Economic valuation of ecotourism development of a recreational site in the natural forests of southern Western Ghats

V. Anitha
PK Muraleedharan

KFRI Research Report No.

Economic valuation of ecotourism development of a recreational site in the natural forests of southern Western Ghats

(Final Report of the Project KFRI/387/03, April 2003-March 2006)

Investigators
V. Anitha
PK Muraleedharan

Research Fellow
KV Santheep

Kerala Forest Research Institute, Peechi – 680 653, Kerala

2006

Abstract of the Project Proposal

1. Project Number   KFRI/387/03
2. Title   Economic valuation of ecotourism development of a recreational site in the natural forests of southern Western Ghats
3. Objectives   1. Examine policies and strategies on eco-tourism with special reference to the development of recreational sites located in natural forests.
   2. Estimate the economic value of eco-tourism in Athirappily forests in Kerala
   3. Study the scope for and limitations of involvement of private sector in developing ecotourism in Athirappily recreational area
   4. To understand the perceptions of different stakeholders on utilization of the Athirappily recreational area.
   5. To analyse the effect of ecotourism development on the socio economic conditions of the local communities
   To suggest suitable strategies and action plans for eco-tourism development in Athirappily recreational area.
4. Practical utility   The results of the study would be useful for the policy makers to develop suitable strategies and action plan for ecotourism and to prepare a perspective plan for the region. They can suggest ways of budget support or private sector participation to modernize and regulate ecotourism in the state with peoples' participation.
5. Date of commencement   April 2003
6. Scheduled date of completion   March 2006
7. Funding agency   Western Ghats Development Programme
   Planning and Economic Affairs
   Government of Kerala
8. Investigators   V. Anitha and PK Muraleedharan
9. Research Fellow   KV Santheep
10 Study area   Athirappily-Vazhachal recreation sites in Charpa Range of Vazhachal Forest Division

C O N T E N T S

ACKNOWLEDGEMENTS

ABSTRACT

Ecotourism is a direct consumptive benefit, which is highly under priced. This tourism sector has certain crucial environmental implications because it depends upon natural endowments for its existence. As deforestation accelerates, there has been a surge of interest in high profile uses such as plantation forestry and tourism. With increasing urbanization and media focus on wildlife and natural ecosystems, ecotourism could be a viable alternative for sustainable management of the forests.

The study attempts to estimate the economic potential of ecotourism in Athirappily-Vazhachal, southern Western Ghats and suggest suitable strategies and action plan. The Central Government with the introduction of ecotourism policy and guidelines as part of new tourism policy (2002) paid special attention on traditional picnic spots of natural forests. Ecotourism is one of the key sectors for India in the service sector negotiations under General Agreement on Trade in Services (GATS) in the WTO. The Government of Kerala is committed to develop strategies for utilizing ecotourism potential in the State. The proposed study gains further importance in the wake of the recent development of a public hearing becoming the peoples' verdict against the proposed Athirappily Hydro Electric project. As is the case in many developed countries, there is a need to justify resource commitments, which are perceived to have a high opportunity cost.

Tourism at Athirappily and Vazhachal is nature based, with high potential features for tourism development in the natural ecosystem. Athirappily-Vazhachal has a very high concentration of tourists. The visitor flow on an average is 2.3 lakh and 5.3 lakh visitors/ year at Vazhachal and Athirappily respectively. The revenue generating

potential of the sites indicates a positive relationship between the revenue, number of visitors and number of vehicles. The total Affected Forest Area (AFA) is approximately 1.33 sq km. Total estimated value of the AFA is equal to Rs 509.124 lakhs. The projected lifespan of Athirappily-Vazhachal is 38 years from 2005 given the present scenario with all things remaining constant, although, there is immense potential for service sector development and private sector involvement. With an average visitor flow of 5,30,000 per year, the rational fee price arrived at is Rs. 12 /-.

The support of the local communities is indispensable for the successful development of tourism in Athirappily-Vazhachal. The resident perception in this regard based on social and environmental priorities among different choices indicates tourism (93 %) and conservation of biodiversity (72.86 %) as occupying the largest support.

The positive impacts of tourism in Athirappily-Vazhachal measured through employment and income multipliers highlighted that labour intensive investment in tourism will ensure employment security. The study results highlighted that a 1 per cent change in the visitor flow will lead to 4.7 per cent change in the level of employment. The income multiplier reveals that one unit increase in income by the recreation sector will result 2.27 unit increases in the aggregate income of the economy in the area. The economic linkages in the economy indicate higher linkages between the business and recreation sector and lower linkages between agriculture and recreation sector in the study area. The tourism sustainability assessment highlights that Athirappily-Vazhchal is fast emerging as a potentially sustainable region for ecotourism development and viable alternative to the conservation of forest and enhancing the standard of living of the dependent communities.

The strategies for sustainable tourism in Athirappily-Vazhachal recreation sites focuses on the Pro-Poor Tourism strategy as laid down in World summit on sustainable tourism (2002) giving due weightage the to economic benefits, non-economic benefits and policy reform in the area with special reference to the poor. The study further recommends a site-specific programme "*One Tourist One Rupee Ten trees Program"* towards action plan for ensuring environmental and economic security in the ecotourism based economy.

Appendix 1.1.Tribal population in the panchayat

Appendix.3.1. Socio – Economic Profile of Visitors

Socio – Economic Profile of Visitors		
Item	Number	Per cent
Sex composition of respondents		
Male	455	57
Female	343	43
Religion wise classification		
Hindu	440	55
Christian	254	32
Muslim	104	13
Education		
High School	136	17
Higher Secondary	75	9.4
Degree	498	62.4
Post Graduate and above	89	11.2
Age wise classification		
Less than 15	0	0
15 - 60	778	97.5
60 and above	20	2.5
Average house hold income	29703	---
Average family size	5	
Schooling in years	15.8	
Average Age	34.5	
Average size of visitor group	15	
Total sample size	798	100

Appendix 3.2. Region wise classification of tourists

Region wise classification of Tourists (National)					
State	Total Number	Adult Male	Adult Female	Child Male	Child Female
Anthra Pradesh	123	64	57	1	1
Delhi	19	17	2	0	0
Gujaradh	8	4	3	0	1
Karnataka	236	153	45	26	2
Kerala	10253	3750	2833	1967	1703
Maharashta	20	20	0	0	0
Manipur	20	20	0	0	0
Pondichery	20	13	7	0	0
Rajasthan	11	7	4	0	0
Tamilnadu	1152	616	357	62	117
Uttar Pradesh	11	11	0	0	0
West Bengal	4	2	1	0	1
Total	11867	4677	3309	2056	1825
International Tourists					
Country	Total Number	Adult Male	Adult Female	Child Male	Child Female
Germany	1	0	1	0	0
Holland	3	1	2	0	0
UK	27	8	9	8	2
USA	11	4	7	0	0
Canada	5	3	2	0	0
Italy	6	2	2	1	1
Total	53	18	23	9	3
Grand Total	11920	4695	3332	2065	1828

Appendix 3.3. Estimating Recreation Surplus by TCM

Recreation Surplus per tourist (Individual Travel Cost Method)					
Region	Recreation demand curve $V = f(TC)$	R^2	Mean Visitors $\dfrac{\sum(V)}{n}$	Mean Travel cost $\dfrac{\sum(TC)}{n}$	Consumer's Surplus per Tourist
Kerala	V = 1363-1.63 *TC*	0.22			196
Allapuzha	V = 1363-1.63 *TC*	0.22	814	572	11.6
Ernakulam	V = 1363-1.63 *TC*	0.22	1648	306	12
Idduki	V = 1363-1.63 *TC*	0.22	92	299	505
Kannur	V = 1363-1.63 *TC*	0.22	960	650	0
Kasaragod	V = 1363-1.63 *TC*	0.22	119	478	317
Kollam	V = 1363-1.63 *TC*	0.22	154	548	237
Kottayam	V = 1363-1.63 *TC*	0.22	1136	262	223
Kozhikode	V = 1363-1.63 *TC*	0.22	394	449	262
Malapuram	V = 1363-1.63 *TC*	0.22	426	200	501
Palakkad	V = 1363-1.63 *TC*	0.22	603	301	163
Pathanamthitta	V = 1363-1.63 *TC*	0.22	105	341	458
Trivandrum	V = 1363-1.63 *TC*	0.22	260	733	20
Thrissur	V = 1363-1.63 *TC*	0.22	2415	116	0
Wayanad	V = 1363-1.63 *TC*	0.22	153	748	37
Tamil Nadu	V =1837- 0.92 TC	0.41	42	1856	123.44
Karnataka	V = 873 - 0.57 TC	0.4	18	1396	116
Andhra Pradesh	V =2146 - 0.99 TC	0.39	17	2050	108.88
Other State	V =2771 – 1.85 TC	0.33	8	5016	103
V = Number of Visitors, n = Number of Observation, TC = Travel Cost					

Appendix 3.4. Estimating Total Recreation Value by CVM

Appendix 3.5. Estimating Recreation Surplus by CAM

Appendix 3.6. Socio-Economic profile of local community

Socio-Economic profile of local community		
Education wise distribution of the sample		
Level of Education	Number	In Per cent
Child	16	2.6
No formal school Education	26	4.25
< Upper Primary	241	39.4
High School	219	35.8
Higher Secondary	59	9.6
Diploma	14	2.3
Nursing	5	0.82
Degree	30	4.9
Post Graduate	2	0.33
Total	612	100
% of sample having school education = 95.75		
Occupational Structure of the sample		
Occupation	Number	Per cent
Agriculture	49	10.8
Business	7	1.52
Coolie	154	34
Govt. Service	9	2
Gulf	4	0.88
House wife	112	24.72
Self Employed	18	4
Service	26	5.74
Students	53	11.7
Unemployed	21	4.64
Total	453	100
Unskilled Coolie work dominate the occupational structure		
Age wise distribution of sample		
Age Group	Number	In Per cent
<15	122	20
15-60	453	74
>60	37	6
Total	612	100
Sex wise distribution of sample		
Sex	Number	Per cent
Male	316	51.6
Female	296	48.4
Sex Ratio is equal to 937 female per 1000 male.		
Total Sample Size = 152		
Average family size = 4		

_____

References

Brandon, K. 1996. Ecotourism and conservation - A review of key issues. World Bank Envronment Department. Paper No. 033, Washington D.C, World Bank.

