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Tourism–Agriculture Nexuses: practices, challenges and opportunities in the case of Bale Mountains National Park, Southeastern Ethiopia

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Abstract

Background: Linkage of tourism with agriculture is critical for maximizing the contribution of local economic and tourism development. However, these two sectors are not well linked for sustainable local development in many destinations of developing countries. The objective of the study was assessing the practice, challenges and opportunities of tourism–agriculture nexuses in Bale Mountains National Park, Southeastern Ethiopia.

Methods: Community-based cross-sectional study design was employed, and 372 households were selected using multistage stratified random sampling technique for quantitative data and qualitative data were collected using FGD and key informant interview. Quantitative data were analyzed using both descriptive and inferential statistics such as χ^2 test to see the association of dependent and outcome variables, and qualitative data were coded and thematically analyzed.

Results and conclusion: The findings of this study revealed that there is no economically profitable coexistence between agriculture and tourism. Agriculture is the major economic activity of the community. Moreover, the market-based linkage of the two sectors was challenged by the practices of non-commercial type of agricultural activities; small market size of tourism industry; and its mere dependency on wildlife. The growing tourist flows and government attentions are pointed out as opportunities. Ministry of Agriculture, Ministry of Culture and Tourism, Park Management Office and other stakeholders should pay attention to ensure linkage and market-based interaction between tourism and agriculture for sustainable local economic development in the study areas.

Keywords: Linkages, Tourism, Agriculture, Local economic development

Introduction

Background

Tourism has been viewed as a powerful tool for developing countries to trade their way out of poverty as these benefits are said to trickle down to the more peripheral regions, disadvantaged communities and the poor [1, 2]. The potential contribution of tourism to the well-being of rural communities in developing countries involves the agricultural development of economic linkages [3]. According to Lejarraja and Walkenhorst [4] the successful broadening and deepening of local

agricultural and tourism linkages is an integral part of making tourism work for economic diversification. With the emergence of a new wave of rural and green tourism, there is a strong possibility that the position of agricultural or farm tourism may assume more prominence in consumer vacation decisions leading to the injection of a new source of ideas for tourism product development and marketing within farm-based tourism destinations [5].

Enhancing linkages between agriculture and tourism presents significant opportunities for stimulating local production, retaining tourism earnings in the locale and improving the distribution of economic benefits of tourism to rural people [6]. The two productive sectors, i.e., agriculture and tourism, seem to offer the best

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opportunities for inclusive economic growth in several countries of the world such as in Pacific island countries, and therefore, the promotion of linkages between tourism and agriculture should help create economic opportunities, build resilience in rural communities and enhance sustainable development in both sectors [7].

However, empirical evidences show two views regarding the practicality of the linkage between tourism and local agricultural activities. According to the first evidence, tourism and local agricultural activities are not linked in most destination economy due to different factors such as the seasonality nature of tourism, low quality of local products, tourism industries' dependence on imported supplies and absence of direct linkage between agriculture enterprises and tourism industries [8]. Contrary to this, studies conducted in Mexico [6], Fiji [9] and Gambia [10] indicated the existence and importance of the linkage between tourism and selected local agricultural productions such as different animal production, vegetables, fruits, fishing, bee keeping, coffee, crops and dairy products.

Agriculture provides not only the tourism industry resources for food consumption but also the background for attractions in rural environments [3]. Arguably, it is important to find out pathways of harnessing such linkage so as to maximize the contribution of tourism for the agricultural sector and sustainable local economic development at large. One of these pathways is "indirect benefit flows" to the poor through induced impacts which exist through tourism supply chains [11], and direct benefit flows to the poor through direct contacts with visitors.

According to Ethiopia's Growth and Transformation Plan (GTP) of Tourism Development, tourism's potential for cross-sectoral complementarities such as its linkage with agriculture is yet to be realized so as to create opportunities for the livelihood diversification of the local communities, thereby enhancing sustainable local development [12]. Currently, due to its increasing growth and high and profitable export values, tourism is being considered as a key economic activity to achieve the goals of Millennium development and poverty alleviation by the government of Ethiopia [11]. In 2011/2012, the total impact of tourism activities in Ethiopia accounted for US\$462 million as estimated by the Ministry of Culture and Tourism [13]. The revenue was earned from 584,000 visitors. In terms of reducing unemployment, 224,000 jobs were created during the stated year. The income has increased by 69%, whereas the number of visitors grown by 14% compared to the previous year. However, it is argued that tourism will

fail as a trigger for local agricultural economic development if there are no inter-sectoral collaboration and fomenting of sustainable linkages between tourism demand and other sectors in the destination economy [8] and [14].

The livelihood activities of the local communities surrounding Bale Mountains National Park (BMNP), which is one of the mega tourist destinations of Ethiopia, are smallholder agricultural activities [15]. Considering such realities and the contribution of tourism to the local economy and conservation of biodiversity, the objective of this study was to assess the linkage and factors affecting the linkage between the two economic sectors in Bale Mountains National Park, Southeastern Ethiopia, with the following specific research questions:

1. Which sector is the major livelihood option for the local community in the study area?
2. Is there market chain relationship between the tourism and agricultural sectors that helps the symbiotic coexistence in the study area?
3. What are the factors that affect the demand and supply relationship of the two sectors in the study area?

Review of related literature

Tourism–agriculture nexus

The potential contribution of tourism to the well-being of rural communities in developing countries involves the development of economic linkages [3]. Fomenting the creation of linkages between tourism and agriculture has recently received considerable attention as a strategy for rural and agricultural development in stagnating rural areas. As tourism and agriculture transform, there will be growing interest among governments, the private sectors, academics, donor agencies and nonprofit organizations to better understand the relationship between these two sectors, to encourage interaction and to become involved in fostering these linkages [2].

