, souvenir shop, cultural attraction exhibition and so on) as an alternative livelihood options is crucial strategy to enhance the existence of mankind with nature in harmony.

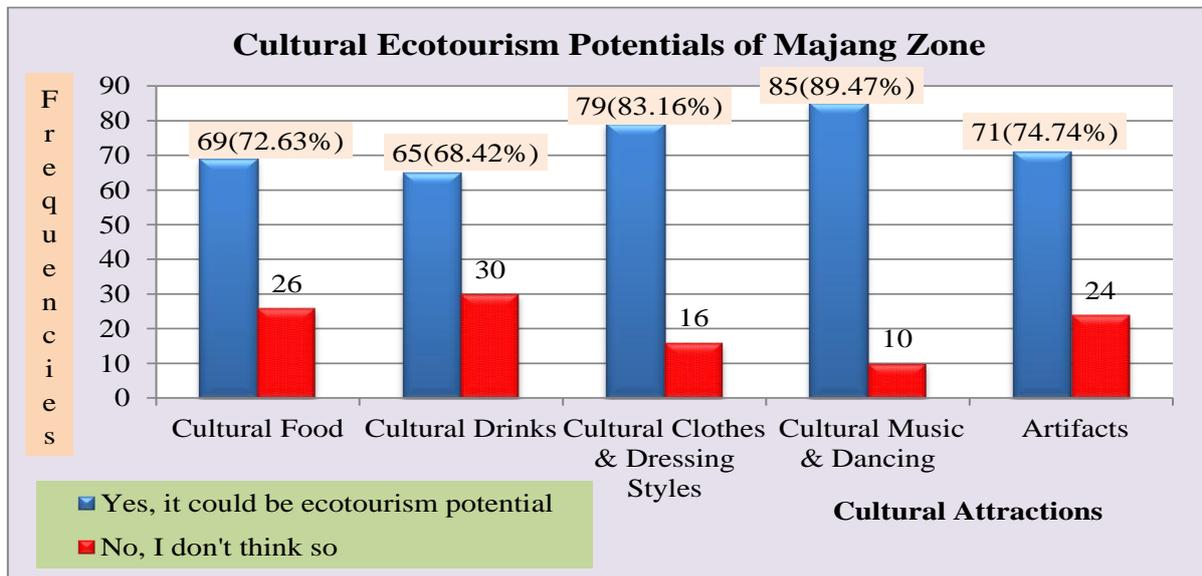


Figure 9: Respondents perception regarding cultural ecotourism potentials of the Majang Zone, Source: Field Survey (2017/18)

6.0 LIMITATIONS

Current study has focused on the inventory of ecotourism potentials of the Majang Forest Biosphere Reserve. Hence, further deep study is vital to identify more ecotourism potentials (natural, manmade, cultural, and historical). Promotion and marketing strategies need to be adopted to promote it wherein using internet, big hoardings, billboards, posters, photographs and travel desks. Infrastructures (road and public amenities like toilets, washrooms, restrooms, health centers, eco-lodges, etc.) should be improved eco-friendly to facilitate ecotourism services smoothly. Viewpoints should be designed and developed using ecofriendly materials in the midst of dense forests, waterfalls, mountains, etc. Ecotourism activities like activities like bird watching, forest walking, mountain climbing, hiking, biking, swimming, and eco-trucking should be designed and practiced.

7.0 ACKNOWLEDGEMENTS

Our deepest thankfulness goes to all the people involved in the interview and discussions. We are thankful to Research Directorate, Gambella University for logistics arrangements. Financial support was provided by MELCA- ETHIOPIA (Movement for Ecological Learning and Action).

REFERENCES

1. Alemneh, A. (2015). Wildlife Resources of Ethiopia: Opportunities, Challenges and Future Directions: From Ecotourism Perspective: A Review Paper, *Scientific Research Publishing Inc.*
2. Asfaw, A. (2014). Development of community based ecotourism in Borena-sayint National park north central Ethiopia: challenges and opportunities. *Journal of hospitality and management tourism* 5: 1-12.
3. Aynalem, S. and Simane, B. (2016). Development of community-based ecotourism, a case of Choke Mountain and its environs, Ethiopia: Challenges and opportunities. *J Tour Hosp Sport*, 16: 14-21.
4. Binayew, T.G. and Yiheyis, A.Y. (2016). Sustainable ecotourism potentials and its challenges in Ethiopia: The Awash National Park in Focus. *International Journal of Humanities and Social Science Research*, 2 (4): 41-49
5. Blom, B., Sunderland ,T. and Murdiyarsa, D. (2010). Getting REDD to work locally: lessons learned from integrated conservation & development projects. *Environmental Science & Policy*13, 164 – 172
6. Bushell, R. and Eagles P.J. (2006). *Tourism and Protected Areas: Benefits Beyond Boundaries: The 5th World Parks Congress.* UK.
7. Chiranjib, K. (2016). Linking Relationship Management to Sustainable Development: Perspective of Wildlife Conservation and Ecotourism in the Gambella Region of Ethiopia, *Global Journal of Research Analysis*, 5(3), 201-206
8. Deprez, A. (2011a). *Food Futures in Biosphere Reserves: Connecting Food Security to Sustainable Agriculture and Markets.* UNESCO, Earth and Ecological Science Division, Paris