Bramwell, B., and Lane, B (1993). Sustainable tourism: An evolving global approach. Journal of sustainable /tourism, 1(1), 6-16.

Butler, J.R. 1991. Ecotourism: Its changing face and evolving Philosophy. Department of Forest Science, University of Alberta, Edmonton

(Butler, R. James, Glen T. Hvenegaard and Doug K. Krystopfiak. (1994) Economic Values of bird watching at Point Pelee National Park, Canada. In Mohan Munasinghe and Jeffrey McNeely (Eds), Protected Area Economics and Policy – Linking Conservation and sustainable Development (P 234) the World Bank, Washington D.C.

Christine Lim and Michael McAleer, 2001. Forecasting Tourist Arrivals, Annals of Tourism Research, Vol.28, No. 4, pp 965-977.

Diley Roe and Penny Urquhart, 2001. Pro-Poor Tourism: Harnessing the World's largest Industry for the World's Poor, World Summit on sustainable Development, International Institute for Environment and Development (IIED) and Regional and International Networking Group (RING) .

Fern, L. Filion, James P.Foley, and Andre J.Jacquemot. 1994. The Economics of Global Ecotourism, In Mohan Munasinghe and Jeffrey McNeely (Eds), Protected Area Economics and Policy –Linking Conservation and sustainable Development (P 234) the World Bank, Washington D.C.

_____

_____

Green, H. (1995). Planning for sustainable tourism development. In C. Hunter, & H.

Green (Eds.), Tourism and the Environment (pp. 93-121). London: Routledge.

Gupta. S.C and V.K.Kapoor. 2001, Fundamentals of Applied Statistics, pp. 2.11

Hunter, C. (1995). On the need to re-conceptualise sustainable tourism development.

Journal of suatianble Tourism, 3(3), 155-165.

ITAR, Indian Tourism Annual Report, Government of India , New Delhi, 2001-2002.

India Tourism, Annual Report, Government of India, New Delhi, 1986-2001.

Indian Tourism, annual Report, Government of India, New Delhi, 2001-2002.

Kerala Tourism Policy Statement, Govt of Kerala, Thiruvananthapuram, 2002

Kerala Tourism Policy Statement, Govt of Kerala, Thiruvananthapuram, 2002.

Ko. T.G.(2001). Assessing progress of tourism sustainability. Annals of tourism research,

28(3), 817-820

Ko.T.G, (2005) Development of a tourism sustainability assessment procedure: a

conceptual approach, Tourism management, pp 431– 445.

Myers N. (1996) Tropical deforestation and a mega extinction spasm. *In* Soule M (ed) :

Conservation Biology - the science of scarcity & diversity, Sinauer Associates

Massachusetts.

Pearce, D.W and Moran, D (1994), The Economic Value of Bio-diversity, Earthscan,

London and Island Press, Washington D.C: in association with the International

Union for the Conservation of Nature (IUCN).

Pearce, D.W. (1998). *Global Environmental Value and the tropical forests:*

demonstration and capture (Chapter 11, p 173-209) in Ecological Economics and

_____

_____

Environment: Essays on Ecological Economics and Sustainable Development, Edward Elgar, U.K.

Repetto, R and Gillis, M (1988), Public policies and the Misuse of Forest Resources, Cambridge University Press, Cambridge.

Sunny George, 1998. Preliminary assessment of the impact of man-made modifications on Chalakudy river system. Research Report, Kerala Research Programme on Local Level development (KRPLLD), Center for Development Studies, Thiruvananthapuram.

Tourist statistics, Ministry of Tourism, Government of India, New Delhi ,2001.

Tourist statistics, Department of Tourism, Government of India, New Delhi, 2001.

Tourist Statistics, Govt of Kerala, Thiruvananthapuram, 2004 - 06.

Wells, P. Michael (1994). Parks Tourism in Nepal: Rconciling the social and economic opportunities with the ecological and cultural threats. In Mohan Munasinghe and Jeffrey McNeely (Eds), Protected Area Economics and Policy –Linking Conservation and sustainable Development (P 234) the World Bank, Washington D.C.

_____

1. INTRODUCTION

Human interactions have eroded and modified extensive forest tracks during the last century. Deforestation is partly due to the scientific ignorance of the contribution of forests to ones welfare, both actually and potentially, partly to ones meager economic understanding of what is at stake and partly to ones lack of institutional capacity to manage forests for everyone's benefit, now and forever (Myers, 1996). Many researchers have sought to provide an economic rationale for the preservation of forest ecosystem, reasoning that the failure to internalize the values of the ecosystem in decision making leads to no economic incentives to protect and conserve biological resources.

As is well known, forests provide a wide range of economic, environmental, social and cultural benefits at the local, national and global levels. In other words, a natural resource has a total economic value (TEV), which is sum of direct and indirect use values, option value and existence value (Pearce and Moran, 1994). Now a natural question that arises is, given these economic values of forest, why is it being eroded? This question is relevant particularly when the degradation of forest leads to global environmental issues such as climate change and loss of biodiversity. Many of the functions of tropical forests are not marketed and are ignored in decision making. This is due to their unpriced nature, local market failure, intervention or government failure and global market failure (Pearce, 1998; Repetto and Gillis, 1988).

The ecotourism phenomenon is promising for developing countries that are rich in biodiversity but which may not always have the means of preserving it from alternative forms of eco development that are not sustainable. The term ecotourism was originally

_____

coined in 1987 by Hector Ceballos- Lascurain of Mexico and because of its appeal, and

has gained wide usage since its introduction. Hector originally defined "ecotourism" as

"traveling to relatively undisturbed or uncontaminated natural areas with the specific

objective of studying, admiring, and enjoying the scenery and its wild plants and animals,

as well as any existing cultural manifestations" (Butler, 1991). Related terms in literature

include terms as "*nature-oriented tourists*", "*green tourists*", "*alternate tourists*",

"*adventure tourists*", "*rural tourists*", and even "*anti-tourists*". However, the most

popular of all is "ecotourism" and "eco-tourists". Some recent definitions of ecotourism,

have expanded the concept to include the actual environmental and socio-cultural

consequences of the activity. For example, the ecotourism society (1991) defines the term

as "responsible travel that conserves natural environments and sustains the well being of

local people". The World Tourism Organization (WTO) defines ecotourism as "travel to

enjoy and appreciate nature". This concept has a wider connotation i.e., developed into a

scientific approach to plan, manage and develop sustainable tourism products and

activities.

Tourism is clearly a highly significant economic use of natural resource. Many

examples are cited in literature. Filion, Foley, and Jacquemot (1994) estimated that in

1988, some 235 million people participated in international tourism to enjoy and

appreciate nature, generating economic benefits (or contributions so the NI of the

countries involved) amounting to as much as $ 233 billion. Visitations in Point Pelee

National Park in Canada, a prime location for observing the spring migration of passerine

birds, brings in at least $ 6 million / year in net economic value (Butler, Hvenegaard and

Krystopfiak, 1994). Tourist expenditures in Nepal are directly attributable to the

existence of the Protected Areas. It is estimated to have been about $ 9 million in 1998, while the annual PA management budget was only about $3 million (Wells, 1994). Income from tourism could contribute significantly to the better management of the site and outweigh the negative impact of tourism which can be significantly reduced by ecologically and sustainable practices (Fern et al, 1994).

Many academicians, government, Non-Governmental Organizations (NGOs) and international organization have been attempting to put sustainable development into practice. Since the beginning of the 1990s, a number of arguments and debates concerning sustainable tourism development (STD) have been presented, mostly at a theoretical rather than practical level (Bramwell & Lane,1993; Green.1995; Hunter, 1995, Ko, 2001). All these highlighted the failure of the approach to recognize the link between poverty, environment and development. The second Earth Summit at Johannesburg (2002) on Sustainable Development of ecotourism emphasizes on the potential for tourism to deliver Pro-Poor growth in the least developed and developing countries by offering benefits to the rural areas by reducing the disparities. In other words, the essence is Pro-Poor Tourism (PPT) is to focus on Sustainable Tourism – Eliminating Poverty (STEP).

The proposed study focuses on the ecotourism benefits of natural forests, especially those from traditional picnic spots. Ecotourism is emerging as a viable alternative to solve the dual problem of forest conservation and livelihood improvement of dependent communities simultaneously. Ecotourism management should give utmost importance to the adverse impact of the increasing pressure of the tourist on the biodiversity and its income generating and income dispersing capacity into the local

economy. Increasing income addition into the local economy help the rural people to shift their income dependence from the forest to other employment opportunities opening up in the local economy. Various studies pointed out that increasing income reduce the forest dependence. Thus, the study broadly covers two aspects, one is the valuation of the natural tourism and the other is identifying the income generating capacity of the nature tourism.

The study attempts to estimate the economic value of ecotourism and suggest suitable strategies and action plans. Although several attempts have been made, most of the valuation studies are in the context of developed countries where situations and the stakeholders are very different from that of a developing country. The study conducted at Athirappily Vazhachal recreation sites, has immense ecotourism potential, considering the number of visitors who visit this area in different seasons and the income generated by way of entry fee. Keeping ecotourism in view, the study attempts to develop a site-specific conceptual model for sustainable natural resource management.

1.1. Objectives

1. Examine policies on ecotourism with special reference to the development of recreational sites located in natural forests.

2. Estimate the economic value of ecotourism in Athirappily forests in Kerala

3. Study the scope for and limitations of involvement of private sector in developing ecotourism in Athirappily recreational area

4. To understand the perceptions of different stakeholders on utilization of the Athirappily recreational area.

5. To analyse the effect of ecotourism development on the socioeconomic conditions of the local communities

6. To suggest suitable strategies and action plans for ecotourism development in Athirappilly recreational area.

1.2 General description of the study area

The Western Ghat Region of Kerala covers nearly 21856 sqkm (42.7 %) of the entire Western Ghats region. The study conducted in the Athirappily – Vazhachal forests areas falls within the Vazhachal Forest Division of the State. Vazhachal Forest Division located in the Mukundapuram taluk of Thrissur revenue district has five territorial ranges viz., Athirappily, Charpa Vazhachal, Kollathirumadu and Sholayar. The Division is located between 10° 5.5' and 10^o23' of north latitude and 76° 9' and 76° 52.5' east longitude. Temperature varies from 20 to 30 degree Celsius with an annual rainfall of 3441mm. The total area of the Vazhachal Forest Division is 413.93 sq km. The study area (Athirappily and Vazhachal recreational sites) is located within the Charpa range (Map 1) of Vazhachal Forest Division. Athirappily is the entrance to Vazhachal Forest Division that was formed in 1981. With an average rainfall of above 2750 mm the area is synonymous with environmental soundness assuring high biodiversity. This Division has evergreen, semi-evergreen and moist deciduous forests (Plate 1), with vast variety of flora and fauna. The forests here are home to the Elephants, the Tiger, the Great Indian Hornbill, the Lion Tailed Macaque, the Nilgiri Langur, the Malabar Giant Squirrel, the Cochin Forest Cane Turtle among others.

