Review Article

Review on the Impacts of Community-Based Ecotourism on Household Financial Asset Improvement and Its Determinants in Ethiopia

Melsew Nibret Mazengiya

Department of Rural Development and Agricultural Extension, College of Agriculture and Natural Resource, Mekela Amba University, P.O. Box. 32, Tuluawilya, Ethiopia

Correspondence should be addressed to Melsew Nibret Mazengiya; melsewnibret@gmail.com

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Community-based ecotourism has been recognized as an important factor for households’ livelihood. Rural households normally have a problem of getting access to participate in ecotourism activities and making family better livelihood status in rural areas. The paper was aimed to review the impacts of community-based ecotourism on household financial asset improvement and its determinants in Ethiopia. Community-based ecotourism has been contributing to employment and income-generating activities. To achieve this objective, the published journal articles and reports were reviewed. As empirical review indicates that, institutional factors such as access to training and distance to the park, economic factors such as annual income, and demographic factors determine the participation of households in community-based ecotourism in Ethiopia. Therefore, the tourism extension expert should create awareness for local communities towards participation in community-based ecotourism in Ethiopia.

1. Introduction

Today, the tourism industry has become one of the most significant and remarkable economic and social trends in the world [1]. Numerous authors include the contributions of tourism to local communities [2–5]. They confirm that tourism can benefit the local community through capacity building in business development, employment, and management, enhancing social welfare and sharing of revenue from tourism. This large industry contributes about 9.8 per cent of global gross domestic product (GDP) and 10 per cent of the world’s income and 9.4 per cent of employment worldwide, receipts account for a little over 5.7 per cent of world export and 4.3 per cent of total investment [6]. On the other hand, the rate of growth is higher in developing countries. As a result, the share of Africa from world tourism is very low in the continents, particularly in Sub-Saharan. In line with this tourism in Africa, it accounts for 8.1 per cent of GDP, 7.1 per cent of total employment, and 5.9 per cent of total investment [7]. In the case of Ethiopia, the contribution of tourism for GDP accounts for 6.8 per cent of total GDP, 6.1 per cent of total employment, and 2.4 per cent of total investment, respectively [8]. Accordingly, tourism is becoming one of the major economic activities in Ethiopia [9].

With the expansion of ecotourism, particularly CBE, in the Sub-Saharan African region, communities living on the outskirts of protected areas have been actively involved, and citizen earning power has increased [10]. In Ethiopia, the combination of historical, cultural, and natural ecotourism attractions has an essential role in its future growth [11]. However, to put together the ecotourism benefits, it is important to involve the local people and incorporate their needs and expectations in tourism planning and development [12].

Community-based ecotourism in Ethiopia is established at distinctive locals like who have great potentials, in Amhara region at Meket, Mount Abune Yosef, and Tigray (Adigrat) initiated with the support from outsiders.
specifically by tourism in Ethiopia for sustainable future alternative (TESFA) and in Oromia region at Adaba-Dodola (Bale); most of the projects are run by a local community. However, it is frequently claimed that local communities were not participating actively in tourism development processes [13]. Furthermore, ecotourism in Ethiopia is still in its infancy and the country has not benefited the most output from its resources [14]. Likewise, ecotourism development and significance in social, environmental, and economic aspects are low compared to the neighbouring countries [15]. The lack of adequate ecotourism research and less dissemination of the idea and approaches of ecotourism impede the successful and sustainable growth of ecotourism in Ethiopia [16].

Even though ecotourism is growing well, unconsciously, most of the rural people are not welcoming of this industry due to the lack of economic, social, cultural, and environmental awareness and impacts. Similarly, residents’ participation is hampered by the limitation of institutional and economic factors [17]. Similarly, scholarly finding shows that many community-based ecotourism projects have failed, usually because of a lack of financial viability [5]. On the other hand, Ethiopian tourism development policy neglects the vital role of community-based ecotourism as a livelihood diversification tool in the protected area all over the country as a policy rather than focusing on the conservation aspects.