The research conducted by Berno [9] in Fiji of Pacific areas showed different mechanisms that supported agriculture–tourism linkages. These are *market approach*—tourism operators buying produce directly from local markets; *product-led approach*—hotels establishing relationships or contracts with individual suppliers often for specific products; *surplus approaches*—market stakeholders approaching hotel operators with surplus produce for sale; *cooperative approaches*—the formation of farmers' cooperatives to supply hotel operators; *creation of demand approaches*—the introduction of menu items using local indigenous products; "grow-your-own" approaches—the use of on-site hotel gardens to supply

the accommodation with a limited range/amount of fresh produce; “boutique” approaches—organic and/or hydroponic gardens attached to high-end accommodation and strategic business unit model.

Challenges of linking tourism with agriculture

Different researchers [2, 6, 16–26] pointed out a set of different factors as challenges of tourism–agriculture nexus: *demand-related factors* including the type of accommodation ownership; tourism industry maturity; health and safety concerns; and seasonality. *The supply-related factor* as physical limitations; poor product quality due to missing knowledge about tourist expectations; high prices of locally produced food; technological and processing limitations; competition for labor; undercapitalization of the agrarian sector; and landscape. Market and intermediary factors, which include marketing and infrastructure constraints, mistrust between traders and agriculture supply and craft producers, prevent from better cooperation; middlemen are the third limiting factors for the linkage between tourism and agriculture. The fourth factor is government policy which includes unfavorable investment policy; lack of credit and micro-finance support; and limited education.

The role of linkage between tourism and agriculture for local development

The linkages between tourism and agriculture involves looking at people who may benefit directly from tourist expenditure, such as hotel/restaurant staff, taxi drivers, guides, craft market stakeholders or communities in partnership arrangements with tourist investors which depends on agricultural products such as vegetables, fruits, fishing, honey production, coffee and crops [10]. The income earned from such supply chains is described as “pro-poor flows” as tourism linkages are able to incorporate the poor and local economic linkages have the potential to reduce leakages by circulating money around the local economy in a way that creates multiplier effects. When such linkages are created, local communities will get economic benefits and reduce the exploitation pressures on tourism resources, thereby increasing the conservation efforts [27, 28].