Map 1.1. Study area

The vegetation of the area covers tropical moist deciduous forest type with reed brakes along the river and stream courses. There are also teak and medicinal plantations. The Charpa range with a total area of 5997.450 sqkms is head quartered at Vazhachal.   The ecological importance of the area is due to the emergence of Chalakudy river out of the forests of Vazhachal Forest Division at Athirappilly, after traversing 65 km through

natural forests from its source of origin at Sheikalmudi, the upper reaches of the Western Ghats without passing through any habitation area or other polluting segments. With varied forest types ranging from tropical forest types to moist deciduous type this tract is also an abundant store of bamboo and rattan.

1.3. A backdrop of the study area

Historical significance highlights the process of land use changes that took place over a period of time resulting in large scale clear felling and destruction dating to the 1800s along the Chalakudy river basin. Earliest large scale destruction was in 1830s when forests were clear felled by the British to try coffee. At present too the area contains large area under cash crops plantation. 1894 saw the construction of the Cochin tramway and 1914 during the War period saw heavy demand for timber further led to indiscriminate felling of trees. In 1942 the road from Chalaludy to Poringalkuthu was constructed for the convenience of the Poringalkuthu Hydro Electric Project work. The road upto

_____

Malakkapara was completed by 1950. The Poringalkuthu HEP was completed by 1957

and in 1958 group of three dams were constructed across the river as per the

Parambikulam-Aliyar Project signed between Kerala and Tamil Nadu. In 1966 came the

Sholayar HEP in Ambalapara in Mukundapuram taluk of Thrissur district.

        Athirappily is one of the rural panchayaths in Kerala with 10 wards and a total

population of 9797. The tribes constitute 13.3 per cent of the total population

(Appendix 1.1), with a sex ratio of 1083. Kadar tribes constituting 52.5 per cent of the

total tribal population, followed by Malaya with 20 per cent and Muthuva with 19.8 per

cent. The Mannar and Ulladar constitute 6.14 and 1.54 of the total tribal population

respectively. The Kadar community, a primitive group found only in the Chalakudy river

depend exclusively on the non-timber forest product collection for their livelihood. They

are thus not trained or well equipped for any other alternate employment. Malayars are

basically agriculturists. Only the Kadars and Malayars come within the study area. The

local community is basically engaged in the primary sector. There is a gradual process of

acculturisation as far as the tribal communities are concerned in the area and are facing a

lot of difficulties as result of various developmental activities (Sunny, 1998).

1.4. Tourism development in Athirappily-Vazhachal and present management:

The Vazhachal Forest Division is a forest tract well known for its natural sceneries.

Besides the waterfalls there are two hydel projects namely Sholayar and Poringalkuthu on

the upstream side of Athirappily falls. Athirappily and Vazhachal water falls are the two

_____

Kerala Forest Research Institute

major recreational sites in the Chalakudy River. The magnificent Athirappily waterfall in a forest background attracts thousands of nature admirers and tourists. The area is having immense ecotourism potential considering the number of visitors who come to this area in different seasons.

The tourist flow to these sites started since 1980 but after 1990s the tourist flow has increased at an alarming rate, which is a potential threat to the conservation of biodiversity. The continuous presence of tourists and their vehicle pose great threat to the wild life and to the serenity of the forest area. Due to this increasing number of tourists visiting the waterfall and nearby area, the Kerala Forest Department developed a picnic spot at Vazhachal during 1990's. Some trek paths and nature trails were developed in the natural forest to give the visitors a feeling of being amidst nature. A nominal fee was established since 21-12-1993 onwards (Rs 2/- for adults and Re. 1/- for children) at Vazhachal and at Athirappily no entry fee was collected during that period.

The forests in and around the above mentioned tourist spots are highly fragmented. Therefore, unplanned tourism will only aggregate the process of degradation. Moreover unplanned tourism germinates special socioeconomic problems not encountered in any kind of economic activity With little care for the environment, the tourist extract maximum for meeting their recreational needs/satisfaction. Many unauthorised shops mushrooming on government lands are creating new sets of issues often creating socioeconomic frictions. Large number of entry paths as a result of very frequent penetration of hundreds of tourists into the nearby reserve forest areas

_____

accelerates degradation and soon will make this an open-access area. There existed no specific tourism management strategy until 2000 to manage this tourist influx.

As part of the present management of Tourism zone, Participatory Forest Management was implemented in 2001 with the objective of conserving and protecting the existing forests from various types of biotic interferences, creating awareness among the people about the needs to conserve the forests and involving the tribes in the management of forests aiming at enhancing their standard of living. With this end an area of 788 Ha. has been covered by the Vana Samrakshana Samithi (VSS) registered as Tribal VSS No. 331-1/2001 with the Conservator of Forests , Central Circle Thrissur, under the provisions of G.O(RT) No. 40/2001/Forests dt. 2-2-2001. Financial resources are generated through the levy of service charges @ Rs.3/- per adult, Re.1/- per Child (between 12-15 years of age) and parking fee for maintenance of parking place and protection of the vehicle, @ Rs.5/-, Rs.3/- and Rs.2/- for heavy, light and medium and two & three wheelers respectively for Vazhachal Picnic Spot with effect from 15-02-2001. This entry fee has been revised to Rs. 15 /-- vide letter No.PFM GL-4/2003 dated 22.12.2004in reference to GO (MS) No. 18/02/F&WLD,dated 02.04.02 and the ticket to both the sites are taken together at Athirappily itself. Of this Rs. 4/- is taken as government revenue and the remaining as the service tax for tourism related activities. The Kerala Forest Department provides a range of opportunities for recreation pursuits that complement those available on other public lands, such as arranging adventurous trekking on the prescribed routes with the help of trained tribal guides, camping, walking

and sightseeing. The resources so generated is being utilized for developing minimum

basic infrastructure facilities for tourists, maintaining environmental hygiene (Plate 2),

drinking water, garbage disposal, toilets, maintenance of existing trek paths, maintenance

and cleanliness of the walking path to the falls (Plate 3), engaging trained tribal men for

safety of the tourists (Plate 4), creating awareness among public through classes,

distribution of pamphlets etc.

Under the current management system, the VSS members continue to augment their

income by providing services to the tourists while the overall management and

coordination rests with the Kerala Forest Department. Certain new rules and regulations

are created and imposed after achieving a general consensus between the local people and

_____

the government agencies. The authorities undertook a number of measures to encourage

local communities to participate in the decision making process of conservation and

management of the area along with saving their interests. In spite of the efforts of the

government authorities the indigenous communities are not actively participating in the

tourism oriented activities due to certain inherent socioeconomic and cultural

impediments, many problems continued to be unresolved, and the major one being the

continued influx of tourists.

It is in this background that the study attempted to ascertain the economic value of

ecotourism potential and look into the various aspects pertaining to tourism development

in Athirappily-Vazhachal within the natural ecosystem.

2.   MATERIALS AND METHODS

2.1. Economic Value of Ecotourism

The valuation of the ecotourism potential of the Athirappily-Vazhachal recreation sites has been undertaken using the standard methods adopted in the valuation of direct non-market use value of natural resources.

Sample selection: Stratified random sampling method is adopted for the collection of the data. The population of the visitors' survey is equal to the average visitor flow in the last ten years and it consists of the first stratum. In the second stratum we take 0.1 per cent of the average visitor flow in each month as the respective sample with the unit of study being the visitor.

Data collection: Data is collected from respective sample size from both Athirappily and Vazhachal recreation site separately. Questionnaire method is adopted for the collection of primary data of the sample and the questionnaire contain questions related to economic and social variables of the visitors, and those pertaining to travel cost and contingent valuation method, Contingent Activity method, social and environmental priorities related to tourism.

Tools and Technique

Difference between Recreation Value (RV) and Recreation Surplus (RS): In order to understand the recreation potential of Athirappily and Vazhachal recreation sites, we estimate the RV and RS by adopting the Travel Cost Method (TCM), Contingent Valuation Method (TCM) and Contingent Activity Method (CAM). Figure 2.1 depicts the difference between recreation value and recreation surplus. Here, y-axis represents

14

the travel cost or the amount the tourist is willing to pay for the conservation of the recreation area. The x-axis represents the number of visitors. In the figure, curve 'cf' represents the recreation demand curve, 'Δ cbd' represents the recreation surplus and the area 'aedc' the total recreation value. The area 'aedb' represents the total travel and other cost around the trip.

2.1.1. Travel Cost Method of Valuation

Individual travel cost method is adopted for estimating the recreation surplus of the tourists. The travel cost paid by the tourists is considered as the price paid for having the benefit of the recreation site. Data pertaining to the travel cost and other expenditures such as food and accommodation is collected from the tourists. The visitor flow is considered as a function of the travel cost. The recreation demand curve, showing the inverse relationship between number of visitors and travel cost is derived by the *Ordinary Least Square* (OLS) method. The recreation surplus of the sample is estimated by using *integration* method. In the mathematical representation of the methodology (Box 2.1) *V, f* and *TC* represents number of visitors, functional relation and travel cost respectively while α_1 and α_2 represent intercept term and slope coefficients. In the methodology for estimating the recreation surplus *AV* and *ATC* represents total number of visitors in the respective groups and their corresponding average travel cost respectively.