For that matter, there are few studies conducted in Ethiopia on CBET such as the work of [18] in Meket CBET who conducted his study on identifying the practices, challenges, and opportunities of CBET development focused on investigating the major challenges and shortcomings faced in developing CBET. Ketema [19] conducted his study on the livelihood strategies adopted by local people and ecotourism contribution. Similarly, Gebeyaw [18] also conducted his study about the potential, challenges of CBET development, and its prospects mainly focused on analyzing the local community and tourists’ perception towards ecotourism. Another study from Girma et al. [20] has conducted a study focused on community Resource Uses and Ethiopian Wolf Conservation in Mount Abune Yosef. However, the above-mentioned studies did not comprehensive because they do not see the impact of CBET on livelihood (Figure 1) and its determinants to participation.

As a result, there is a lack of empirical evidence on community-based ecotourism. Hence, with the pursuit of filling the gaps, the current review on “impacts of community-based ecotourism on household financial asset improvement and its determinants in Ethiopia” was compiled.

3. Results and Discussion

Culture and history are becoming increasingly important in both local and regional development, and they have a direct impact on economic performance and growth [17]. The diverse domestic and international-oriented tourist attractions that exist in Ethiopia have a considerable economic and social impact on the surrounding local people. The main economic consequence is an increase in local community income, while the social impact is the creation of jobs and a decrease in unemployment. In the long run, ecotourism business activities done in these unpopular tourist areas are supposed to relieve poverty and promote welfare.

Community-based ecotourism has been popular as a means of promoting the conservation of biodiversity, particularly in developing countries, linking livelihoods to biodiversity conservation, while at the same time reducing rural poverty and achieving both sustainable objectives [22]. Accordingly, CBET is a form of tourism, which focuses on travel to areas with natural attractions to contribute to environmental conservation and local livelihood enhancement.

3.1. The Experiences and Lessons of Sub-Saharan Africa Countries towards Community-Based Ecotourism. CBET, which is considered a community-based natural resource management system, aims to give a sector or the entire local community full or partial rights, ownership, and/or control over resources [22]. Better governance, empowerment, and higher economic returns from tourism and natural resource management projects are all aimed at increasing revenue streams and livelihoods for disadvantaged people in rural areas [22]. In this context, community-based tourism (CBT) is defined as a situation in which locals own and/or have access to tourism resources and activities for their own personal or equitable community benefit [23]. CBET is a type of tourism that is dependent on community-owned or managed resources through communal stakeholders or carried out by individuals from within a community, providing equitable returns to the wider community for using these communal resources in Sub-Saharan Africa countries such as Benin, Burkina Faso, Angola, Cameroon, Botswana, Kenya, Ethiopia, Cabo Verde, and Central Africa Republic [22].

These resources are diverse in Sub-Saharan Africa’s rural regions and include agricultural resources, forests, wildlife, water and fisheries, cultural heritage, infrastructure, and the built environment, all of which are collectively used and managed by individuals or groups of people with equitable benefit sharing [24]. As a result of the diversity of resources, various types of community-based tourism enterprises have emerged, such as community ranches and nature conservation ventures, culture and heritage enterprises, village and homestay tourism, agri-tourism ventures, shopping and
entertainment facilities, catering and hospitality facilities, sporting and recreational facilities, and tours and travel organization firms [24].

Community-based tourism is diverse in form, nature, and scale of operation due to the aforementioned resources and activities, which include not only natural resources owned and managed by locals but also social and cultural heritage, as well as economic activities such as agricultural production, all of which contribute to a community’s overall way of life.

3.2. Community-Based Ecotourism in Ethiopia. In Ethiopia, tourism has a vital role to play in the development of the nation and continues to grow continuously in recent years [19]. In 2017, tourism's contribution to GDP represents 6.8% of total GDP, 6.1% of total employment, and 2.4% of total investment, respectively [8]. Tourism is therefore becoming one of the major economic activities in Ethiopia [19].

Ecotourism offers visitors and tourists the opportunity to experience the rich tourism resource of the country, as well as the unique features of its history and culture [18]. For this reason, community-based ecotourism in Ethiopia is established in distinct local communities, such as Meket, Mount Abune Yosef, and Tigray (Adigrat), which have great potential in the Amhara region, even if it is difficult to name a completely operational CBET enterprise that has been built, maintained, and can be a source of income for Ethiopians [18]. This is due to the lack of infrastructure and service provision that ecotourism cannot grow expectedly. The absence of adequate studies on ecotourism and less dissemination of ecotourism concepts and approaches hinders the effective and sustainable development of ecotourism in Ethiopia [16].