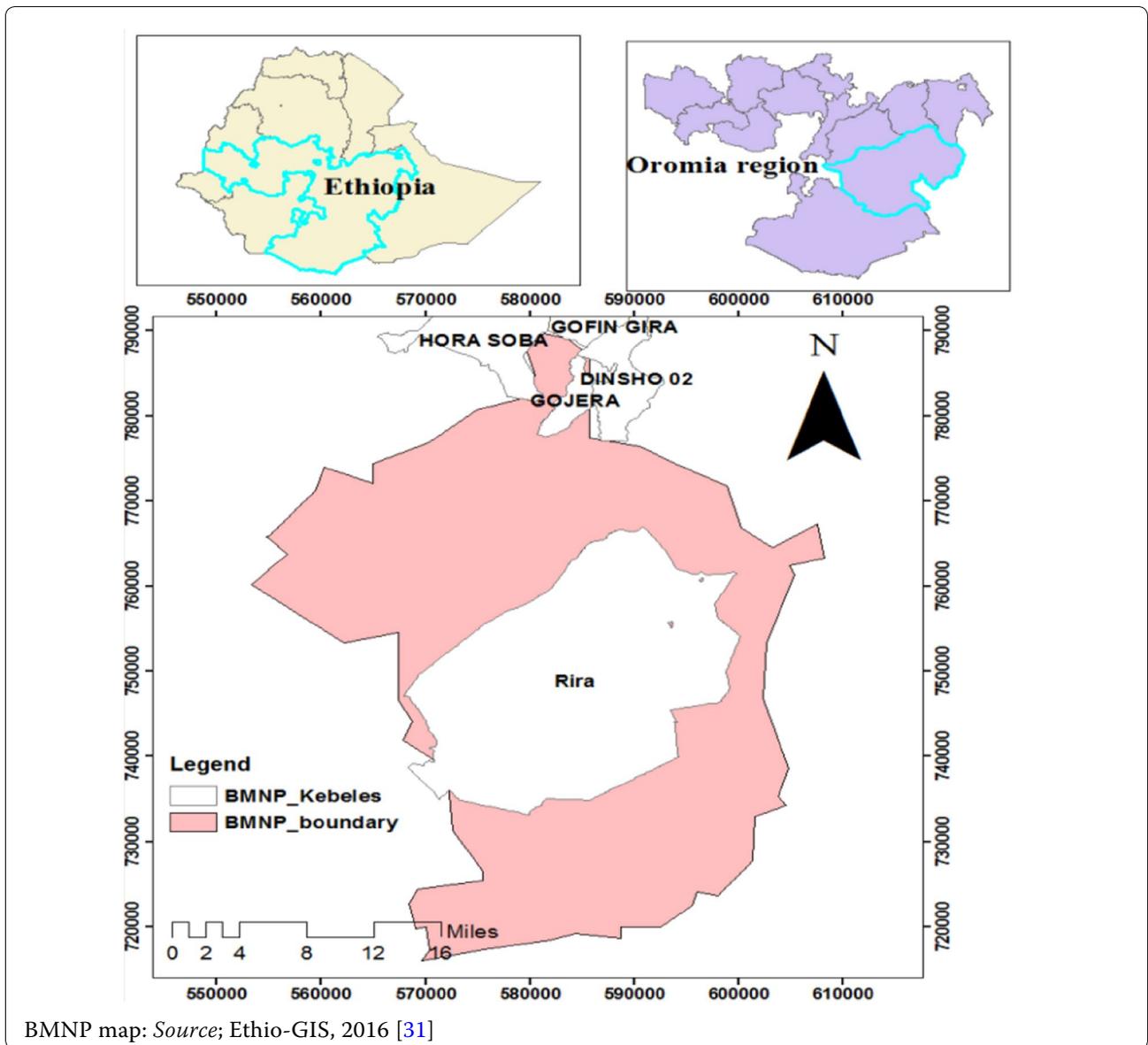
Methods

Description of the study area

Nominated in 2009 to the World Heritage Tentative List, Bale Mountains National Park (BMNP) is one of the highest incidences of animal endemism of any terrestrial habitat in Ethiopia and the world. It is located 400 km southeast of Addis Ababa in Oromia National Regional State and belongs to the Bale-Arsi massif. The park is within geographical coordinates of 6°29′–7°10′N and 39°28′–39°57′E. It covers an area of 247,000 hectare or 2400 km² with an altitudinal range of 1500–4377 meters above sea level. The local boundary of BMNP lies within five woredas: Adaba (west), Dinsho (north), Goba (northeast), Mana-Angetu (south) and Berbere (east). Tullu Dimtu, altitude 4377 m asl., is the highest peak in the park and the second highest peak in Ethiopia. The park includes an Afroalpine plateau over 3500 m asl and a major section of moist tropical forest, the second largest in Ethiopia [29].

Within the park, rivers cut deep gorges; alpine lakes feed streams; and water accepts gravity’s fate at several waterfalls. Haremma Escarpment splits the park in two, running fracture like from east to west. To the northeast of the escarpment lies the high-altitude plateau known as the Sanetti Plateau (4000 m). The plateau is broken by a series of volcanic plugs and small peaks, including Tullu Dimtu. To the south, the land gradually falls away from the plateau, and a thick heather belt gives way to heavily forested areas known collectively as the Haremma Forest [30].

The park is also known for its endemic wildlife, particularly the Ethiopian Wolf and the Mountain Nyala. The sighting of an Ethiopian wolf, the world’s rarest canid, is the most guaranteed on the Sanetti Plateau. But there are plenty of other no-less-remarkable endemics to be seen, including Menelik’s Bushbuck and the Giant Mole rat. BMNP is also famous for its incredible number of endemic birds. Usually, the endemics are very easily seen. The birdlife in the juniper forests around the park headquarters is outstanding too [29].



The residents in and around the Bale National Park are practicing pastoralism and agricultural activities. They are rearing cattle, sheep and goats. In addition to this, different farming activities such as cereals and crops, vegetables and fruits, and fishing are being practiced in BMNP. Tourism such as tour guiding, scouting, tourism enterprises/associations like cooks and handicraft producers and sellers, horse renting, etc., is another economic activity [29].

Study design and data source

In this research, community-based cross-sectional study design was employed, combining quantitative and qualitative approaches to capitalize on the strengths of each approach and offset their different weaknesses [32, 33]. The quantitative data were collected through household survey, while qualitative data were gathered using key informant in-depth interview, FGD, field observation and document analysis. Key informant in-depth interview

was conducted with two experts each from park management, agriculture office, culture and tourism office and three elders from local community, respectively. Two FGDs were conducted with knowledgeable local inhabitants one at Rira kebele and one at Gojera from the two adjacent kebeles Gojera and Gofingra of rural kebeles, while one FGD was conducted at Horasoba and Dinsho kebele with 8–10 members each using interview guide checklist. Quantitative data were collected from 372 sample household heads drawn from the total of 2405 households in the purposively selected four rural and one urban kebele of the study area based on proximity to the park, and the estimated sample size is allocated to each using proportional allocation to size of total sample households in each kebele.

Sampling and sample size determination

The quantitative data were obtained by means of interview schedule from the 372 household heads. The sample size was determined using Yamane [34] formula:

$$n = \frac{N}{1 + N(e^2)},$$

where *n* is sample size, *e* margin of error, *N* is total target population, *e* is level of precision.

Therefore, the sample size determined at ± 5% precision and 95% confidence level will be 342 households. That is, $n = \frac{2405}{1 + 2405(0.05^2)} = 342$ and to compensate none response rate (10%) or 30 households were added and the total sample size was 372 households. Finally, it was proportionally allocated to each kebele as 42, 59, 66, 79 and 126, respectively.

Methods of data analysis

Qualitative data were coded and thematically analyzed. However, for quantitative data analysis the questionnaires were checked for completeness and consistency of the responses and entered into SPSS version 20 software and cleaned for analysis. Descriptive statistics was performed and presented in tables, pie charts, percentages, means and graphs. Using χ^2 test, the associations between the dependent and outcome variables were determined. In addition, the findings from the in-depth interviews with key informants, field observations, document analysis and survey were triangulated and compared.

Analysis of results

Demographic characteristics of respondents

As depicted in Fig. 1, the age category of the majority of respondents were found to fall within the range from 29 to 39 and 40 to 50, with the percentage share of 32 and 31%, respectively, whereas very few of them (5%) were above 60 years old.