2.1.2. Contingent Valuation Method

15

The contingent valuation method (CVM) is used to estimate the economic value of non-market goods and services in monetary term. CVM is a direct approach, it asks people what they are willing to pay (WTP) for a benefit, or what they are willing to accept (WTA) by way of compensation to tolerate a cost or both. The three major biases of CVM are the strategic bias, information bias and instrument bias. The strategic bias occurs when the respondents of CVM deliberately understate or overstate the monetary value of the non-market commodities in order to manipulate policy decisions in their favour. Information bias occurs when the questionnaire fails to provide adequate information disclosure to the respondents about the hypothetical market. Finally, the instrument bias is associated with the method of payment described in the CVM schedule. There are four common methods for applying CVM, viz., 1) Contingent referendum method, 2) Payment card method, 3) Open ended question method and 4) Bidding game method. Here in this case, the Bidding game method of CVM is adopted for estimating the recreation value of Athirappily-Vazhachal.

This consist of two steps, first the respondents are asked whether they are willing to pay for a given non-market commodity benefit after providing proper information about the commodity. If the answer is no, the process ends there with the particular respondent. If the answer is yes, the second step is to determine the maximum amount he is willing to pay. The maximum willingness to pay will be determined by the bidding process. The recreation demand curve, representing the relationship between amount that the people are willing to pay for having the benefit and number of tourist is represented as $Y = f(V)$ Where Y, f and V represent the willingness to pay, functional relationship and number of tourists respectively. The respective functional relationship

16

is estimated by using the OLS method ($Y = \beta_1 + \beta_2 V$) where β_1 and β_2 represents the intercept and slope coefficients respectively. The total recreation value (TRV), equivalent to aggregate willingness to pay of the sample is estimated by using the integration method (Box 2.2) in which AV represent total number of sample visitors.

2.1.3. Contingent Activity Method

Here, a hypothetical activity, i.e., willingness to travel additional distance (WTT) is used to indirectly measure the recreation surplus. WTT will be expressed in monetary terms by taking the product of additional distance a tourist is willing to travel and his travel cost per kilometer. Functionally $V = f(D)$, where V, f and D represent f number of visitors, functional relationship and the additional distance the tourists are willing to travel respectively. The linear observation of the functional relationship is in the form, $V = \beta_1 - \beta_2 D$ where β_1 and β_2 are intercept and slope coefficient respectively. The recreation surplus, which is equivalent to gain in net utility and represented by the willingness to travel additional distance by the tourists is estimated by the integration method (Box 2.3), in which RS,V,P and k represent recreation surplus, number of visitors willing to travel additional distance, average travel cost per kilometers and total number of visitors willing to travel additional distance respectively.

2.2. Forecasting the lifespan of the recreation site

17

Forecasting the lifespan and estimating the expected number of visitors to a recreational

site is important for estimating the recreational value of a tourist spot. It is very helpful

for the cost-benefit analysis of the visitors flow to the site, i.e., the expected benefit is

dependent on the expected visitor flow. The cost is in terms of affected forest region,

fixed cost and variable cost, thus, forecasting the lifespan provides a basis for

calculating the profitability at the recreational site. For forecasting the lifespan we use

the ordinary least-square method,

Principles of least squares consists in minimizing the sum of squares of the deviation

between the given values of Yt and their estimates given by equation (1), in other

words we have to find a and b such that for given values of Yt, corresponding to n

different values of t, $Z = \sum_{t=1}^{n} (Y_t - a - bt)^2$ is minimum. For a minimum of Z, variations

in a and b we should have $\partial Z / \partial a = 0 = -2\sum (Y_t - a - bt)$,

$\partial Z / \partial b = 0 = -2\sum t(Y_t - a - bt)$, thus the normal equations for estimating a and b are

equal to $\sum Y_t = na + b\sum t --- (2)$ and $\sum tY_t = a\sum t + b\sum t^2 --- (3)$. The values of

$\sum Y_t, \sum tY_t, \sum t, \sum t^2$ are obtained from the secondary data of the tourist flow in

Vazhachal recreation site. The equation (2) and (3) can now be solved for a and b

which are the intercept term and slope coefficient respectively.

Forecast error: Forecast error is defined as the actual value minus the forecast value of

the variable for the time period t, namely $e_t = A_t - Y_t$ where e_t is equal to forecast

error at time t, A_t is equal to actual arrival at time t and Y_t is equal to forecast arrival at

time t. For a given data process and forecasting method, the forecast error is assumed to

be an independent random variable with zero mean, $E(e_t) = 0$ and constant variance

18

$Var(e_t) = \sigma^2$ Numerous measures of accuracy are available, including the popular root

mean squared error (RMSE). In the analysis we use the RMSE for estimating the

forecasting accuracy. $^{*}RMSE = \sqrt{\dfrac{1}{n}\sum\limits_{t=1}^{n} e_t^2}$. (Christine and Michael, 2001)

2.3. The Recreation Price

Conservation Margin Pricing (CMP) is a method of pricing based on the conservation

margin (CM). The CM is the marginal amount charged from the visitor for conserving

the biodiversity. It should be equal to the value of biodiversity which is adversely

affected by his visits. Since, it is very difficult to measure the value of biodiversity

which is adversely affected by the visit of each visitor we are charging a fixed marginal

amount from each visitor. The fixed marginal amount is calculated on the basis of the

total value of affected biodiversity and the expected number of visitors to the site in its

life time period. Here, maximum importance is given to the supply side than the

demand side because the supply is relatively scarce than demand. Thus, the supply

price (P) is equal to

$$P = \frac{1}{N}\sum(X+Y) + \frac{1}{n}\sum(V) + CM$$

Where, N = Expected visitor flow in the life span of the tourist area, X = Total Fixed

Value Of Affected Natural Resource, Y = Total Fixed Cost, n = Number of visitors in

the just preceding year, V = Total variable cost in the preceding year, CM =

Conservation margin.

2.4 Employment Elasticity

Employment elasticity with respect to visitor flow is estimated by using the Arc employment elasticity method. It is estimated over a period of 2002-03 based on the secondary data pertaining to the visitor flow and employment generation in the area and 2002 is taken as the base year.

$$e_E = \frac{\Delta E(V_1 + V_2)}{\Delta V(E_1 + E_2)}$$

In this equation, e_E represents employment elasticity, ΔE, E_1 and E_2 the change in employment, employment in 2002 and employment in 2003 respectively, and ΔV, V_1 and V_2 represents change in visitor flow, visitor flow in 2002 and visitor flow in 2003 respectively.

2.5. Socioeconomic Assessment

Sample selection : The reconnaissance survey highlighted that, in the Athirappily Grama Panchayath, wards 1 to 6 are directly or indirectly being benefited by the increasing tourism (by way of employment, local businesses among others), which has been identified as the *'benefit zone'*. Total number of household (1 to 10 ward) is 2414 out of this only 1465 households comes under benefit zone. The sample size represents 12 per cent of the households (176 households). Tribal households consist of 15 per cent of the total households, thus 15 per cent of the sample are the tribal households.

Data Collection : A direct household survey is conducted for primary data collection of the relevant data in which a questionnaire method is followed covering questions related to family details, history of land occupation, social and environmental priorities, agriculture production and its distribution, live stock, fodder source, health care, land use and cropping pattern, cultivation details, availability of water, forest dependence,

20

and problems related to forest conservation and management . The tools and technique are used mainly for estimating the standard of living of the people, their forest dependence and for identifying the income product flow in the local economy.

2.5.1. Forest Dependency Index (FDI)

Forest dependence index is the average index value of fodder, fuel, housing, medicinal and income dependencies.

Fodder Dependency Index (FoDI), $FoDI = \sum_{i=1}^{n} \left(\dfrac{X}{1 + X_i} \right) \times 100$

X = 1, If forest is a fodder source. X = 0, If forest is not a fodder source. Xi = Number of other fodder sources except forest.

Fuel Dependency Index (FuDI) of individual household $FuDI = \sum_{j=1}^{n} \left(\dfrac{F}{1 + F_j} \right) \times 100$

F = 1, If forest is a fuel source. F = 0, If forest is not a fuel source.

Fj = Number of other fuel sources except fuel from the forest.

Housing Dependency Index (HDI) of individual household

$$HDI = \sum_{i=1}^{n} \left(\dfrac{h_i}{H} \right) \times 100$$

hi = number of parts of the ith house constructed by using forest products

H = Total number of parts that can be constructed by using forest products

Medicinal dependency Index (MDI) of individual household

$$MDI = \sum_{i=1}^{n} \left(\frac{M}{1 + M_i} \right) \times 100$$

Table. 2.1 Transaction Matrix of a Recreation Economy			
Producers of inputs	User of outputs		
	Agriculture, Household (X_1)	Business (X_2)	Recreation (X_3)
Agriculture, Households (X_1)	X_{11}	X_{12}	X_{13}
Business (X_2)	X_{21}	X_{22}	X_{23}
Recreation (X_3)	X_{31}	X_{32}	X_{33}

M = 1, If the household is using medicine from the forest, and M = 0 otherwise

Mi = Number of other alternative medicinal options used by the household.

Income Dependency Index (IDI) of individual household

yi = income from forest acquired by i[th] family

Yi = Total income of ith family

Thus, the Forest Dependence Index (FDI) of individual household

$$FDI = \sum \left(\frac{FoDI + FuDI + HDI + MDI + IDI)}{5} \right)$$

2.6. Income–Product Flow: Input – output analysis is a method of analyzing how an industry undertakes production by using the output of other industries in the economy and how the output of the given industry is used up in other industries or sectors (Table 2.1).

Since the total output of an industry is fully used up either by industries as input or in meeting the final demand of households and tourists, we can set this in the form of following equations:

$X_1 = X_{11} + X_{12} + X_{13}$
$X_2 = X_{21} + X_{22} + X_{23}$
$X_3 = X_{31} + X_{32} + X_{33}$

These are the balance equations which show the output of each industry flows into various industries as input and in meeting final demand for consumption or capital formation. Looking at the equations vertically we can know the requirements of inputs for the output of an industry.