However, Ethiopia has unique and valuable resources in the field of ecotourism. The combination of historical, cultural, and natural ecotourism attractions has an indispensable role to play in its future growth [11]. That is why the Ethiopian tourism development policy has been formulated given the previous vision, principles, and objectives and gives greater emphasis to the development of community-based tourism as a key priority [25]. However, Ethiopia's tourism development policy neglects the vital role of community-based ecotourism as a source of livelihood in the protected area across the country as a policy rather than a conservation issue.

3.3. Community-Based Ecotourism towards Other Sectors of Ethiopia Economy. Community-based ecotourism is a major driver of community economic development in Ethiopia. It has a favourable impact in terms of foreign exchange revenues, job creation and income, and domestic spending stimulation [25]. The economic impact of community-based ecotourism is both direct and indirect. Foreign exchange earnings, job creation, and income generation are the immediate economic effects. Multiple contributions to the development and expansion of numerous economic sectors and activities are included in the indirect impact.

Community-based ecotourism plays as a catalyst for the development of other economic sectors in Ethiopia such as agriculture, entrepreneurship, construction, entertainment, infrastructure, and contribution to local and regional development [6]. Community-based ecotourism’s economic impacts, which include both goods and services purchased by the industry as well as investment and public spending, are a key driver of economic growth. One of the few sectors of the economy and ecotourism, particularly the hotel and catering divisions, is at the core of the production chain, not only for agricultural and food items but also for consumer and capital goods [7]. International and domestic community-based ecotourism should be considered a vital component of...
economic stimulus efforts, particularly during times of economic crisis. Because of its position as an economic stimulant, community-based ecotourism should be at the centre of efforts to resurrect economic growth, since the trade flows generated by a thriving community-based ecotourism industry have a significant impact on business and consumer confidence [26]. Community-based ecotourism may play a significant role in economic stimulus plans in times of crisis if it is viewed as a fundamental component of such plans, as both an economic stimulant and a source of job creation that complements other industries, particularly manufacturing [26]. Community-based ecotourism can be seen as an economic sector that helps the green economy thrive. It is based on passenger travel, which has a minimal environmental impact because travel and ecotourism account for only 5% of total carbon emissions [6].

3.4. Conceptual Framework. After a careful review of different works of literature, the following conceptual framework was formulated to illustrate community-based ecotourism as a means of household financial livelihood asset in Ethiopia. This review is based on the assumption that several factors have an impact on community-based ecotourism participation. These factors are demographic, institutional, and socioeconomic characteristics.

3.5. Determinants of Households’ Participation in Community-Based Ecotourism. According to Ribot [27], community participation is critical to community success and is one of the major components of an empowered community where participation is the heart that pumps the lifeblood of the society and its residents into a community business. It also suggests that communities that engage citizens and partners deeply in the work of community development raise more resources to achieve more results and development more holistically and beneficially.

Similarly, Aref and Redzuan [28] argue that community participation is at the heart of community development and a component of sustainable tourism development where the role of local communities is to influence tourism development activities.

According to the AYZACCA Office Report [29], the main ecotourism activities are handicrafts, guides, local transport services, scouts, cultural shows, and community lodge employees, and supplies of agricultural-related food are the most common activities performed by local people due to the presence of conservation areas.

Local community participation in development has been widely explained in different literature in various development activities. There is, however, a limitation of similar literature on the determinants of participation in ecotourism activities and on the diversification of livelihoods, in particular in Ethiopia. Furthermore, most of the literature for this study consists of works from abroad.

The gender difference between household heads is a very important explanatory variable in the study of the factors involved in the development of tourism. According to Kiper [30] in their study entitled “Involvement in Tourism Activities and Perceived Benefits in Communities around Udzungwa Mountain National Park in Tanzania,” more men than women were being engaged in tourism-related activities. Similarly, Gebeyaw’s [18] study, Effects of Socio-Demographic Characteristics and Perceived Tourism Benefits on Community Participation in Tourism in the Mesomagor area of Kakum National Park, Ghana, shows that the gender variable and community participation in ecotourism have a significant relationship. The author noted that males tended to be more involved in tourism development than their female counterparts.

