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# Socio-Economic Aspects of Sustainable Ecotourism Development: The Case of Kerala

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**Abstract**

The paper is an attempt to shed light on the socio-economic aspects of the local communities on the development of ecotourism in Kerala. Most of the local communities in the ecotourism destinations are tribes who have been excluded from the mainstream society and are not a part of Kerala's overall development setting. The paper also tries to situate the community perception on the sustainable livelihood of ecotourism sites of Kerala. Data for the study is obtained from a primary survey by dividing the ecotourism destinations in Kerala into three zones, 230 from south zone, 220 from central zone and 200 from north zone with a total sample size of 650 based on the notion of community based ecotourism initiatives of the state. The result of the study confirms that ecotourism has helped to enhance the livelihood of the marginalized community. With well-knit policies it is possible to tag ecotourism of Kerala as an important tourism destination in the global tourism map.

**Key Words:** Perception, Livelihood, Marginalized community, Community based Ecotourism, Sustainability

## 1. Introduction

Kerala, the southernmost State of India with 2.8 percent of the population is blessed with human development indicators at par with the developed countries. Literacy rate of almost 100 percent as well as high life expectancy and low infant mortality rates among Indian states make Kerala the most advanced state in terms of social sector development. Tourism has been given industry status by Kerala since 1986. Varied demographic traits and the resultant unique culture and traditions *inter alia* forest and wild life heritage tags make Kerala one of the popular ecotourism hotspots in the world with 56 potential ecotourism destinations (Govt. of Kerala, 2006). Most of the local communities in these destinations belong to tribes who have been excluded from the mainstream and are not a part of Kerala's overall development scenario. The community linked ecotourism activities helps in the inclusion of the local community in the development discourse of the state through the enlargement of ecotourism base in various parts of the state. The growth of ecotourism has been phenomenal during the last decade with an increase in tourist inflow and associated activities. Its emergence as one of the major source of income and livelihood for the local communities transformed them from exploiters of forest to conservators and protectors.

Community based ecotourism has always advocated the involvement of the local communities in the development initiatives as they are the most affected group during the conservation process. Most of the ecotourism sites in Kerala are in and around the forest area and are occupied by local tribal communities. These community members depend mostly on forest for their livelihoods. They also work as local tourist-guides, watchers and other employees at the tourist sites. As the forest resources are fast depleting the socio-economics of these communities to a greater extend depend on the earnings they get from the ecotourism destinations (Smith, 1989; Thampi, 2005; Rajasenan and Paul, 2012). The ecotourism policy of the government unequivocally focuses on the local community to safeguard their survival and sustenance and thereby the sustainability of the ecotourism destinations with the help of socio-economic impact assessment.

## 2. Materials and methods

The article is the result of an exploratory search into the socio-economic contour of the communities focusing on education, income and livelihood options as well as their perception about the ecotourism development in their area.

 

Data for the study is obtained from a primary survey by dividing the ecotourism destinations in Kerala into three zones. Eco Development Committees/Vana Samrakshana Samithi (EDC/VSS) constitutes the data source and the sampling framework was decided on the basis of active EDC/VSS in the area, based on their population proportion. 230 EDC/VSS from south zone (Thiruvananthapuram, Kollam, Pathanamthitta and Kottayam), 220 from central zone (Idukki, Ernakulam and Thrissur) and 200 from north zone (Palakkad and Wayanad), with a total of 650 samples involved in various fields of community based ecotourism in Kerala represent the respondents of the survey. Statistical tools like Chi-Square, Correspondence Analysis, Likert Scale Analysis, etc. have been employed for analytical purpose.

## 3. Results and Discussion

### *3.1 Educational Qualification of the Community Members*

Education acts as a determining factor for the socio-economic and livelihood of the forest communities connected with the ecotourism activities. Their historical backwardness and dwelling in difficult terrains make it difficult to acquire basic education and thereby to interact with the multi-cultural and multi-linguistic tourists visiting the ecotourism destinations. It can be inferred from the analysis of the educational qualifications in Table 1 that majority (i.e. 62.20 percent) has a formal education of $10^{th}$ class and below. Most of the locals had only basic school education. 21.40 percent are undergraduates whereas 10.20 percent respondents are graduates and 6.30 percent are with post-graduation and above. Majority of graduates and post graduates come from south and central zones--36.60 percent of the post graduates are from the south zone and 46.30 percent are from the central zone and 59.10 percent of the graduates are from south and 33.30 percent from the central zone. There is not much difference in percentages when we analyze the sample based on education level of the $10^{th}$ and below and under graduation. Even though graduates and post-graduates form a meager part of the total sample, more than 80 percent of the respondents having these qualifications are from the south and central zone. Table 2 (a) illustrates the Chi-Square analysis of zone and formal education. It is clear from Table 2 (a) that there is significant difference in the formal education level between three zones.