$X_1 = f(X_{11}, X_{21}, X_{31})$

$X_2 = f(X_{12}, X_{22}, X_{32})$

$X_3 = f(X_{13}, X_{23}, X_{33})$

These are the structural equations show the structure of the economy.   The Input Coefficient (a_{1n}) is the relative values of input used for producing various output (Table 2.2).

$$a_{1n} = \frac{X_{1n}}{X_n}.$$

Table.2.2. Input Coefficients			
	User of output		
Producer of input	X_1	X_2	X_3
X_1	a_{11}	a_{12}	A_{13}
X_2	a_{21}	a_{22}	A_{23}
X_3	a_{31}	a_{32}	A_{33}

Total Value of $X_1 = a_{11}X_1 + a_{12}X_2 + a_{13}X_3$

Total value of $X_2 = a_{21}X_1 + a_{22}X_2 + a_{23}X_3$

Total value of $X_3 = a_{31}X_1 + a_{32}X_2 + a_{33}X_3$

Where X_1 = Agriculture sector, X_2 = Business sector and X_3 = Recreation Sector

2.7. Tourism sustainability assessment

The output from a tourism sustainability assessment exercise, using scales of sustainability levels, has been adopted following sustainability assessment procedure developed by Ko (2005). Ko has developed a practical approach of assessing sustainability of the tourism development in the area, following eight steps of sustainability assessment procedure (Box 2.3). Here, in the present context, this has been followed, adopted adapted to make it site specific in assessing the tourism sustainability in Athirappily-Vazhachal based on the above conceptual approach.

2.6.1. Delphi Method: The recreation system has two dimensions, (1) economic dimensions and (2) ecological dimensions. Various indicators of ecological dimensions is estimated by using the Delphi method. Here, data pertaining to sustainability is collected from three groups of people in the area. The sample size is arbitrarily fixed at

30. The environmentalist in the sample consists of the people working for the environment or the people arguing for the environment. The Officials and Academicians include officials of forest department, local administrative bodies, teachers and researchers working in the area. People's representatives include those elected to local level administrative bodies, representative of VSS, Clubs, etc. The survey is conducted in two steps.

In the initial stage, data is collected from these groups through informal discussions and then the general observation of different groups is assimilated. In the second stage, we convey the general observation of one group or people to others without revealing their identity and request them to reconsider their observation by considering the opinions of other group. In the second step we collect the final observation of the group by interview method.

3. RESULTS AND DISCUSSION

3.1. The sector and policy framework

3.1.1. The Tourism Sector

Tourism is one of the world's largest industries, generating an estimated 11 per cent of global Gross Domestic Product (GDP), employing 200 million people and transporting nearly 700 million international travelers per year- a figure that is expected to double by 2020 (Diley and Penny, 2001). The tourism sector makes important contributions to the economies of developing countries, particularly to foreign exchange earnings; employment and GDP

(Box 3.1). Developing countries have only a minority share of the international tourism market (approx. 30 per cent) although this is fast growing.

The global scenario reveals that Travel and Tourism (T&T) industry contributes about 4.2 per cent of GDP whereas T&T economy contributes about 10.7 per cent of GDP. Also T&T economy generate 8.2 per cent of total employment and 12.8 per cent of exports worldwide. In India, T&T industry generate 12.3 million job (2.9 per cent of employment) and 2.5 per cent of GDP whereas the contribution of T&T economy in India to GDP is 5.3 per cent generating 25 million job (6 per cent of overall employment), ranking second in the world (ITAR,2001-2002). The T&T industry refers to products and services for visitor's consumption whereas T&T economy include along with it the production and services for industry demand.

In the past few years, there has been a tremendous increase in the number of tourists visiting India (Figure 3.1) . The international tourist arrivals, which stood at a mere 1.2 lakhs in 1960, rose to 12.5 lakhs in 1980 and further increased to 26 lakhs in 2000 (Tourist statistics, 2001).

Fig 3.1. Foreign Tourist Arrivals / Foreign Exchange Earnings (India)
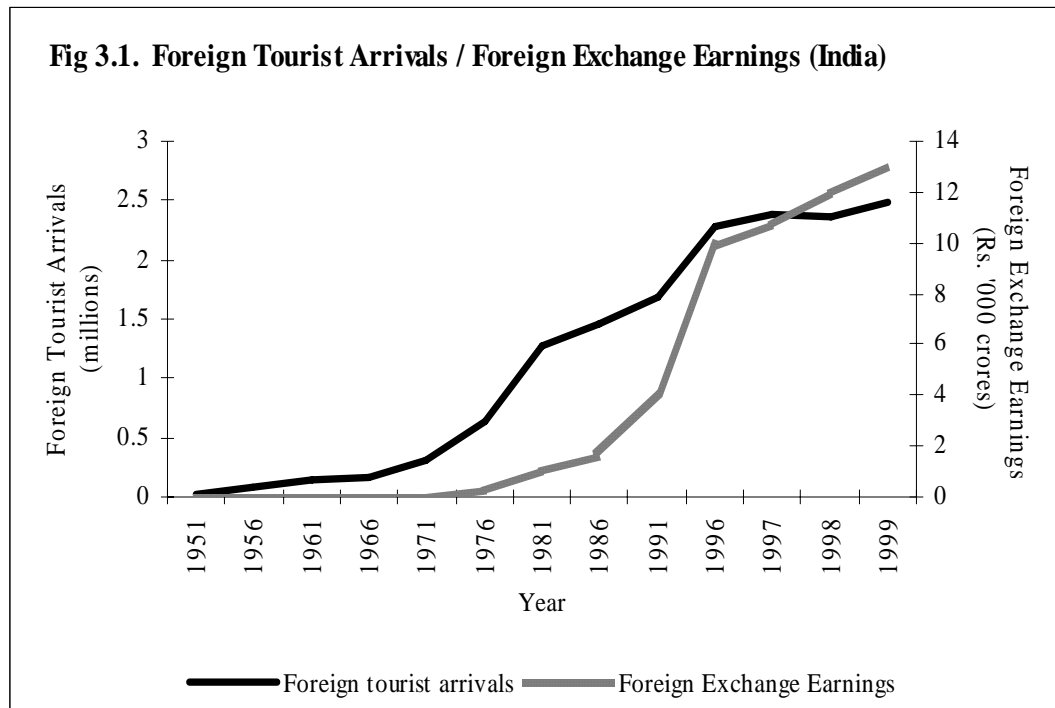
The varied nature of destinations provides comparative advantages for tourism in India. Most of these destinations, such as hill stations, archaeological monuments, and pilgrim centers had been developed historically. Among the world's 60 most important tourism countries India's position was 46th. Several tourism-related studies are being undertaken in India in order to collect baseline data to support management plans. In recent times, especially in the last two decades, keen interest is being taken to conduct environmental impact assessments for all new tourism development projects.

3.1.2. The policy framework

During the first few decades of independence, tourism was not viewed as a priority sector for development. The focus of the government was only on wildlife conservation, putting little emphasis on actual utilization and promotion. Though planning for tourism promotion was taken up in the second and third five year plans for the development of tourist facilities in India, it was only after sixth plan that tourism began to be considered as a potential instrument for economic development and social integration. Until 1982 India did not have a definitive tourism policy. The Government of India (GOI) took significant steps towards the development and promotion of tourism in the country through various stages and periods (Table 3.1).

The plan outlay on tourism has been on an increase, accounting to Rs. 793.75 crores for the Ministry of tourism, as approved by the Planning commission, in the ninth five year plan (1997-2002). This comprises of internal and external resources of Rs. 308.00 crores and an direct budgetary support of Rs. 485.75 crores (Indian tourism, 1999-2000).

Table 3.1. Policy for Tourism Promotion in India – an overview

| Period	Focus / Emphasis / Envisages	Global focus	Consequence/impact
1982 National Policy on Tourism	Development of travel circuits and assigned the responsibility of promoting international tourism to the Central Government and domestic tourism to the State Governments		Responsibility lacks complete co-ordination and fails to bring on integration at different levels
1986	The sector became eligible for several incentives and facilities including tax incentives, subsidies, priorities in the sanctioning of loans by the State financial institutions and preferences in providing electricity and water connections.		tourism given the status of industry
1988	A comprehensive plan for achieving sustainable growth in tourism was formulated by the National Commission on Tourism	WTO- The World Tourism Organisation defined sustainable tourism as early as 1988 as "*leading to the management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological process, biological diversity and life support systems*".	This approach has failed to recognize the link between poverty environment and development.
1991	Tourism sector opened up, making it eligible for automatic approvals up to 51% of the equity.		tourism was declared to be a priority sector for foreign investment
1992	A National Action Plan was initiated		
1996	A National Strategy for Tourism Development was evolved, which advocated the strengthening of an institutional set-up in human resource development, setting up of an Advisory Board of Tourism Industry and Trade (which has since been set up), the integrated development of tourist destinations and the promotion of private sector in tourism development.		Advocates better linkages between concerned sectors and promotes private sector involvement.

Period	Focus / Emphasis / Envisages	Global focus	Consequence/impact
1997-2002 (Ninth Five Year Plan)			
1998	Hotels, travel agents, tour operators and tourist transport operators eligible for such recognition entitling them to various incentives. In order to take advantage of the liberalized economic regime and the developments taking place around the world, a new National Tourism Policy is under consideration of the Government.		Tourism was granted 'Export House' status
1999	Tourism Synergy Programme targeted on the development of basic facilities (hotels, restaurants, recreational activities, etc.) along with tourism infrastructure (minimum basic amenities and infrastructure like roads, water, sewerage, electricity and telecommunication facilities).	In 1999 the UN Commission on sustainable Development urged governments to *"maximize the potential of tourism for eradicating poverty by developing appropriate strategies in co-operation with all major groups, indigenous and local groups"*. The prerequisite of significant progress is pro-poor growth - growth which benefits the poor.	Potential for employment generation, poverty alleviation and sustainable human development.
2002 New tourism policy	New initiatives towards making tourism the catalyst in employment generation, environmental regeneration, development of remote areas and development of underdeveloped and other disadvantaged groups in the country besides promoting social integration. It would lead to large foreign exchange earnings and create conditions for more foreign direct investment.	The Pro-Poor Tourism (PPT) The Johannesburg World Summit on Sustainable Development of ecotourism (2002) offers an opportunity to highlight the potential for tourism to deliver pro-poor growth in the least developed countries offers significant benefits to the worlds poorest people. Greater coordination should be attempted, in order to maximize the potential to support sustainable, PPT. The private sector, community organizations in destination countries, international NGOs and governments should all be involved in efforts to develop PPT.	Focus on growth which benefits the poor Benefits the rural areas by reducing the disparities. Societal welfare at large More foreign direct investment

Source: India Tourism , GOI, 1986-2001, Diley and Penny, 2001

Policy for Tourism Promotion: The Mission of the policy for tourism promotion is to promote sustainable tourism as a means of economic growth and social integration. The Objectives of tourism development are to fasten understanding between people, to create employment opportunities and bring about socioeconomic benefit to the community, particularly in the interior and undeveloped areas. One of the major objectives is the preservation and protection of natural resources and environment to achieve sustainable development. The new tourism policy endows significant importance to tourism being a *multi-dimensional activity*

(Box 3.2) **i**n which different stakeholders come together and thereby the community at large is benefited besides the immediate tourists.