About the level of education, Odege [31] found that both household income and people’s level of education have a significant relationship in the study of factors influencing community participation in cultural tourism in Kit Mikayi, Kisumu County, Kenya. Similarly, Yeboah [32] in his research entitled “The Extent of Community Participation in Selected Community-Based Ecotourism Projects in the Brong-Ahafo Region of Ghana” found that the level of education and income had a significant impact on CBET participation.

Age has a crucial impact on development intervention, which plays an important role in influencing farmers. Older farmers may have experience and resources that would allow them to participate more in the establishment of an eco-tourism project. Younger farmers, on the other hand, are more likely to participate in the development of tourism, because they have had more schooling years and old people have an idle job since tourism itself is labor-intensive. Various studies have shown that the age of the head of household has a negative or positive impact on the participation of the ecotourism project. For instance, a study called “Factors Affecting the Participation of Farmers’ Households in the Community Tourism Organization in the Province of Tra-Ving, Vietnam” [33] found that age had a statistically significant impact on the participation in ecotourism activities.

Annual household income condition is one of the key determinants of participation in ecotourism activities. For instance, in a study called “Factors Affecting the Participation of Farmers’ Households in the Organization of Community Tourism in the Province of Tra-Ving, Vietnam” [33] found that annual income had a statistically significant impact on the participation of ecotourism in the diversification of household livelihoods. Similarly, the Kiper’s [30] study, Drivers and Socioeconomic Impacts of Tourism Participation in Protected Areas, shows that annual household income was a significant explanatory variable for tourism participation.

Also, Salleh et al. [34] in their research entitled “The Factors of Local Community Participation in Tourism-Related Business: Case of Langkawi Island” found that, in addition to encouraging families, income was the two factors that influenced local communities’ participation in tourism-related businesses.

Farmland size and market access are also key determinants of participation in ecotourism projects. Different literatures have shown the size of shat farmland and access to the market has been a determinant of participation.
Accordingly, Nair et al. [35] found that the size of the farmland was one of the key factors determining the participation in the ecotourism project.

Institutional factors address the extent or degree to which institutions determine the participation of households. Institutions include all tourism development services, such as finance, training on ecotourism, and dissemination of information. They also include facilities and mechanisms that enhance farmers’ access to ecotourism-related productive inputs as well as product markets. For instance, Nair et al. [35] in his study called “Households Assets Dynamics and Ecotourism Choices in the Western Highlands of Cameroon” showed that households participating in ecotourism-related training had a significant impact on their participation.

3.6. Impacts of Community-Based Ecotourism in Households’ Livelihood. According to Langoya and Long [36], the concept of ecotourism as an income-generating industry with the capacity to be the centre of many developing destinations is revealed in tourism. Likewise, Wei et al. [37] argue that many protected areas in developing countries are major attractions in rural and often remote areas that offer immense opportunity.

It is claimed that ecotourism has a positive impact, i.e., creating economic and employment opportunities and increasing individual incomes [36, 38, 39]. The financial impact on local communities has the opportunity to support conservation and the income from the tourist protected area (entry fee) goes to the local community [29].

According to Roy [40], tourism generates two types of cash income opportunities for local communities: (a) seasonal income from camel safari and (b) casual income from the sale of crafts. The income generated by these two types of economic activity is mainly used for the purchase of food, particularly in “dry” years. However, there are limitations on the benefits of local people. More or less, it is commonly agreed that the main share of the benefits goes to tour operators that are particularly influential and elite [18].

On the other hand, the presence of ecotourism in a specific area has an important role to play in improving health status. For example, the Kiper’s [30] study called “Involvement in Ecotourism Activities and Perceived Benefits in Communities around Udzungwa Mountain National Park in Tanzania” found that the establishment of national park communities living nearby reduces their annual education costs as one of their household members becomes a participant in ecotourism activities income which is much more likely compared to nonparticipants.

4. Policy Implications

In Ethiopia, different ecotourism activities are carried out and these activities help households to diversify and maintain their sustainable livelihoods. The determinants influence participation of households in community-based ecotourism as institutional factors such as access to training and distance to the park, economic factors such as annual income, and demographic factors such as gender. Furthermore, the empirical evidence of this review indicates community-based ecotourism in Ethiopia. So, the Ethiopian government and scientific community should develop better community-based ecotourism practices.