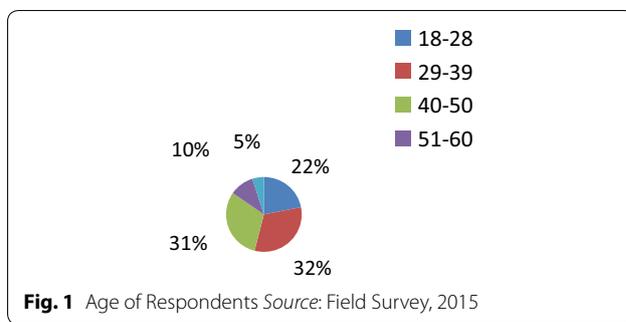


Fig. 1 Age of Respondents Source: Field Survey, 2015

In terms of level of education, 41% of the respondents were 1st to 4th grade complete, 2% of them attained certificate level, 2% of them diploma, and 1% of the attained degree and above, respectively, as indicated in Fig. 2. As depicted in Fig. 3, majority of the respondents (83%) were male, while only 16% of them were female.

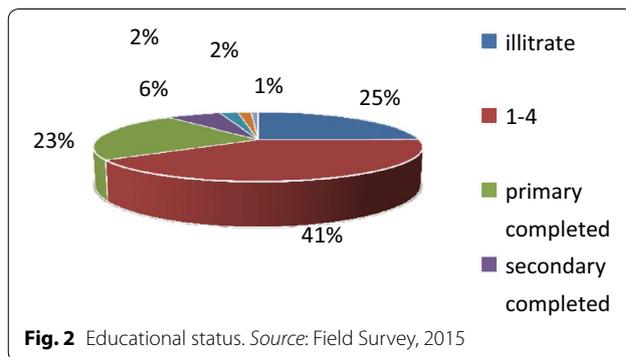


Fig. 2 Educational status. Source: Field Survey, 2015

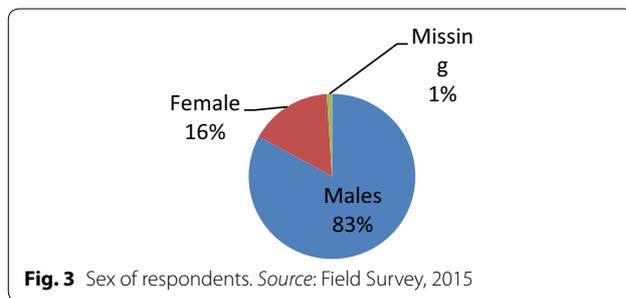


Fig. 3 Sex of respondents. Source: Field Survey, 2015

Table 1 Occupation of respondents. Source: Field Survey, 2015

Jobs of respondents	Frequency	Percent
Government-employed	10	2.7
Self-employed	28	7.5
Farmer	301	81.1
Tourism worker	15	4.0
Merchant	13	3.5
Others	4	1.1
Total	371	100.0

As listed in Table 1, farming is the main occupation of the majority of respondents accounting for 81.1% with the minor proportion; about 7.5% of the respondents were self-employed participating in different small-scale business activities, while inconsiderable proportion, about 4% of them engaged in tourism businesses.

As indicated in Table 2, 86% of the respondents had already been living in all villages of the study area since their birth, in mainly Dinsho Town and Gojera, whereas only few respondents had been living in the study area for about 10 years or above.

As already indicated in Fig. 4, annual income distribution of the respondents, 37% of them earn less than 10,000.00 Ethiopian Birr per annum, 28% of respondents earn between 11,000.00 and 20,000.00 where by an annual income of few respondents was above 21,000.00 Ethiopian Birr yearly in ascending order. Here, low annual income of the respondents would be an indicator for the need to have diversified sources of income or livelihood approaches for the communities in and around Bale Mountains National Park. In the case of size of land holding, majority of the respondents (62.5%) own the land size of 1.5–3 ha (Table 3).

According to the responses of 56.1% of respondents for access to credit services, there is no easy access to credit to launch both tourism and agricultural business activities. On the contrary, 43.9% of the respondents have

Table 2 Length of years lived in the village. Source: Field Survey, 2015

Name of kebeles	Length of years lived in the village			Total
	< 10 years	> 10 years	Since I was born	
Dinsho Town	0	14	58	72
Gojera	0	4	37	41
Gofingra	0	1	56	57
Rera	1	1	61	63
Horasoba	0	16	108	124
Total	1	36	320	35
Percentage	0.3%	9.7%	86%	

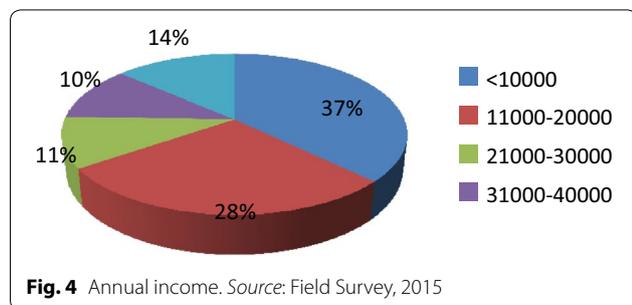


Fig. 4 Annual income. Source: Field Survey, 2015

Table 3 Land size owned by respondents. Source: Field Survey, 2015

Land size in hectare	Frequency	Percent (%)
Missing system	48	12.9
0–1 h	91	24.5
1.5–2.5 h	140	37.7
≥ 3 h	92	24.8
Total	371	100

confirmed the availability of credit facility for those individuals or associations who want to invest in both sectors. Concerning the number of livestock and equines owned, 30.2 and 27.8% of the respondents have from 11 to 20 and 6 to 10 livestock, respectively, whereas 31.3 and 18.1% of the respondents have from 6 to 10 and 1 to 5 equines, respectively. However, 19.2 and 18.3% of the respondents do not have livestock and equines, respectively. In case of the trends of the number of livestock and equines owned, 64.4% of respondents stated that the size of livestock and equines was decreasing due to expansion of crop farm and conservation of tourism resources (Table 4).