Table 1 (about here)

As can be seen from the cross tab analysis, the zone-wise difference is in the proportion of graduates and post-graduates as there are lesser percentages of graduates and post graduates in the north zone compared to the other two zones. To confirm this, Chi-Square of the zone and educational qualification, by taking only the south and central zones, is performed, which shows no significant difference between these, as is shown in Table 2 (b).

Table 2 (about here)

### *3.2 Income, employment and saving pattern*

#### 3.2.1 Income and employment

Employment and income are also equally important to place the position of the community in the economy and society. Nearly ninety nine percent of the respondents work in tourism sector throughout the year as guides, naturalists, watchers, drivers, eco-shop workers, cooks, craftsmen etc. As can be seen from Table 3, 56.20 percent of respondents are earning full income from tourism related activities and 34.80 percent of community members earn an income between 75-99 percent from tourism and the remaining 9.10 percent earn less than 74 percent from tourism. Zone-wise analysis also shows similar pattern.

Table 3 (about here)

It can be inferred from Figure 1 that majority of the respondents (55.50 percent) come under the income group of Rs. 3001-4000, whereas 23.80 percent has an income range of Rs. 4001-5000, 13.20 percent has a monthly income between Rs. 2001-3000. And the others (3.10 percent and 4.30 percent) have an income of Rs. 1001-2000 and above Rs. 5000 per month, respectively. Most of the community members are earning more after they start working as EDC. This shows that their security in income earning and thereby their livelihood security has increased once they start earning from tourism related activities. Because of this, the communities are now acting as conservators of forest in comparison to their earlier role as poachers and destroyers of forest. Analysis based on three zones also gives similar results.

Figure 1 (about here)

 

3.2.2 Banking habits

This section analyses the banking habits of the community pertaining to bank account, savings, and indebtedness. Section (a) (5) of Table 4 shows that 51.40 percent of households have bank account. Education level is an important determinant in the financial habits of the individuals as it shows a positive relationship between education and banking habits. Section (a) of Table 4 clearly evinces this fact as, people having a formal education of $10^{th}$ and below (38.10 percent) hold a bank account and the rest (61.90 percent) do not have a bank account. As we move to the respondents with higher qualification, the percentage also moves in favour of holding a bank account as it is revealed that 92.40 percent of the graduate community holds a bank account. However, all the respondents having qualification of post graduation and above hold a bank account.

The saving habits of the community are satisfactory as 62.90 percent of the respondents have saving habits in varying temporal dimensions; 80.4 percent saved on a monthly basis, 7.6 percent have weekly savings, 7 percent save on a daily basis and the rest (5.1 percent) have other patterns of savings (see Figure 4.5). Education-saving cross tabulation also gives similar relationship as in education and bank account habits. Section (b) of Table 4 shows that people with higher education qualification, - post graduation and above, has 100 percent saving habits and this gets reduced with the downward shift in education level.

Figure 2 (about here)

Table 4 (about here)

Table 5 (a) highlights whether the respondents save for revenue generating and non-revenue is generating purposes. Savings to earn interest or to do business/self employment can be termed as revenue generating and savings for consumption, marriage etc., which do not earn any direct or immediate financial returns are categorized into non-revenue generating ones. Table 4.9 shows that 46.70 percent of the respondents save for the purpose of education of children followed by marriage (20.30 percent), and consumption/purchasing (14.4 percent). Only one fifth of their saving (19.50 percent) is utilized for income generating purposes.

Table 5 (about here)

The nature of saving of the community members is given in Table 5 (b), which shows a diversified saving pattern useful for their survival and sustenance. In the case of indebtedness, we can see from section (c) of Table 4 that there exists an inverse relation between indebtedness and formal education; as the education level increases the tendency to borrow decreases. 83.90 percent of the $10^{th}$ and below category of respondents have indebtedness. But we see a decelerating tendency when we relate indebtedness with higher and higher education levels as evidenced in section (c) of Table 4. But the combined analysis of indebtedness of the community shows an alarming picture with 73.40 percent. When we analyse the source of debt, they are really in debt trap with the money lenders (31.60 percent) as given in Table 5 (c). We can infer from Table 5 (d) that the percentage level of indebtedness is biased in favour of day to day expenses, construction of house, marriage, education and treatment which are purely unproductive in nature.

If we bring together bank account holding tendency, savings and borrowings, we can see that most of the graduate and post graduate respondents have bank account and saving habits, they have lesser tendency to borrow compared to the rest of the group. Chi-Square analysis between education-holding of bank account, education-savings and education-indebtedness is given in Table 6. The results of the Chi-Square show that there is a significant difference between formal education level of the community members and their tendency to save, hold a bank account and to incur debt.