Data Availability

This review paper’s data comes from previously published studies and datasets that have been cited.

Conflicts of Interest

The author declares no conflicts of interest related to this paper.

References

[1] WTTC, Travel and Tourism, Economic Impact. Regional Reports for Africa, America. Europe Asia-Pacific, Middle East, London, UK, 2017.
[2] S. Chok, J. Macbeth, and C. Warren, “Tourism as a tool for poverty Alleviation: a critical analysis of ‘Pro-Poor tourism’ and Implications for Sustainability,” Current Issues in Tourism, vol. 10, no. 2-3, pp. 144–165, 2007.
[3] R. Scheyvens, “Exploring the tourism-poverty Nexus,” Current Issues in Tourism, vol. 10, no. 2-3, pp. 231–254, 2007.
[4] W. Zhao and J. Ritchie, “Tourism and Poverty Alleviation: An Integrative Research Framework,” in pro-poor Tourism; Who Benefits? Perspectives on Tourism and Poverty Reduction, C. Hall, Ed., Channel View Publications, Clevedon, UK, 2007.
[5] J. Mitchell and C. Ashley, Tourism and Poverty Reduction Pathways to Prosperity, Overseas Development Institute, London, UK, 2008.
[6] World Tourism Organization, UNWTO Tourism Highlights, UNWTO, Madrid, 2015.
[7] WTTC, Travel and Tourism Economic Impact, WTTC, London, UK, 2015.
[8] Ministry of Foreign Affairs, Analysis of Tourism Value Chain in Ethiopia Final Report, Ministry of Foreign Affairs, Addis Ababa, Ethiopia, 2018.
[9] M. Ferehiwot and G. Shewit, “Contribution of the local community for ecotourism development in and around Abijata-Shalla Lakes national park with emphasis to Women’s role, Ethiopia,” Australasian Journal of Social Science, vol. 1, pp. 1–19, 2015.
[10] N. Moswete and B. Thapa, “Factors that influence support for community-based ecotourism in the rural communities adjacent to the Kgalagadi Transfrontier Park, Botswana,” Journal of Ecotourism, vol. 14, no. 2-3, pp. 243–263, 2015.
[11] C. Meseret, Mammalian diversity in Borena Sayint National Park, South Wollo, Ethiopia, M.Sc Thesis, Addis Ababa University, Addis Ababa, Ethiopia, 2009.
[12] P. Murphy, Tourism: A Community Approach, Routledge, Oxfordshire, UK, 2013.
[13] G. Dagnachew, Community Participation in Tourism Development in Amhara Region: Evidence from Lalibela, M.Sc Thesis, Mekede University, Mek’ele, Ethiopia, 2013.
[14] A. Eshetu, “Ecotourism as a viable strategy for livelihood diversification and sustainable natural resource management in Ethiopia (from an eco-development paradigm point of view),” Journal of Environmental Science and Water Resources, vol. 3, pp. 40–52, 2014.
[15] H. Sintayehu, S. Dejene, and R. Ready, “Ecotourism potential and its role for sustainable development and livelihood in
Awash National Park, Ethiopia,” *International Journal of Science and Research*, vol. 3, no. 12, pp. 792–796, 2014.

[16] A. Gebreigziabiher, “An assessment of potential resources tourism development in Ethiopia. The case of Dejene Wereda,” *African Journal of History and Culture*, vol. 7, pp. 100–108, 2015.

[17] D. Ouma, T. Kimani, and E. Manyasa, *Agricultural Trade and Economic Growth in East African Community*, https://ajol.info/index.php/ajer/article/view/136017, 2016.

[18] A. Gebeyaw, G. Tesfay, H. Bauer, Z. T. Ashenafi, H. De Iongh, T. Yeboah, “Assessing community participation in selected T. Kiper, Role of Ecotourism in Sustainable Development, Abune Yosef Zigit Abuhay Gariya Community Woreda,” *International Journal of Science and Humanities*, vol. 6, no. 8, pp. 565–571, 2016.

[19] D. Ketema, “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*, vol. 7, pp. 429–434, 2015.