9. Fetene, A. (2012). The Contribution of Ecotourism for Sustainable Livelihood Development in the NechSar National Park, Ethiopia. *International Journal of Environmental Sciences*, 1(1):19-25
10. Ketema, D.T. (2015b). Inside the commons of ecotourism development in Ethiopia: Strategic communal empowerment or marginalization? Evidence from Wenchi community based ecotourism. *International Journal of Biodiversity and Conservation*, 7: 429-434
11. Kumar, C. (2017). *Ecotourism Dynamics*, CreatSpace Publishing and (company of amazon.com), Washington, USA
12. Kumar, C. and Aditi, C. (2016). *Ecotourism Planning Development & Marketing*, Bharti Publications, New Delhi, India
13. Lema, E., Tefera, J., Fikiru, M. and Adanech, A. (2017). Assessment of Plant Diversity and Structural Analysis of Majang Forest Biosphere Reserve, Majang Zone, Gambella Regional State, Southwest Ethiopia. MELCA-Ethiopia, Addis Ababa, Ethiopia.
14. Mathewos, M. (2017). Analysis and Detection of Land Use and Land Cover Changes Using Remote Sensing Technology on the Landscape of Majang Zone, Gambella Region. MELCA-Ethiopia, Addis Ababa, Ethiopia.
15. Ministry of Culture and Tourism (MoCT) (2012). Federal Democratic Republic of Ethiopia, Ethiopia's Tourism Sector: Strategic Paths to Competitiveness and Job Creation News Letter No I, (2009). Awash National Park, Ethiopia, 2012
16. Sintayehu, W, Afework, B. and Balakrishnan, M. (2012). Species diversity and abundance of small mammals in Nechisar National Park, Ethiopia. *African Journal of Ecology* 50 (1): 102–108
17. Sintayehu, W. (2014). Ecotourism Potential and its Role for Sustainable Development and Livelihood in Awash National Park, Ethiopia. *International Journal of Science and Research*, 3:12
18. Sustainable Development of Protected Areas Systems of Ethiopia (SDPASE) (2008). Ethiopia's Protected Areas for Ecotourism. Ethiopian Wildlife Conservation Authority, Addis Ababa, Ethiopia
19. United Nations Educational, Scientific and Cultural Organization (UNESCO) (2010b). Twenty-second Session of the International Coordinating Council of the Man and Biosphere (MAB) Programme: Item 10 of the Provisional Agenda, 31 May — 4 June. UNESCO, Paris.
20. United Nations Educational, Scientific and Cultural Organization (UNESCO) (2011a). Farming Systems and Food Security — UNESCO Biosphere Reserves as Learning Sites: An Expert Planning Workshop 24 – 25 March 2011. UNESCO, Fontenoy, Paris.
21. United Nations Educational, Scientific and Cultural Organization (UNESCO) (2011b). International Coordinating Council of the Man and the Biosphere (MAB) Programme: Twenty-third Session, 28 June — 1 July 2011. UNESCO, Dresden, Radebeul.
22. United Nations Educational, Scientific and Cultural Organization (UNESCO) (2012). International Coordinating Council of the Man and the Biosphere (MAB) Programme: Twenty-fourth Session, Final Report, 9 – 13 July 2012. UNESCO Headquarters, Paris.
23. Woldemariam, T. (2003). Vegetation of the Yayu forest south west Ethiopia impacts of human use and implication for in-situ conservation of wild coffee arabica L. Population. Ecology and Development serious
24. Wondachew, M. and Muchie, N. (2017). Assessment of Traditional Farming and Natural resource Management Practices in Majang Forest Biosphere Reserve, Southwest Ethiopia. MELCA-Ethiopia, Addis Ababa, Ethiopia.