Practices of agriculture in Bale Mountains National Park

As it can be depicted from Table 5, considerable proportion of the respondents replied that cereals (73.3%), cabbage (82.7%), potato (86.5%) and onion and garlic (66.3%) were the major agricultural crops being produced in the study area due to the favorable climatic condition.

In addition to crop production, people also engage in different animal-rearing activities. As indicated in Table 6, 75.5 and 85.4% of respondents engage in farm activities as cattle and sheep and goat fattening, respectively, as an alternative livelihood option around Bale Mountains National Park. On the contrary, they did not engage in supplying farm activities such as poultry and eggs, cow milk and milk products, fruits and vegetable, and spices to the tourism sector as a result of absence of market linkage with tourism. Furthermore, the tourism industry outsourced the market of almost all such farm products to the market of other parts of the country. Moreover, majority of respondents indicated that grazing land availability was decreasing from time to time. The FGD discussants said that,

“The increasing demand for more fields for cultivation of cereals led to the shrinking of park area and grazing land for their livestock. Moreover, the numbers of livestock and the grazing land area are also on a decreasing trend from time to time.”

Table 4 Access to credit, owned livestock and equine at present, and trend on size of animals. Source: Field Survey, 2015

Variables	Frequency	Percent (%)
Availability of access to credit		
Valid		
Yes	163	43.9
No	208	56.1
Total	371	100
Number of livestock owned by respondents at present		
Valid		
1–5	21	5.7
6–10	103	27.8
11–20	112	30.2
≥ 21	67	18.1
0	68	18.3
Total	371	100
Number of equines owned by respondents at present		
Valid		
1–5	67	18.1
6–10	116	31.3
11–20	56	15.1
≥ 21	61	16.4
0	71	19.2
Total	370	100
Size of livestock and equines owned by respondents since 10 years		
Valid		
Increasing	98	26.4
Decreasing	239	64.4
No change	34	9.2
Total	371	100

These in turn had been further endangering the fate of biodiversity conservation of the park at large in the study area.

Practices of tourism in Bale Mountains National Park
Tourist attractions and income generation from tourism sector

As shown from the statistical data recorded by Bale Mountains National Park Office, the numbers of visitors are increasing from year to year. Hence, the trend of flow of visitors is significantly increasing every year (Fig. 5).

Similarly, as depicted in Fig. 6, the income generated from tourism is increasingly throughout the specified period of time.

This growth trend of flow of visitors and income gained from the industry is bringing opportunities for the establishment of hotel and lodging industries in and around Bale Mountains National Park, thereby increasing the opportunities for the supplies of commercial agricultural products to those sectors (Figs. 5, 6).

Table 5 Cereals and horticultural crops production at the area. Source: Field Survey, 2015

	Frequency	Percent (%)
Cereals		
Yes	272	73.3
No	99	26.7
Total	371	100
Cabbage		
Valid		
Yes	307	82.7
No	64	17.3
Total	371	100
Potato		
Valid		
Yes	321	86.5
No	50	13.5
Total	371	100
Onion and garlic		
Valid		
Yes	246	66.3
No	125	33.7
Total	371	100
Fruits		
Valid		
No	371	100

Linkage of tourism with agriculture

According to the interviewees, due to the extensive agricultural activities, infant stage of tourism industries and its dependency on merely imported agricultural products, there is no significant income gain from tourism for the residents of the study area. Specifically, an effort had been exerted to identify the agricultural products which are currently being supplied to tourism industries by local people (Table 7).

As it can be observed from Table 7, concerning the availability of supply of agricultural outputs to tourism industry from local source, the finding has shown that majority of the respondents are not supplying fattened cattle, sheep and goat, vegetables, milk and its by-products, poultry and egg, coffee, honey and bamboo to the tourism industry and tourists. On top of these, fruits and fishes are not being produced by the residents of the study area. Insignificantly, 7.8, 6.5, 5.7, 3.8 and 2.7% of respondents replied that they are selling sheep, honey, vegetables, cattle and goats to tourism sector, respectively. Equivocally, the absence of supplying commercial agricultural products to the tourism industry like lodges and hotels is an indicator for the absence of linkage between tourism and agriculture in the aspect of market-based supply–demand chain. Generally, using χ^2 test, the

Table 6 Mixed farming system in the study area. Source: Field Survey, 2015

Variables	Frequency	Percent (%)
Poultry and eggs		
Yes	129	34.8
No	242	65.2
Total	371	100
Fattening of sheep and goat		
Yes	317	85.4
No	54	14.6
Total	371	100
Milk cow and milk products		
Yes	124	33.4
No	247	66.6
Total	371	100
Fruit and vegetable products		
Yes	163	43.9
No	208	56.1
Total	371	100
Spice products		
Yes	10	2.7
No	361	97.3
Total	371	100
Cattle fattening		
Yes	280	75.5
No	91	24.5
Total	371	100

livelihood dependency of residents in relation to tourism and agriculture as sources of income and their annual income were discussed and analyzed. As listed in Table 8, the association between annual income and agriculture is significant as the *p* value of 0.001 was less than the conventional *p* value of 0.05.

On the other hand, the researchers tried to see the association between annual income and tourism, and the result in Table 9 depicted that there is no association between dependency on tourism and their annual income due to the *p* value of 0.452 which was greater than the conventional *p* value of 0.05.

Therefore, the livelihood of residents of the study area is highly depending on agriculture than on tourism. This can be an indicator for the absence of the nexuses between these two sectors in Bale Mountains National Park (Table 9).