Table 6 (about here)

Table 7 (about here)

Chi-Square analysis based on zones of these three banking habits viz. savings, bank account holding tendency and indebtedness (Table 7) shows that there is no significant difference between zone and saving habits, while a difference exists between zone and bank account holding tendency, and zone and indebtedness.

*3.3 Community Perception*

3.3.1 Managing tourism in the area

 

The community members' perception on how they will manage tourism in their area, if given an opportunity based on ranking in a scale of 1 to 6 is shown in Figure 3. Majority of the respondents (57.60 percent) give first preference to the increase in the number of tourists currently visiting the ecotourism sites.

Figure 3 (about here)

3.3.2 Benefits from the forest

The response of the community members with regard to ranking the benefits from the forest is depicted in Figure 4. Tourism is given first rank by 60.90 percent of the respondents, followed by the procurement of wood products by the others. This shows that the majority of the community members are able to derive benefits from the forest without harming the environment.

Figure 4 (about here)

3.3.3 Future threats to the forest

Table 8 infers that 60.30 percent of the total respondents opine that the ecotourism destination pose threats. Regarding the type of threats from the forest, 67.30 percent feel that the main threat to the forest is in the form of fires, followed by the felling of trees (16 percent). Some of the community members (9 percent) hold the view that tourism activities which are not based on the carrying capacity of the sites will also act as a threat factor. Inter-zone analysis also confirms this as shown in Table 9.

Table 8 (about here)

Table 9 (about here)

3.3.4 Obstacles to tourism development

Obstacles to tourism development in the ecotourism sites are evaluated on the basis of the community members' perception in relation to 10 statements based on the degree of impact. The result is shown in Table 10.

Table 10 (about here)

It can be seen that 68 percent of the total respondents opine that unstable earning from tourism is an obstacle to tourism development. They are not happy about the government funding on development projects (79.50 percent) followed by the problem of language barrier (53.40 percent). Regarding the conflicting aspirations of officials and locals, only 19.10 percent argue this as a reason for lack of tourism development.

The respondents' perception regarding the degree of impact of these obstacles is shown in Figure 5. Community members believe that lack of adequate spending from the government and unstable earnings from tourism could be major obstacles in the development of ecotourism in their area. Except conflicting aspirations, all the other obstacles pose very serious or serious threats to the tourism development.

Figure 5 (about here)

3.3.5 Benefits to the household/community from tourism development

Major benefits from tourism, as cited by the respondents, are the development of transportation/communication facilities, improvement in sanitation/waste disposal facilities, and the inclusion of basic amenities (education, welfare, health, etc., developing more community activities for tourists, initiate training/education for locals, increase community involvement/ownership and other benefits). The respondents' ranking is shown in Table 11 and it shows that the increase in transportation facilities in ecotourism site was given the top rank by majority of respondents.

Table 11 (about here)

**4. Conclusions**

Ecotourism has helped the economic development and livelihood of the marginalized community of the ecotourism destinations. Most of the socio-economic indicators *inter alia* community perception show an upward trend in income and employment of the local people. One of the positive aspects of this is the reduction in the overall exploitation of forest land by these communities, perpetuating sustainable development of ecotourism sites and ecotourism in Kerala. Inter-zone analysis to highlight the differences in the socio-economic aspects points to the fact that, the difference among zones is marginal. This may be either due to the small geographical area of Kerala or to the different niche ecotourism sites which are equally preferable to all the visitors coming over to Kerala for

 

ecotourism activities. In order to sustain the potential of Kerala's ecotourism destinations, several factors like infrastructure, services, safety, and cost reflect the overall demand for the ecotourism sites, hence it is necessary to take sufficient policy options that maximizes strength and opportunity and minimizes weakness and threats. With appropriate policy options, it is possible to tag ecotourism spots of Kerala as an important tourism destination in the global tourism map.

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**Table 1 Formal education of the community members**

| | Formal Education (%) | | | | |
|---|---|---|---|---|---|
| Zone | 10th & Below | Under Graduate | Graduate | Post Graduate | Total |
| South zone | 140 | 36 | 39 | 15 | 230 |
| | (34.7) | (25.9) | (59.1) | (36.6) | (35.4) |
| Central zone | 133 | 46 | 22 | 19 | 220 |
| | (32.9) | (33.1) | (33.3) | (46.3) | (33.8) |
| North zone | 131 | 57 | 5 | 7 | 200 |
| | (32.4) | (41.0) | (7.6) | (17.1) | 30.8 |
| Total | 404 | 139 | 66 | 41 | 650 |
| | (100.0) | (100.0) | (100.0) | (100.0) | (100.0) |
| (% of Total) | (62.2) | (21.4) | (10.2) | (6.3) | (100.0) |

 

**Table 2 Chi-square result – zone and formal education**

| | (a) South, central and north zones [1] | | | (b) South and central zones [2] | | |
|---|---|---|---|---|---|---|
| | Value | df | Asymp. Sig. (2-sided) | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 35.250[a] | 6 | 0 | 6.388[a] | 3 | 0.094 |
| Likelihood Ratio | 38.732 | 6 | 0 | 6.453 | 3 | 0.092 |
| Linear-by-Linear Association | 7.922 | 1 | 0.005 | 0.064 | 1 | 0.801 |
| N of Valid Cases | 650 | | | 450 | | |

1. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.62.
2. 0 cells (.0%) have expected count less than 5. The minimum expected count is 16.62.