3.1.3. Tourism Sector of Kerala : The State of Kerala provides maximum potential for the development of ecotourism, highlighting various ecotourism destinations like, the Wildlife Sanctuaries / National Park, Beaches, Backwaters, Plantations, Hill Stations and Eco Resorts. The past few years, has noted an increase in the number of tourists visiting Kerala (Figure 3.2). The international tourist arrival, which stood at 202173 in 1999, rose to 294621 in 2003. The total number of domestic tourists visiting Kerala is 4888287 in 1999, which rose to 5871228 in 2003 (Tourist Statistics, 2004- 06).

Fig. 3.2. Foreign Tourist Arrivals / Foreign Exchange Earnings (Kerala)
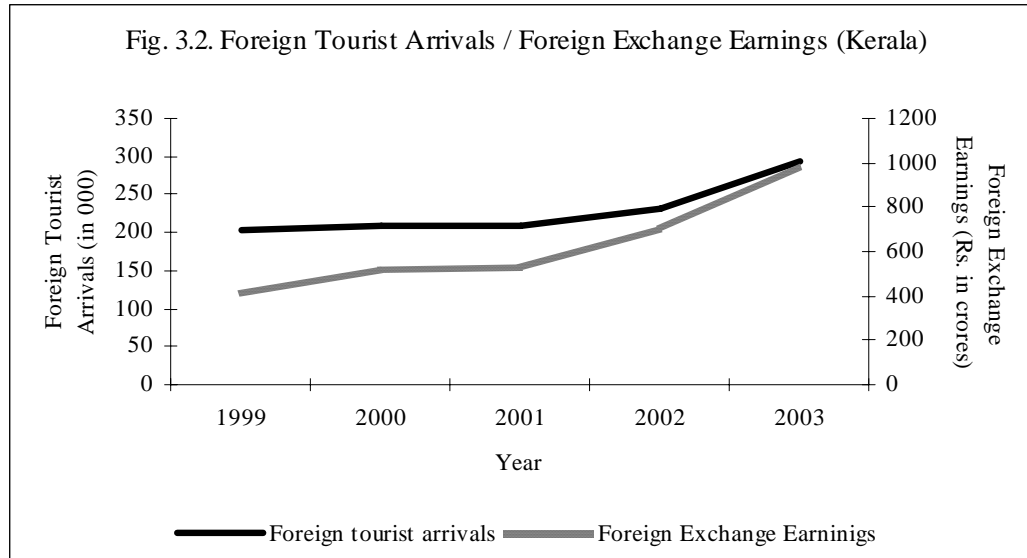
Tourism Policy of Kerala: The tourism policy of the State government published in August, 2002 envisages Kerala as an up market high quality tourist destination through optimal use of resources with focus on conserving and preserving heritage and environment. The policy lists an action plan to achieve a 10 per cent increase in earnings from tourism with 7 per cent growth in foreign and 10 per cent growth in domestic tourists arrivals. This way the policy hopes to create 10,000 jobs opportunities every year. It proposes that the existing legislation, such as the Kerala Land Utilization Order, Rent Control Act, Labour Act, Building Tax Act and Excise Law would be rationalized in order to facilitate the growth of tourism (KTPS, 2002).

The policy proposes to create awareness and tourism consciousness among the people particularly among the taxi drivers, bus conductors, ports and customs and emigration officers and others with whom tourists encounter. The promotion of tourism will be based on the carrying capacity of the destination. Preservation of art, culture and heritage of the state will be part of the policy objectives. Special tourism zone will be

identified and measures taken to preserve and conserve them. The institution of human resource development in the field will be developed into institutions par excellence. Panchayath Raj institutions and non governmental institutions will be involved in the development of tourism infrastructure and tourism awareness. The action plan envisages the tourism department as the nodal agency for coordinating all activities related to tourism. Area development plan will be prepared for all tourism destinations and plans and implementations will be reviewed periodically. The approval of the tourism unit by the tourism department will be made mandatory to guarantee quality services.

A single window system is proposed for clearing tourism projects, and a special campaign planned to attract Non–Resident Indian investment. Tourism greatly benefits the rural areas by reducing the disparities. For example, the highlights of socioeconomic impact of tourism on folk artists and artisans of Kerala and Rajasthan reveal that more than 90 per cent of the artisans income comes from tourists activities, and this has led to higher education and better standards of living (Tourist Information, 2001).

The policy on the whole does focus on the overall societal welfare following the *Pro-poor tourism* (PPT) concept (Box 3.3) as has been emphasized in the 2002 Johannesburg World Summit on Sustainable Development. The net benefits to the society may be economic, but they may also be social, environmental or cultural. Pro-poor tourism is not a specific product or sector of tourism, but an approach to the industry. Strategies for making tourism pro-poor focuses specifically on unlocking opportunities for the poor within tourism, rather than expanding the overall size of the sector. It identifies three core areas of focus include: (i) increased economic benefits, (ii) enhancing non-economic

impacts, and (iii) policy / process reform. In other words *poverty* is the core focus of the

PPT.

3.2. The recreation potential of tourism

3.2.1. Tourism in Athirappily-Vazhachal recreation sites

As has already been mentioned earlier Vazhachal Forest Division is a forest tract known

for its natural resources. Athirappily and Vazhachal water falls are the two major

recreational sites here along the Chalakudy river basin. In between these two falls is the

Charpa falls. The magnificent Athirappily waterfall (Plate 5) in a forest background

attracts thousands of nature admirers and tourists. The area is having immense

ecotourism potential considering the number of visitors who come to this area in different

seasons. Almost 3.5 lakhs visitors visit these sites annually. In Athirappily the main

natural attractions are the magnificent waterfall (42 meters high and 220 meters wide),

the dense forest as the background of the fall ever flowing clean water of the Chalakudy

river. In Vazhachal (Plate 6) the main attractions are the small waterfalls, a garden, an

interpretation center (yet to be opened up to the public), natural scenic beauty of the

forest and wild life. The Charpa falls (Plate 7) is a comparatively small but magnificent

water falls which lies on the left side of the road, 3 km from Athirappily Water falls on

the way to Vazhachal.   During rainy season this water fall has a slanting height of 63 m

and width of 28.3 m, presenting a magnificent sight. The Vazhachal recreation spot is 5

km away from the Athirappily recreation site. Chalakudy is the nearest township from

Athirappily which is 30 km away connecting with the National Highway 47. Athirappily

–Vazhachal thus is naturally and socially endowed with high potential features for

tourism development in natural areas.

3.2.2. Current status of recreation: Recreation to Athirappily-Vazhachal being

seasonal in nature is classified into lean, moderate and peak season depending on the

percentage of visitors (Figure 3.3).

Fig.3.3.Similar Pattern of Visitor Flow at Athirappilly & Vazhachal
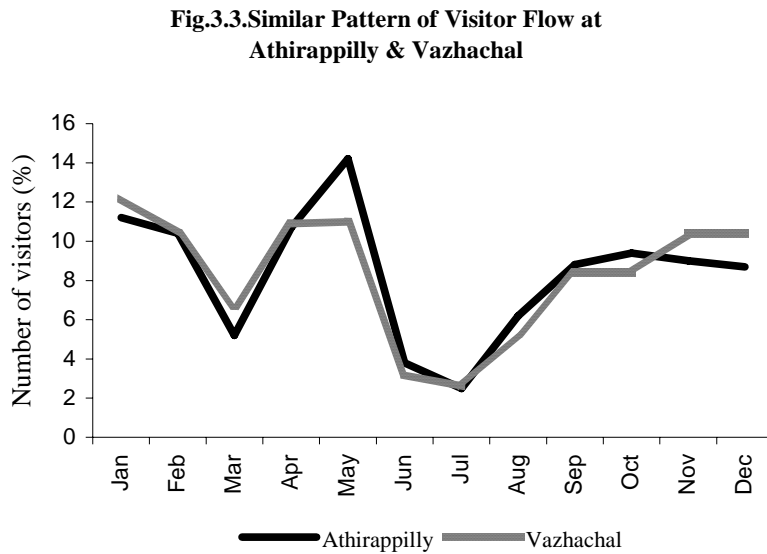
The seasonality of visitation ranges between September to May in Athirappily and

Vazhachal (Figures 3.4 & 3.5). June, July and August are the lean periods, the monsoon

sets in the State. November to January and the two summer months of April and May is

peak periods during which the maximum tourists arrive. A good portion of the tourists

are from Thrissur, Kozhikode and other nearest districts of Kerala and Tamil Nadu. The

visitor flow is positively related to the number of holidays and festivals. Swimming,

bathing, and relaxing in the river are the major tourist activities. Thus, the summer period

attracts more tourists to the clean flowing water here at Athirappily. Seeing wildlife is another attraction in the site, during the summer period wildlife like elephant, deer, among others come out for drinking water. Thus, these recreational sites have great potential to provide seasonal employment to the local community.

3.2.3. Revenue generation potential of sites: The visitor flow on an average is 2.3 lakh and 5.3 lakh visitors/ year at Vazhachal and Athirappily respectively. The average fee collection is about Rs. 10 lakh /year at Vazhachal and Rs.23.5 lakh / year at Athirappily. Parking fee for vehicles comes to around Rs1.39 lakh / year and Rs. 2.7 lakh / year at Vazhachal and Athirappily respectively.

The revenue generating capacity of the Vazhachal recreational site (Table 3.2) indicates that on an average Rs 5.6 lakhs is earned from visitors entrance fee and parking charges. Revenue generated from entrance fee is 3.5 times higher than that generated from the parking fees, i.e., by way of 2.3 lakhs visitors visiting this site and 22 thousand tourist vehicles coming in per year. Year 2001 registered the highest revenue generation (Rs. 6,12,490) during the period 1994-2003.

Table 3.2. Revenue generating potential of Vazhachal recreation site.