[20] G. Eshete, G. Tesfaye, H. Bauer, Z. T. Ashenafi, H. De Iongh, and J. Marino, “Community resource uses and Ethiopian Wolf conservation in Mount Abune Yosef,” *Environmental Management*, vol. 56, no. 3, pp. 684–694, 2015.

[21] Z. Bujdosó, L. Dávid, T. ozsér et al., “Basis of heritagization and cultural tourism development,” *Procedia Social and Behavioral Sciences*, vol. 188, pp. 307–315, 2015.

[22] S. Tesfaye, “A review paper on challenges and opportunities for community based ecotourism development in Ethiopia,” *Journal of Tourism, Hospitality and Sports*, vol. 30, no. 24–29, 2017.

[23] V. G. Gaitho, “Impact of community based ecotourism on households’ livelihoods and environmental management in Ngwesi and Lekurruki group ranches, Laikipia county, Kenya,” *Journal of Sustainable Tourism*, vol. 7, pp. 13–29, 2014.

[24] K. A. Alexander, M. Ramotadima, and C. E. Sanderson, “The power of consensus: developing a community voice in land use planning and tourism development in biodiversity hotspots,” *Ecosystem Services*, vol. 30, pp. 350–361, 2018.

[25] K. Wubshet, “Development of Community Based Ecotourism in Abune Yoseph Massif, Northern Ethiopia: Potential, Challenges, and Prospects,” 109 pages, Addis Ababa University, Addis Ababa, Ethiopia, 2018., M.Sc Thesis.

[26] F. Vellas, “The indirect impact of tourism: an economic analysis,” Paper submitted to the Third Meeting of T20 Tourism Ministers, Paris, France, 2011.

[27] J. Ribot, “From exclusion to participation: turning Senegales Forestry policy around the World,” *World Development*, vol. 23, pp. 2004.

[28] D. Ouma, T. Kimani, and E. Manyasa, *Agricultural Trade and Economic Growth in East African Community*, https://ajol.info/index.php/ajer/article/view/136017, 2016.

[29] A. Gebeyaw, G. Tesfay, H. Bauer, Z. T. Ashenafi, H. De Iongh, T. Yeboah, “Assessing community participation in selected ecotourism projects in the Brong-Ahafo Region, Ghana,” *Journal of Ecology and the Natural Environment*, vol. 5, no. 7, pp. 133–143, 2013.

[30] R. Bhoj and T. Jan, *Policy Brief-Community-Based Ecotourism for Sustainable Development in the Mekong Region, Cuts International*, Hanoi Resource Centre, Hanoi, Vietnam, 2007.

[31] N. Hanim Mohd Salleh, M. Shafiin Shukor, R. Othman, M. Samsudin, and S. Hajar Mohd Idris, “Factors of local community participation in tourism-related business: case of Langkawi Island,” *International Journal of Social Science and Humanities*, vol. 6, no. 8, pp. 314–337, 2015.

[32] V. Nair, U. T. Munirikishnan, S. D. Rajaratnam, and N. King, “Redefining rural tourism in Malaysia: a conceptual perspective,” *Asia Pacific Journal of Tourism Research*, vol. 20, pp. 57–64, 2015.

[33] C. Langoya and C. Long, “Local communities and ecotourism development in budongo forest reserve, Uganda,” *Rural Development Forestry Network*, vol. 15, pp. 1–14, 2016.

[34] W. Liu, C. A. Vogt, J. Luo, G. He, K. A. Frank, and J. Liu, “Drivers and socioeconomic impacts of tourism participation in protected areas,” *PLoS One*, vol. 7, no. 4, Article ID e35420, 2012.

[35] M. Simpson, *An Integrated Approach to Assess the Impacts of Tourism on Community Development and Sustainable Livelihoods*, Oxford University Press, England, UK, 2007.

[36] H. Goodwin and D. Roe, “Tourism, livelihoods and protected areas: opportunities for fair-trade tourism in and around national parks,” *International Journal of Tourism Research*, vol. 3, pp. 337–391, 2001.

[37] S. Roy, “Tourism in Bangladesh: present status and future prospects,” *The International Journal of Management Science and Business Administration*, vol. 10, no. 8, pp. 1–9, 2015.