**Table 3 Percentage of income from tourism**

| | Income from tourism (%) | | | | | |
|---|---|---|---|---|---|---|
| Zone | 0-24 | 25-49 | 50-74 | 75-99 | 100 | Total |
| South zone | 0.4 | 3.9 | 4.8 | 36.5 | 54.3 | 100 |
| Central zone | 0.5 | 3.2 | 4.1 | 37.7 | 54.5 | 100 |
| North zone | 0.5 | 2.0 | 8.0 | 29.5 | 60.0 | 100 |
| Total | 0.5 | 3.1 | 5.5 | 34.8 | 56.2 | 100 |

**Table 4 Formal Education * holding of bank account * savings * indebtedness - Cross tabulation**

| Formal Education | (a) Holding of bank account (%) | | (b) Does your family save (%) | | (c) Indebtedness (%) | | Total (a)/(b)/(c) (%) |
|---|---|---|---|---|---|---|---|
| | yes | no | yes | no | Yes | no | |
| 10th and Below (1) | 38.10 | 61.90 | 56.40 | 43.60 | 83.90 | 16.10 | 100.00 |
| Under Graduate (2) | 43.60 | 56.40 | 54.30 | 45.70 | 63.60 | 36.40 | 100.00 |
| Graduate (3) | 92.40 | 7.60 | 98.50 | 1.5 | 66.70 | 33.30 | 100.00 |
| Post Graduate (4) | 100.00 | 0.00 | 100.00 | 0.00 | 14.60 | 85.40 | 100.00 |
| Total (5) | 48.60 | 51.40 | 62.90 | 37.10 | 73.40 | 26.60 | 100.00 |

 

**Table 5 Banking habits**

| **(a) Purpose of savings** | | | | **(b) Type of savings** | | | |
|---|---|---|---|---|---|---|---|
| Purpose | **Responses** | | **Percent of Cases** | **Type** | **Responses** | | **Percent of Cases** |
| | N | Percent | | | N | Percent | |
| Purchasing | 64 | 14.4 | 18.8 | Bank savings | 104 | 18.2 | 27.2 |
| Education of children | 207 | 46.7 | 60.9 | Post office savings | 103 | 18 | 26.9 |
| Marriage | 90 | 20.3 | 26.5 | Chit fund savings | 60 | 10.5 | 15.7 |
| To earn interest | 56 | 12.6 | 16.5 | Self helped Groups savings | 60 | 10.5 | 15.7 |
| To do business | 26 | 5.9 | 7.6 | Co-operatives savings | 42 | 7.3 | 11 |
| | | | | Savings at home | 25 | 4.4 | 6.5 |
| | | | | Others savings | 178 | 31.1 | 46.5 |
| **Total** | **443** | **100** | **130.3** | **Total** | **572** | **100** | **149.3** |
| **(c) Source of Debt** | | | | **(d) Purpose of indebtedness** | | | |
| Source | Responses | | **Percent of Cases** | Purpose | **Responses** | | **Percent of Cases** |
| | N | Percent | | | N | Percent | |
| Private money lenders | 305 | 31.6 | 66.9 | Agriculture | 120 | 9.6 | 26.1 |
| Kudumbasree | 188 | 19.5 | 41.2 | Education | 156 | 12.4 | 33.9 |
| Co-operative society | 150 | 15.5 | 32.9 | Treatment | 168 | 13.4 | 36.5 |
| Local shopkeepers | 118 | 12.2 | 25.9 | Livestock | 80 | 6.4 | 17.4 |
| Relatives | 80 | 8.3 | 17.5 | Purchase of land | 50 | 4 | 10.9 |
| Friends/neighbors | 60 | 6.2 | 13.2 | Construction/maintenance of house | 190 | 15.1 | 41.3 |
| Others | 64 | 6.6 | 14 | Marriage | 160 | 12.7 | 34.8 |
| | | | | Day to day expenses | 182 | 14.5 | 39.6 |
| | | | | Others | 149 | 11.9 | 32.4 |
| **Total** | **965** | **100** | **211.6** | **Total** | **1255** | **100** | **272.8** |

Note: Percentages and totals are based on responses; Percent of cases will add up to more than hundred.