Year	Visitor		Vehicle		Total Revenue generated (in Rs.)
	Number	**Revenue (Fee)**	**Number**	**Revenue (Fee)**	
1994	251762	468042	21122	124121	592163
1995	276107	512284	23905	139612	651896
1996	252512	474714	23306	131966	606680

1997	245508	459795	22051	123657	583452
1998	203434	382292	19733	109195	491487
1999	211496	397146	20489	116274	513420
2000	255373	474390	24784	136632	611022
2001	248645	454315	27916	158175	612490
2002	195829	358169	20432	115261	473430
2003	193139	354263	19506	107987	462250
Average	233381	433541	22324	126288	559829

Source: Official records, Charpa Range Office, Kerala Forest Department

The co efficient of correlation between total revenue and visitor flow is 0.99 and the

coefficient of correlation between total revenue and entry of vehicle is 0.79. The

estimated regression function showing the relationship between the revenue, number of

visitors and number of vehicles is in the model $Y = \beta_1 + \beta_2 X_2 + \beta_3 X_3$ (Box 3.4). In this

equation Y is the dependent variable representing revenue, β_1 is the intercept term, β_2 and

β_3 *are* slope coefficients with respect to the number of visitors *(X₂) and* the number of

vehicles (X_3) respectively. The estimated regression function shows that β_2 and β_3 are

equal to 2.06 and 3.7 respectively. The R^2 value of the given regression function is equal

to 0.99. Thus, the total revenue depends on the number of visitors and entry of vehicles.

The Visitor flow and Govt. revenue collected at Vazhachal indicate a negative growth

(Figure 3.6) due to the lack of adequate facilities and service sector development in the sites.

3.2.4. Demographic characteristics of visitors: The visitor profile is presented in Appendix 3.1**.** The sex composition of the visitors is such that 57 per cent of the respondents are male; 43 per cent are female. The sex composition of tourists in the area is dominated by the males for both national and international tourists. In the case of national tourist it is 764 for 1000 males while that of international tourists is 788 per 1000 international male tourist. The estimated child visitation rate is equal to 486 for national tourists and 292 for international tourists per 1000 tourists. Even though foreign tourists visit the site every year, it is relatively low compared to the numbers of national tourists. The estimated international visitor ratio to national visitor to Athirappily-Vazhachal is only 5 per 1000 national tourists. Among the national tourists a good share of visitors are from Kerala itself compared to other states in the country. The estimated ratio of visitors from other states is equal to 158 per 1000 tourists from Kerala. The average number of years of formal education of visitors in the sample is 15.8 years, almost equivalent of a bachelor's degree. The visitors at Athirappily-Vazhachal are generally educated, with 62.4 per cent possessing bachelors' degree, 11.2 per cent Masters and higher degree.

Visitors reported an average per capita household income of Rs. 29703, considerably more than the state average of Rs 18,262 (1999-2000). In fact, more than 97.8 per cent of the respondents had household incomes greater than the state average. This is reflected, in part, by the large proportion of visitors (98 %) employed in professional occupations.

A majority of the visitors originated from nearby districts and states, mainly from Tamil Nadu (9.66 %) and Karnataka (2%) (Appendix 3.2). With smaller percentages originating from *Andhra Pradesh*, *Gujarat*, *Maharashtra, Manipur, Pondicherry*, *Rajasthan*, *Uttar Pradesh* and *West Bengal.* The most common metropolitan centers of origin are, Kochi, Thiruvananthapuram, Chennai and Bangalore. Of the total 29 per cent of the respondents came from urban residential setting.

It is estimated that 37.4 per cent of the visitors coming to the recreational sites is from in and around Thrissur district itself. Local residents constitute 12 per cent and foreign visitors account for only a meager 0.45 per cent. The tourists are mostly independent visitors who are groups of young people, students, families among others, coming mostly during weekends and holidays. Purposes of visit stated by them are categorized as follows:

- To enjoy the natural serene atmosphere,

- To understand and study the nature (plants and animals),

- Accessibility wise closer from city and short travel time,

- Low travel cost,

- To be far from the hustle-bustle of city life

Visitors coming from other states are mostly government officers, pilgrims visiting various other religious spots in the State, college and school students who come on conducted tours. Foreign visitors coming to the site are from various developed countries

like the USA, UK, Germany, Canada, Italy, among others although their per cent is

meager in comparison to the national and regional tourists.

3.2.5. Recreational characteristics: The visitors participate, on an average, 12 days per

year in nature tourism. 51.2 per cent were first time visitors to the site. 27 per cent had

visited the park at least two times, and 21.8 per cent of the respondents had visited the

site more than two times.

Photography is an important aspect of their experience at Athirappily-Vazhachal.

Visitors spend an average of 7 hours/day at Athirappily-Vazhachal. The overall trip

length averaged 12 hours/days, of which 58 per cent was spent in Athirappily-Vazhachal

recreational site.

3.2.6. Trip expenditures: Major expenditures included travel (42.6 %), food (32 %),

and accommodation (25.4 %). Of the sample 42.2 per cent used personal vehicles to

travel to the site, while others traveled by rental vehicles (46 %), or other forms of

transport (11.8 %), such as guided tourist buses or vans. With the primary attraction

being the natural falls, Chalakudy is the major beneficiary in providing facilities and

services to this user group.

3.2.7. The current tourist activity zone and the Affected Forest Area

Tourism here at Athirappily and Vazhachal is nature based which include both mass

tourism and simple ecotourism. But for an interpretation centre of the Kerala Forest

Department, educational activities are very limited in this area. Being an area rich in biodiversity it has attracted large number of nature lovers and students. The tourist activities now include, walking along the natural trails, i.e. trek paths constituted by the Forest Department (Box. 3.5) and conducted by trained guides of the Department, enjoying the scenic beauty of the natural falls and forests in the background. The current visitor activity zone is spread 100 m to both sides of the road from the Athirappily check post to Irumbapalam (Map 3.1). This is

Map 3.1 Tourist activity zone – 1.33 sq. km (shown as the white patch parallel to the Chalakudy River in the map)

arrived at considering the different visitor activities, such as taking a walk alongside or relaxing in the wilderness. Thus, the total affected forest area is worked out based on the current visitor activity zone is approximately 1.33 sq km.

3.3. The recreation value (RV) of ecotourism

As has been explained earlier recreation is a non-marketed use value and its valuation in monetary terms is difficult. It includes recreation uses of the natural areas which do not require exclusive associated development, but at the same time, provides economic gains to local communities. Athirappily-Vazhchal is fast emerging as a potential ecotourism site and viable alternative to the conservation of forest and enhancing the standard of living of the depending communities. The recreation value or the recreation potential of Athirappily-Vazhachal has been ascertained by applying the travel cost, contingent valuation technique, and the contingent activity method.

3.3.1 Travel cost method for estimating the RV

As the recreation service offered by the forest is an intangible benefit which cannot be estimated by using the usual market terminology, here we use an indirect method of valuation based on the travel cost of the tourists. Here, the travel cost of the tourist is considered as their sacrifice to have the recreation benefit. The surplus satisfaction obtained by the tourists is an indication of the future development potential of the recreation economy. The individual travel cost method was applied to estimate the

recreation surplus. It is assumed here, that the visitor flow is a function of travel cost

while all other factors remain constant. The recreation demand curve is estimated by

using the OLS method. It is assumed that V = f (TC), where V, TC, and f represents

number of visitors, travel cost and functional relationship respectively. In this recreation

demand curve 3566 is the intercept term and -1.02 is the slope coefficient of visitor flow

with respect to travel cost (Box 3.6). The estimated aggregate recreation surplus of the

sample is equal to Rs 20,69,214 with an average recreation surplus per visitor of 2,593

(Table 3.3). The estimated recreation surplus is very high due to the high variation in the

travel cost of the people from different regions of the world. In order to mitigate the

effect of high variation in the travel cost of the people on the calculation of the recreation surplus, we estimate the recreation surplus of different regions separately.

3.3.1.1. Recreation surplus of visitors from Kerala (Individual Travel cost method)

The recreation surplus derived by the tourists is estimated by using the individual travel cost method. Travel cost is a function of the distance covered and mode of travel, that is TC = f (Distance, Mode of Travel). In the sample, total number of visitors from Kerala numbered 10253 of which 9,279 responded to the questions and their average travel cost equaled Rs. 429. In the estimated recreation demand curve (Box 3.7) 1,363 represents the constant and 1.63 represents the slope coefficient of the recreation demand curve with respect to travel cost. The estimated R^2 value is 0.22 which explains that 22 per cent of the visitation can be explained by the travel cost. The aggregate recreation surplus of the people from Kerala amounts to Rs. 8,77,074 with an average recreation surplus of Rs 196 (Table 3.4). The recreation surplus of people from Thrissur and Kannur is zero while those from other districts are positive.

The recreation surplus becomes zero when the tourist is willing to pay nothing more than what they actually paid. The willingness to pay in this context depends on the number of visits and expectation *(social factor).*

The district-wise recreation surplus of tourists from Kerala (Table 3.5) records Wayanad and Thrissur having highest and lowest travel cost respectively and Thrissur and Idduki having highest and lowest number of visitors respectively.

Table 3.5. Recreation surplus of visitors from Kerala				
District	Travel Cost (Rs.)	Visitors* (No.)	Recreation surplus/ Per tourist	Recreation surplus Total of sample
Allapuzha	571.5	814	11.6	9491.24
Ernakulam	305.85	1648	11.96	19710.08
Idduki	298.6	92	505	46438.84
Kannur	649.8	960	0	0
Kasargod	478	119	317.135	37739.065
Kollam	547.7	154	236.46	36414.84
Kottayam	262	1136	222.95	253271.2
Kozhikode	449	394	262.26	103330.44
Malapuram	200	426	501.5	213639
Palakkad	301	603	162.6	98047.8
Pathanamthitta	341	105	458.405	48132.525
Thiruvananthapuram	731.5	260	20.13	5233.8
Thrissur	116	2415	0	0
Wayanad	748	153	36.765	5625.045
Total		9279		877073.9
Average recreation surplus of tourists from Kerala = 196				
* Include only those visitors who revealed their district of origin				
Source : Primary data estimates				

The recreation surplus of people from Thrissur and Kannur is equal to zero and they are not willing to pay anything more than the travel cost and entrance fee. In case of the tourists from Thrissur, recreation surplus become zero because of the persistent visits and diminishing marginal utility, while in case of the tourists from Kannur, recreation surplus became zero because of the high travel cost and other socio-economic factors.