Challenges of linking tourism with agriculture

So far, situations of agriculture and tourism as economic activities in and surrounding of Bale Mountains National Park and the nexuses between tourism and agriculture

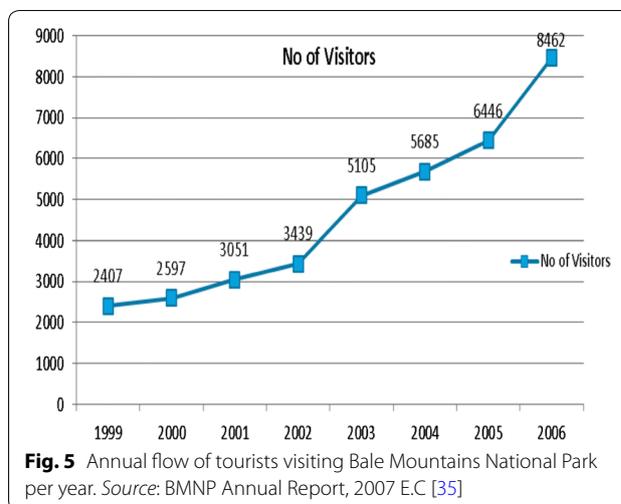


Fig. 5 Annual flow of tourists visiting Bale Mountains National Park per year. Source: BMNP Annual Report, 2007 E.C [35]

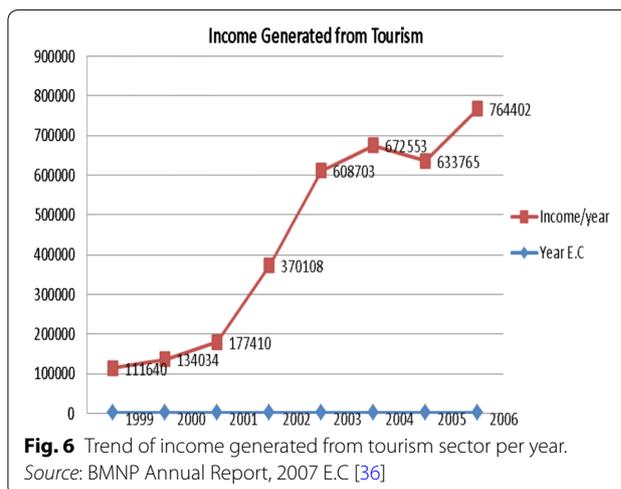


Fig. 6 Trend of income generated from tourism sector per year. Source: BMNP Annual Report, 2007 E.C [36]

had been discussed and confirmed the absence of commercial and tourism demand-driven agricultural activities, and this resulted in the nonexistence of agriculture–tourism linkage based on business and mutual existence scenarios.

Agricultural encroachment

The key informants from park management staff, Dinsho Woreda Agriculture office and FGD and the representatives of local residents pointed out some of the challenges faced by the park as:

“The park had been very much challenged by the continuing pressure from the local communities for the demand of land for the purpose of agriculture activities both cereals and grazing land for their cattle and settlement as the size of population

Table 7 Local supplies for tourism industries. Source: Field Survey, 2015

Variables	Frequency	Percent (%)
Fattening cattle		
Yes	14	3.8
No	357	96.2
Total	371	100
Sheep		
Yes	29	7.8
No	342	92.2
Total	371	100
Vegetables		
Yes	21	5.7
No	350	94.3
Total	371	100
Fruits		
Yes	2	0.5
No	369	99.5
Total	371	100
Goats		
Yes	10	2.7
No	361	97.3
Total	371	100
Fishes		
No	371	100
Poultry and egg		
Yes	7	1.9
No	364	98.1
Total	371	100
Milk products		
Yes	8	2.2
No	363	97.8
Total	371	100
Coffee		
Yes	2	0.5
No	369	99.5
Total	371	100
Honey		
Yes	24	6.5
No	347	93.5
Total	371	100
Bamboo products		
Yes	1	0.3
No	370	99.7
Total	371	100

was increasing from time to time. Accordingly, the farmers illegally penetrate to the areas of the park through plowing and settling inside the park and engage in mixed farm.”

Health and hygiene concern

Due to the fact that local agricultural products are blamed to have less quality, tourists or hotels do not want to risk themselves in compliance with health and safety standards. The result of FGD and interview with hotels and lodges manager and workers also depicted similar situation of high demand of imported agricultural products. The manager of Bale Mountains Lodge argued that:

“We are importing agricultural products from outside of this area mainly from Addis Ababa, Ethiopia because of our fear of health and hygiene issues resulting from poor quality of the products, technological and processing related problems like poor harvesting technique improper storage, packaging, and transportation of agricultural products.”

Lack of customers’ preference for local farm products and market size

Tourism industries provide the products that most interest their customers. According to the result of the survey conducted with residents of the study area, 73.3% of respondents indicated that tourists are not interested to buy local farm products due to their hesitation about the unreliable standard quality of local farm products and services (Fig. 7).

Similarly, the interviewed lodge and hotel owners in the study area described as:

“Mostly, the customers/tourists are interested to use imported packed products than local farm products. Moreover, tourism markets are relatively small food markets in remote areas due to the fact that there are very small flows of tourists for very short visits. As a result, the market may not be large enough to generate significant agricultural food products demand locally.”

Therefore, the market demand of agricultural products by tourism industry in the study area was very low.