**Table 6 Chi-Square test (Education-bank account, Education-saving and Education-indebtedness)**

| | Education-Bank account [1] | | | Education-Savings [2] | | | Education-Indebtedness [3] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Value | df | Asymp. Sig. (2-sided) | Value | df | Asymp. Sig. (2-sided) | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 113.513[a] | 3 | .000 | 72.013[a] | 3 | .000 | 104.123[a] | 3 | .000 |
| Likelihood Ratio | 138.058 | 3 | .000 | 101.634 | 3 | .000 | 95.886 | 3 | .000 |
| Linear-by-Linear Association | 96.495 | 1 | .000 | 51.479 | 1 | .000 | 86.778 | 1 | .000 |

1. 0 cells (.0%) have expected count less than 5. The minimum expected count is 19.93.
2. 0 cells (.0%) have expected count less than 5. The minimum expected count is 15.20.
3. 0 cells (.0%) have expected count less than 5. The minimum expected count is 10.91.

 

**Table 7 Chi-square test (Zone-bank account, Zone-savings & Zone-indebtedness)**

| | Zone-Bank account [1] | | | Zone-Savings [2] | | | Zone-Indebtedness [3] | | |
|---|---|---|---|---|---|---|---|---|---|
| | Value | df | Asymp. Sig. (2-sided) | Value | Df | Asymp. Sig. (2-sided) | Value | df | Asymp. Sig. (2-sided) |
| Pearson Chi-Square | 5.975[a] | 2 | .050 | 1.121[a] | 2 | .571 | 8.921[a] | 2 | .012 |
| Likelihood Ratio | 5.994 | 2 | .050 | 1.117 | 2 | .572 | 8.790 | 2 | .012 |
| Linear-by-Linear Association | 3.951 | 1 | .047 | 1.023 | 1 | .312 | 3.858 | 1 | .050 |

Source: Worked out from Appendix 1, 2 and 3

1. 0 cells (.0%) have expected count less than 5. The minimum expected count is 97.23.
2. 0 cells (.0%) have expected count less than 5. The minimum expected count is 74.15.
3. 0 cells (.0%) have expected count less than 5. The minimum expected count is 53.23.

**Table 8 Future threats to the forest**

| | Does the forest face any future threats (%) | | |
|---|---|---|---|
| Zone | yes | No | Total |
| South zone | 138 | 92 | 230 |
| | (60.0) | (40.0) | (100.0) |
| Central zone | 130 | 90 | 220 |
| | (59.1) | (40.9) | (100.0) |
| North zone | 124 | 76 | 200 |
| | (62.0) | (38.0) | (100.0) |
| Total | 392 | 258 | 650 |
| | (60.3) | (39.7) | (100.0) |

**Table 9 Main Threat to the forest**

| | Main threat (in %) | | | | | Total |
|---|---|---|---|---|---|---|
| Zone | Felling trees | Fires | over use of tourism | Agriculture | Other | |
| South zone | 16.2 | 69.9 | 8.1 | 1.5 | 4.4 | 100.0 |
| Central zone | 17.1 | 67. | 9.3 | 1.6 | 4.7 | 100.0 |
| North zone | 14.6 | 64.2 | 9.8 | 4.9 | 6.5 | 100.0 |
| Total | 16.0 | 67.3 | 9.0 | 2.6 | 5.2 | 100.0 |

 

**Table 10 Obstacle to tourism development (in percent)**

| Obstacle type | South | | | North | | | Central | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | No | total | Yes | No | Total | Yes | No | Total | Yes | No | Total |
| Conflicting aspirations (goals) of local community and forest officials | 21.3 | 78.7 | 100 | 16.8 | 83.2 | 100 | 19 | 81 | 100 | 19.1 | 80.9 | 100 |
| Unstable earnings from tourism | 73 | 27 | 100 | 61.8 | 38.2 | 100 | 69 | 31 | 100 | 68 | 32 | 100 |
| Lack of proper awareness of community on tourism business | 46.5 | 53.5 | 100 | 40.5 | 59.5 | 100 | 44.5 | 55.5 | 100 | 43.8 | 56.2 | 100 |
| Lack of coordination between tourism authorities and forest authorities | 29.1 | 70.9 | 100 | 28.2 | 71.8 | 100 | 32 | 68 | 100 | 29.7 | 70.3 | 100 |
| Language barriers | 52.6 | 47.4 | 100 | 55.5 | 44.5 | 100 | 52 | 48 | 100 | 53.4 | 46.6 | 100 |
| Limited land for tourism use /expansion | 37.8 | 62.2 | 100 | 33.2 | 66.8 | 100 | 38.5 | 61.5 | 100 | 36.5 | 63.5 | 100 |
| Low participation of community in tourism | 41.7 | 58.3 | 100 | 43.2 | 56.8 | 100 | 39 | 61 | 100 | 41.4 | 58.6 | 100 |
| Political interference | 25.7 | 74.3 | 100 | 18.2 | 81.8 | 100 | 20 | 80 | 100 | 21.4 | 78.6 | 100 |
| Poor leadership at the community level | 35.7 | 64.3 | 100 | 39.1 | 60.9 | 100 | 36 | 84 | 120 | 36.9 | 63.1 | 100 |
| Lack of Government spending on development projects | 79.6 | 20.4 | 100 | 79.1 | 20.9 | 100 | 80 | 20 | 100 | 79.5 | 20.5 | 100 |

**Table 11 Ranking of benefits due to tourism development**

| **Type of benefit** | **Ranks in %** | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Transportation | 42.8 | 12.6 | 14.8 | 12.2 | 11.2 | 5.8 | 0.6 |
| Improve sanitation/waste disposal facilities | 10.8 | 21.1 | 21.8 | 25.8 | 15.4 | 5.1 | 0 |
| Improve basic amenities (including education, welfare, health..etc) | 18.3 | 38.2 | 15.1 | 11.8 | 10 | 5.2 | 1.4 |
| Develop more community activities for tourists | 20.8 | 14.9 | 18.2 | 23.1 | 13.7 | 8 | 1.4 |
| Initiate Training/ education for locals | 5.2 | 9.5 | 23.5 | 12.6 | 33.5 | 12.2 | 3.4 |
| Increase community involvement/ownership | 1.5 | 2.8 | 6.6 | 12.8 | 13.1 | 49.1 | 14.2 |
| Others | 2 | 0.9 | 2 | 2.8 | 14.6 | 77.7 | 0 |

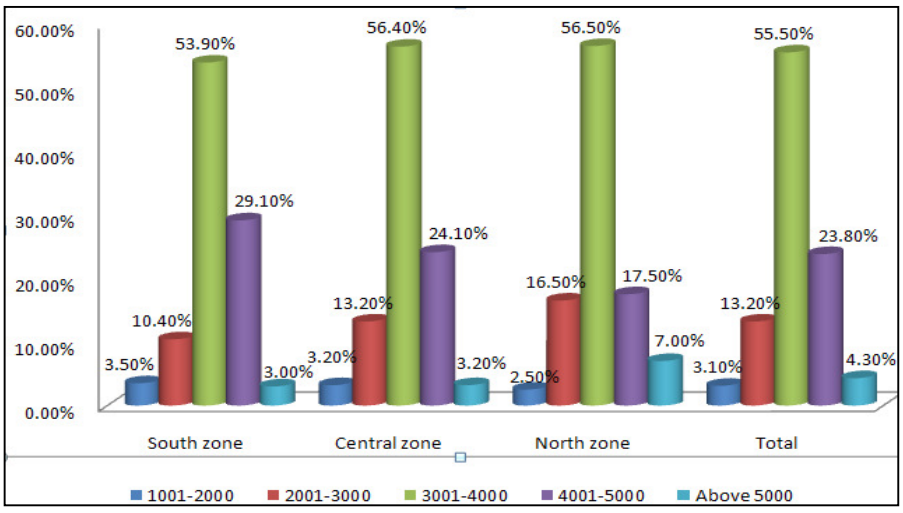


**Figure 1 Monthly income from tourism activities**

 