Procurement, taxation and institutional issues

In this study, an effort has been exerted to investigate the demands of lodges and hotels to buy local farm products. According to the interviewees, this is not because of the absence of interests from the side of lodges and hotels industry, but it is due to the procurement and taxation regulation of the government. Bale Mountain Lodge Manager pointed out that:

“As an industry, it is expected that receipt should be issued for each and every sales and purchase undertaken. As a result, local farmers are unable to issue legal receipts or invoices for the sales of agricultural products for the hotels and lodge. Due to this, we are forced to buy supplies from the outsiders who can provide receipts or invoices.”

Table 8 Association between annual income and agriculture (χ^2 test). Source: Field Survey, 2015

	I am depending on agriculture than on tourism					Total
	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	
Annual income						
< 10,000	78	19	4	7	3	111
11,000–20,000	58	20	3	4	0	85
21,000–30,000	27	2	0	1	1	31
31,000–40,000	27	6	0	0	0	33
> 41,000	37	3	1	0	0	41
Total	227	50	8	12	4	301
	Value		df		Asymp. Sig. (2-sided)	
Pearson χ^2	20.937		16		0.181	
Likelihood ratio	27.602		16		0.035	
Linear-by-linear association	10.655		1		0.001	
Number of valid cases	301					

Table 9 Association between annual income and tourism (χ^2 test). Source: Field Survey, 2015

	Tourism is benefiting me than agriculture					Total
	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	
Annual income						
< 10,000	5	5	5	29	67	111
11,000–20,000	1	4	5	25	49	84
21,000–30,000	0	1	3	8	16	28
31,000–40,000	0	2	5	8	18	33
> 41,000	0	1	6	3	29	39
Total	6	13	24	73	179	295
	Value		df		Asymp. Sig. (2-sided)	
Pearson χ^2	20.506		16		0.198	
Likelihood ratio	22.779		16		0.120	
Linear-by-linear association	.565		1		0.452	
Number of valid cases	295					

In line with this, FGD conducted with representatives of local residents in Rira kebele of the study area also showed similar finding. In their word of mouth:

“There is/are no well-established institution(s) or government organization responsible in facilitating market value chains interlinkage for both tourism and agriculture through organizing local farm products suppliers associations and facilitating them to have their own legal receipts or invoices while selling their farm products, leading to have no symbiotic co-existence between tourism and agriculture through market exchange.”

Absence of favorable investment opportunities

Due to the low level of linkage between agriculture and tourism in rural protected areas, government support in the investment was very important so as to minimize encroachments extensive farm to the park. On the other hand, the focus group discussants and interviewees from local residents disclosed as:

“Regardless of its potentials and possibilities of income diversification like agriculture, tourism, and other commercial activities in rural areas, there, was the gap between policy and practice at the grass root levels. The practices on the ground do not allow easy access to favorable investment procedures credit service in rural areas.”



Absence of marketing channels and local intermediaries

In this regard, the interview with Bale Mountain and Dinsho Lodges indicated the absence of marketing channel and intermediaries who are playing the bridging role of linkage between tourism and agricultural sectors. Moreover, one of the members of FGD held at Dinsho stated that:

“There was no market network that connects the tourists and local producers around Dinsho as intermediary agent or market cooperative or farm market union. The tourists rarely visit the local market and there were no agents that link the two sectors. There were also no well-established hotel/lodge that can entertain the tourists in the town of Dinsho and mostly the tourists who are visiting the wild animals go back to either Robe or Goba towns for accommodation.”

Opportunities of linking tourism with agriculture

Improved market and technology situations

Considerable efforts have been made to identify possibilities of introduction of new innovative technology, improved price of farm products and income due to linkage between tourism and agriculture in the park development areas. However, as indicated in Table 10, 89.2, 90.3 and 86.5% of the households disagree with the opportunities created due to synergistic coexistence between tourism and agriculture. Similarly, the focus group discussants also affirmed:

“The local community around the park lost the grazing land, the benefit from the forest area and large area committed to the park for free. Sometimes, the local government tell the people that the development of the park benefit the local community in introducing important infrastructures such as veterinary clinic, schools, health center and introducing new productive farm technologies. However, there was no demand-driven introduction of new farm technology by tourism industry into agricultural activities of providing sustainable benefits for the residents.”

Table 10 Introduced new farm technology and market situations. Source: Field Survey, 2015

	Frequency	Percent (%)
Introduction of new farm technology due to park development		
Valid		
Yes	39	10.5
No	331	89.2
Total	370	99.7
Missing system	1	0.3
Total	371	100
Improved prices of farm products due to tourism		
Valid		
Yes	36	9.7
No	335	90.3
Total	371	100
Improved prices of new business innovations		
Valid		
Yes	50	13.5
No	321	86.5
Total	371	100

Cost advantages of local farm products

Buying locally produced farm products such as cabbage, potato, honey, coffee and garlic can have financial benefits over imported produce, due to the assumptions that such locally produced farm products have lower transport costs than imported produces; are fresh as the time from harvesting to sale is reduced; and the buyer has greater influence and flexibility in the production of food because of the closer relationship with a local supplies, rather than imported produces.

Growing governments’ attention

Recognizing the benefits of tourism industry for poverty alleviation and considering tourism as a pro-poor development alternative, Ethiopian government is giving due emphasis for tourism industry. This will bring opportunities for the agricultural products to be supplied for the tourism sectors.