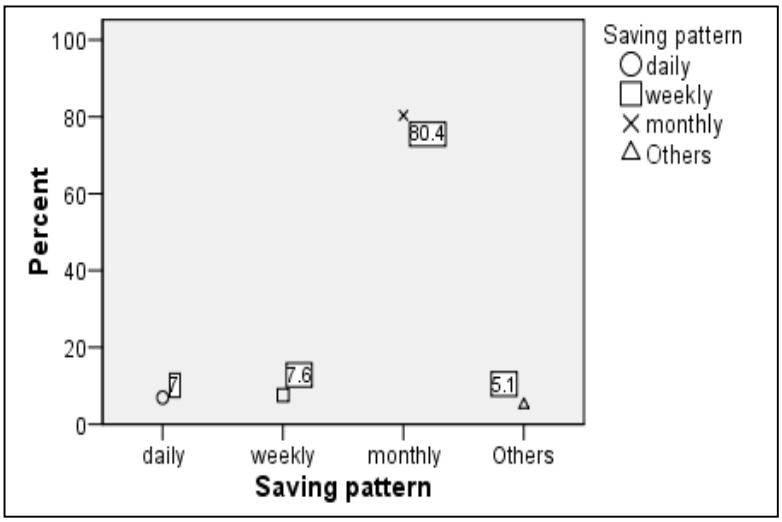


**Figure 2 Saving pattern**

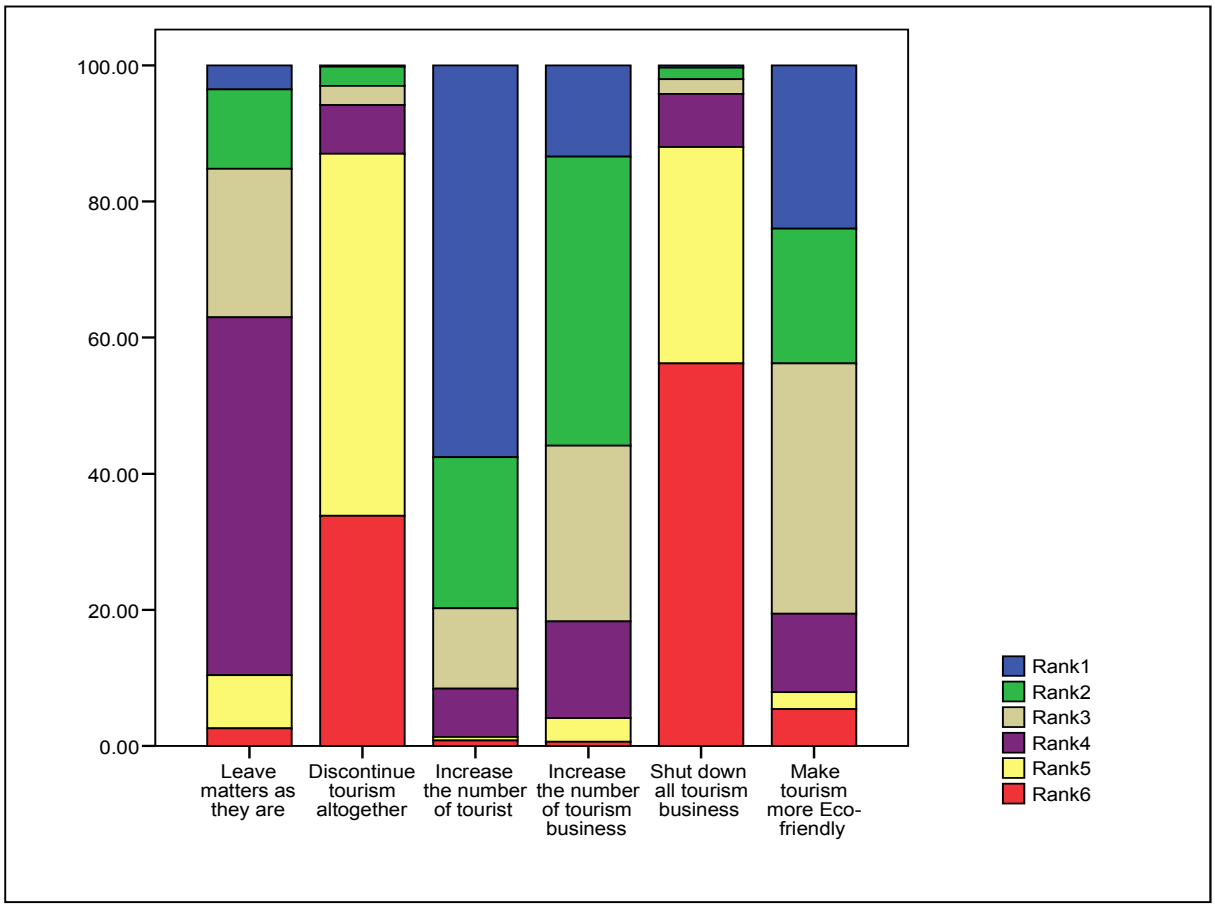


**Figure 3 Perception of the community in managing tourism in the area according to their preference**

 

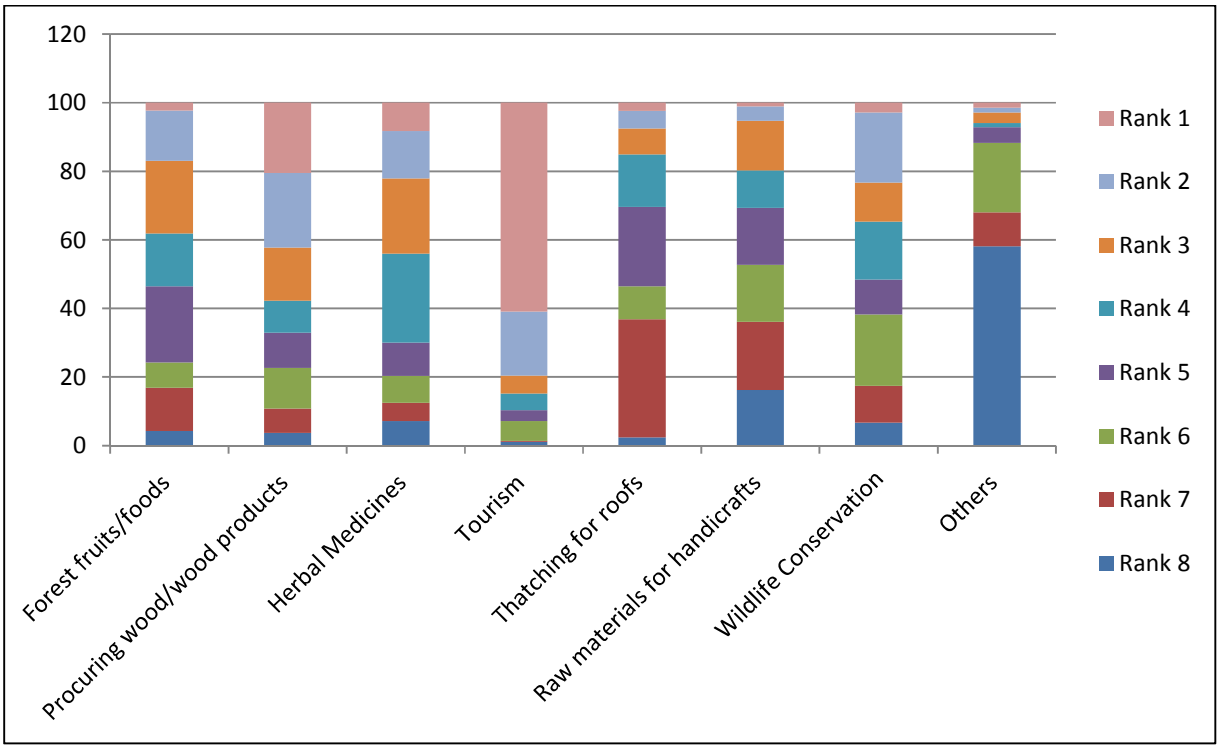


**Figure 4 Type of Benefits from forest according to the preference**

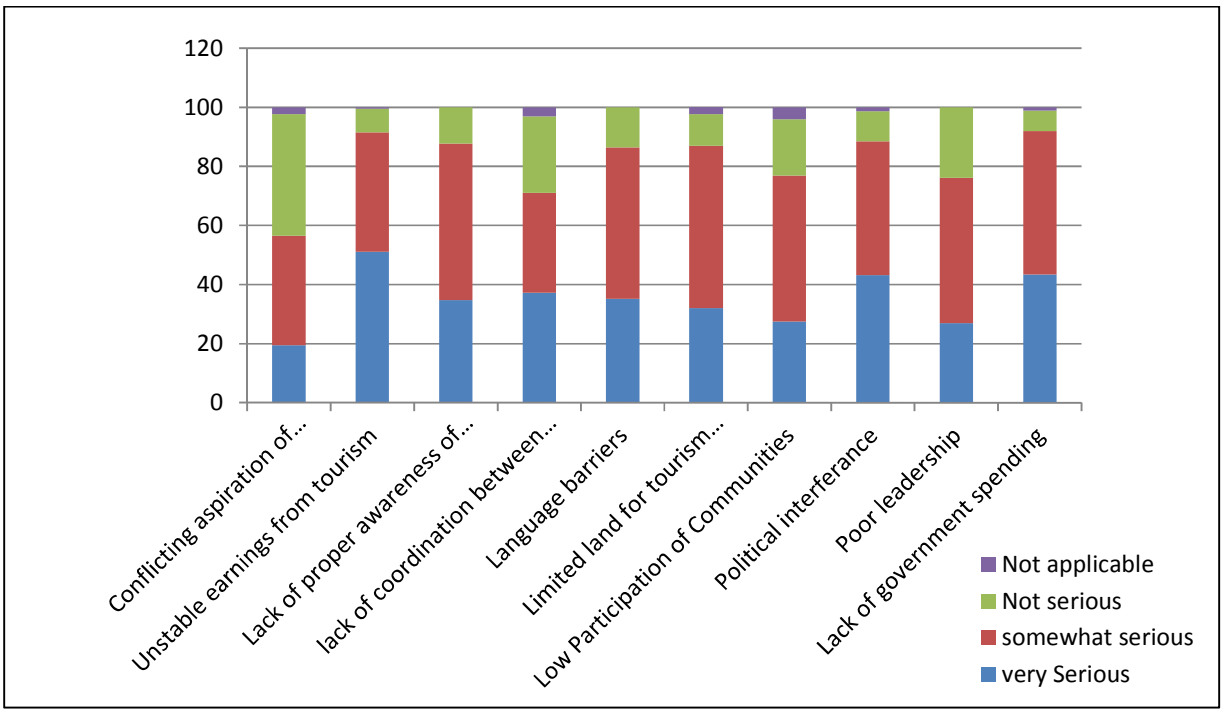


**Figure 5 Degree of impact of obstacles**

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