Discussion

The role of local intermediaries in the marketing channels is indispensable in creating linkage between the suppliers (local farm producers) and tourism industry (hotels and lodges). This is due to the fact that agriculture supply producers are often unable to provide these services themselves, and in Tanzania and Ethiopia, there are examples of hoteliers contracting purchasers to manage this interface between large numbers of small providers and small numbers of large buyers [32]. In this regard, the interview with Bale Mountain and Dinsho Lodges shows

that there are no marketing channel and intermediaries who are playing the roles of making linkage between tourism and agricultural sectors. There is/are also no well-established institution(s) or government organization that are responsible in facilitating market value chains for both tourism and agriculture sectors through organizing local farm product suppliers associations and facilitating them to have their own legal receipts or invoices while selling their farm products, leading to have no symbiotic coexistence between tourism and agriculture. This is similar to the results of a study by Mitchell and Coles [33] on the issue of tourism-related food supply chains in Ethiopia. For example, hotel demand for food supplies is a small percentage of the total marketable surpluses in secondary destinations such as Lalibela 3%; Axum 2%; and Arba Minch 0.4%.

Conclusion and recommendation

Conclusion

This study was aimed to see the practices, challenges and opportunities of the linkage and symbiotic coexistence between tourism and agriculture arising from direct, indirect and induced impacts in Bale Mountains National Park. Therefore, the study revealed that cereals, horticulture (except fruits), sheep and cattle are the major agricultural products though coffee and honey are being produced mainly in Rira village. Productivities of cereals and livestock are increasing though the size of farm and grazing lands are decreasing proportionally from time to time.

However, there is no practical linkage between tourism and agriculture in Bale Mountains National Park with respect to the symbiotic coexistence and market-based value chain scenarios. The market-based value chains of the two sectors are challenged by the practices of non-commercial type of agricultural activities; the mere wildlife-dependent tourism activities; health and hygiene concern and lack of customers' preference for local farm products; small market size of tourism industry; absence of favorable investment opportunities in both sectors; lack of marketing abilities of the local farmers; and absence of marketing channels and local intermediaries. The encroachment on local people due to the need of extensive farm and grazing land and settlement expansion; growing firewood demand; and human-wildlife conflict are some additional challenges. In spite of such challenges, the areas huge potential for agro- and village tourism, huge potentials of coffee, honey, and highland fruits like apple productions, cost advantages of dependency on local farm products; fish farming and sport fishing; growing tourist flows and government attentions are pointed out as opportunities to ensure symbiotic

coexistence and value chain linkages between tourism and agriculture.

Therefore, unrestricted efforts to create an eco-village and sustainable local development through creating symbiotic coexistence and market-based value chain or linkages between tourism and agriculture by the governmental, non-governmental, educational and any concerned stakeholders are very crucial.

Recommendation

Therefore, the finding of this research suggests the following way forwards to governmental, non-governmental, educational, and other stakeholders: the Ministry of Culture and Tourism, Ministry of Education, Ministry of Agriculture, Park Management, NGOs, local government, Ministry of Justice, EPA, Institute of Biodiversity Conservation and MaddaWalabu University should make coordinated efforts mobilizing local community at the grass root.

For market-based value chain or linkage between tourism and agriculture

- Conducting intensive and extensive promotional campaign to increase the number of tourists.
- Developing and diversifying tourism activities to increase the length of stay and tourists expenditure on food sourced from the poor farmers.
- Facilitating to focus tourism market-tailored to agricultural activities.
- Encouraging intermediaries or tourism industries such as hotels and lodges to process the raw agricultural products than buying the end value of agricultural commodities.
- Establishing farmer-owned accommodation or hotels and lodge who will directly serving tourists using their agricultural products.
- Facilitating pro-poor local small enterprises that will produce and supply agricultural products to hotels and lodges.
- Developing agro-tourism to enable tourists participating in farming activities; exploring local culture; enjoying the landscape and agro-biodiversity; and observing organic and conventional agricultural practices.
- Utilizing coffee and honey production potentials for tourism market.
- Giving capacity empowerment training about the production of quality tourism market demand-tailored agricultural products.
- Facilitating and setting regulations about the procurement and taxation systems so as to enable the tourism sectors purchase agricultural products directly from the local poor farmers.

For symbiotic coexistence between tourism and agriculture

- Facilitating intensive agricultural activities to minimize pressure to the park.
- Encouraging livestock production using cut-and-carry system.
- Establishing buffer zone so as to minimize the penetration of wild animals to the farming areas of the residents in and around the park.
- Facilitating urban settlement options so as to avoid or minimize illegal settlement inside the park.
- Providing alternative energy sources for the residents.

Abbreviations

BMNP: Bale Mountain National Park; MoCT: Ministry of Culture and Tourism; FDRE: Federal Democratic Republic of Ethiopia; HH: household; EWCA: Ethiopian Wildlife Conservation Authority.

Authors' contributions

BZ designed and led the study, structured the concepts, reviewed much of the studies and analyzed much of the qualitative and quantitative data and further developed the manuscript, while DW identified and developed important concepts, validated and helped design the arguments, conceived and helped design of the study, assisted in analysis of both quantitative and qualitative data and editions of the final manuscript. Both authors read and approved the final manuscript.

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Competing interests

The authors declare that they have no competing interests.

Availability of supporting data

The authors declare that they can submit the required data at all times. The datasets used will be available from the authors up on request.

Consent for publication

The manuscript to be submitted to the Journal of Agriculture and Food Security has been approved by the authors. The authors would declare that the manuscript had neither been submitted nor been published in the other journals. All presented case reports have verbal consent.

Ethical approval and consent to participate

Ethical clearance and letters of permission were obtained from Research and Community Service Directorate of MaddaWalabu University and relevant government offices. Verbal consent was obtained from every participant informing the aim of the study, and the information obtained kept confidential.

Besides, the researchers gave due attention for environmental (wildlife and their habitats, other natural resources), and sociocultural (language, religion, customs, etc.) considerations of participants.

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