Estimating Recreation surplus : The total number of visitors from Kerala numbered 10253 and the average recreation surplus per visitor worked out to Rs. 196 with an average cost of Rs. 429 (Appendix 3.3). As is seen maximum visitors besides home state are from Tamil Nadu followed by Karnataka and Andhra Pradesh (Table 3.6). The total number of visitors coming from Tamil Nadu is 1152 and their average recreation surplus is 123 and the average travel cost per tourists is Rs 1856. The average recreation surplus of 236 tourists coming from Karnataka is Rs 116 with Rs 1396 as an average travel cost per tourists. The people from Andhra Pradesh earn a recreation surplus of Rs 109 and their average travel cost is equivalent to Rs 2050. People from other state together earn a recreation surplus of Rs 103 with an average travel cost of Rs 5016. In short, the recreation surplus per tourists of the total sample is equal to Rs. 185. The estimated aggregate recreation surplus of the sample is equal Rs. 2202676.

3.3.1.2. Factors Determining Recreation surplus

a) Travel Cost and Recreation Surplus

The relationship between recreation surplus and travel cost of the tourists of different districts of Kerala reveals that recreation surplus has an inverse relationship with the

travel cost (Figure 3.7). The estimated OLS equation (Box 3.8) shows the relationship, in which RS and TC represent recreation surplus and travel cost respectively. The negative slope coefficient (-0.63) points out that one unit increase in the travel cost leads to 0.63 unit reduction in the recreation surplus.

b). Number of Visits and Recreation surplus *:* As the number of trips to a particular tourist destination increases, the marginal utility from the site will fall thereby the visitor will be willing to pay only less. The average number of visitors from Thrissur is the highest with 5 times followed by Ernakulam (3 times) and Palakkad (2 times).   The average number of visits of the people from Kasaragod, Kollam and Kottayam is one as it is their first visit. Thus, the data projects an inverse relationship between the number of visits and Recreation surplus (Figure 3.8). The increase in the number of visits reduces the marginal recreational utility and willingness to pay for reaching the recreation centre. If the expectation is high, the probability of becoming unsatisfied is high and it will adversely affect the willingness to pay of the people. As the willingness to pay falls and the travel costs remain the same or increases, the recreation surplus of an additional trip will be lower than the earlier one.

c). Recreation surplus, Travel cost and Number of visits : As has been explained the recreation surplus is a function of travel cost and number of visits, i.e., Recreation surplus = f (Travel cost, Number of visits). The estimated functional form of recreation surplus (Box 3.9) shows that recreation surplus is inversely related to travel cost and number of visits. The slope coefficient of recreation surplus with respect to travel cost is -0.12 which implies that one unit increase in the travel cost leads to 0.12 unit reduction in the recreation surplus and vice versa. The slope coefficient of recreation surplus with respect to the number of visits is -1.82 which indicates that one unit increase in the number of visits will result in 1.82 unit reduction in the recreation surplus.

3.3.1.3. Factors Determining Willingness To Pay for having Recreational Benefits

a) **Willingness to Pay and Recreation surplus :** *WTP = f (Recreation surplus)*
The WTP and recreation surplus are positively related. The data highlighted that if the tourist is satisfied with the natural beauty and the surrounding recreational facilities they are willing to pay more. This relation also indirectly reveals the indirect relationship between willingness to pay and degradation of the forest area. If the degradation of the affected forest area is high, it will generate less recreation surplus which leads to lower willingness to pay. The estimated slope coefficient of WTP with respect to recreation surplus is 0.44 (Box 3.10) which reveals that one unit increase in the recreation surplus leads to 0.44 unit increase in the WTP.

In general, it is observed that *WTP = f (Recreation surplus) and Recreation surplus = f (Travel cost , Number of visits), thus WTP = f (Travel cost , Number of visits).*

b) Indirect influence of Travel cost on the WTP

Change in WTP (Y) due to a change in the travel cost [dY/ dT] is equal to the product of change in the willingness to pay due to a small change in recreation surplus (dY/dX) and change in the consumers surplus due to a small change in the travel cost (dX/dT) (Equation 1) (Box 3.11).

The data projects one unit increase in the travel cost leads to 0.05 unit reduction in the willingness to pay.

c) Indirect influence of number of visits on the WTP

Change in the WTP (Y) due to a change in the number of visits [dY/dV] is equal to the product of change in the willingness to pay due to a change in the recreation surplus (dY/dX) and change in the recreation surplus due to a change in the number of visits (dX/dV), equation 2 **(Box 3.12).** It is projected that one unit increase in the visitation rate leads to 0.8 unit reduction in the willingness to pay of the sample collected.

d). Income and WTP

The relationship between monthly income and the amount that the people are willing to pay in their life time for the conservation of the natural resources in Athirappily-Vazhachal is worked out for four income groups (Table 3.7).

Table 3.7. Relationship between income and WTP						
Income Group (Range)	WTP Group (Range)	Mean Income	Mean WTP	WTP Per cent	Number of observation	Coefficient correlation
0 - 10000	0 - 10000	5780	220	3.8	544	0.00
11000 - 20000	0 – 1000	15917	284	1.8	78	0.08

| 20000 - 30000 | 0 – 1000 | 27444 | 290 | 1.1 | 36 | -0.1 |
| 30000 - 100000 | 0 - 10000 | 57105 | 1211 | 2 | 19 | 0.15 |

The correlation coefficient of the income group 0 – 10000 is equal to zero, which revels

that there is no relationship between income and WTP in this income group, while it is

slightly increased to 0.08 for the income group 11000 – 20000. But it is -0.1 in the case

of the income group 20000 – 30000 and 0.15 for the income group 30000 – 100000. In

brief, of the four groups of classification, one group represents no correlation, two groups

represent slight positive correlation near to no correlation and another one group

represents negative correlation which is also near to zero. Thus, it is conclusive

/understood that there is no direct or indirect positive or negative correlation between

income and WTP. A theoretical representation of the relationship between Material

Resources (MR) and Natural Resources (NR) (Figure 3.9) indicates the existence of a

paradox scenario where "*People are willing to pay relatively less as income increase*".

As is seen in the figure the indifference curve (*indifference curve in this context is the*

locus of different combinations of material resources and natural resources giving equal

amount of utility to the people) represents the U_0 amount of utility. There are three areas

of consumption

- The area before the point e. The area of perfectly inelastic portion

- The area between e and f. That is the area of no correlation portion

- The area after point f, that is the area of perfectly elastic portion

In the first area of consumption that is before point e the marginal utility of additional

material resource is zero. In this stage the individual has large amount of material

resource and the marginal utility of additional material resource is zero. At this stage

people look for satisfaction from other sources such as spirituality, going into the nature

among others. At this stage the size of natural resource is relatively lower compared to the material resource. Since the natural resource is relatively lower and marginal utility of material resources is zero, people are willing to pay more for the conservation of natural resources as their income increases. In short, the societies highly developed in materialistic term; exhibit a positive relationship between increase in material resources and the amount of material resources that the people are willing to sacrifice for having the benefit of the natural resources. But, this is an extreme scenario in the real world where there is poverty and low standard of living. In developing countries like India people prefer more material resources for their wellbeing and improved standard of living.

In the third stage of consumption, which is after the point f, the perfectly elastic portion implies that the marginal utility of additional natural resources is zero. For example the case of tribal living within the forest the marginal utility of additional natural resource is zero to them but the marginal utility of material resources is positive. Thus they will prefer material resources to the natural resources. This is the reason for tribes expressing less desire in participating wholeheartedly in the conservation without any incentives.

Normally a person is in the second stage of consumption, which is in the no correlation portion (ef in the figure). They are basically neutral to both material resources and natural resources. The normal person is always trying to maximize their utility and moving to higher indifference curve. The economic development offers a conducive externality factors for increasing utility by increasing material resources. As the economic development is going on the one side and the natural resources is falling on the

53

other, resulting in the lower utility from natural resources. Thus, for increasing their

utility they have to increase the materialistic gain. The normal person continues trying to

increase the material resources thus they are willing to pay only a minimum amount

irrespective of their increase in income. The highlights of the relationship between WTP

and income are summarized below.

- Falling natural resources is not due to the action of a single individual. But the

  increasing material resources of the individual is due to his own action thus he

  will pay for the conservation of natural resources irrespective of the increase in

  his personal income level. That is there does not exist any proportional

  relationship between WTP and increase in income.

- People try to maximize utility which is a combination of utility from material

  resources and natural resources, but the utility from natural resources is falling

  thus they give more preference to the gain in material resources

- Material resources and natural resources are not perfect substitutes, but both of

  these are two component of the utility function. Since, it is not perfect substitute

  income and WTP are not directly related.

- WTP of an individual depends upon his level of awareness, environmental

  consciousness and other socioeconomic factors.

- The shaded area in the circle shows the existence of no correlation between

  increase in material resources and WTP.

 Thus, at this stage WTP is not directly or inversely proportional to the increase in the

income but it depends upon various socio-cultural, economic, awareness level and

environment consciousness of the people with regard to the importance of natural

resources and the need to conserve the same for posterity.

3.3.2. Contingent Valuation Method for estimating the Recreation Value

The Contingent Valuation method (CVM) is applied for both Indians and

foreigners together to elicit their willingness to pay for ecotourism benefits of the

recreation facilities. The bidding game technique is used to apply for CVM in

Athirappily-Vazhachal. In the contingent valuation method we directly ask the people

what they are willing to pay for the conservation of the natural resources and the amount

that the person willing to pay for the conservation of the resources is considered as the

value the person put over the resources. In bidding game method only 708 visitors were

willing to pay for the conservation of the natural resources, others were either hesitant /

reluctant or indifferent to the question.

The results highlighted that the tourist's average willingness to pay is only a

minimum amount for the conservation of the Athirappily- Vazhachal recreation sites and

the adjacent forest area (Table 3.8).

Table 3.8. Willingness to pay for conservation of Recreation Area				
WTP	Mean WTP	Std. Dev	Number of Visitors	Less than cumulative Per cent
Less than 50	43	12.8	69	100
51 – 100	100	0	369	90.3
101 – 150	139	8.3	18	38
151 – 200	199	5.3	82	35.6

201 – 250	250	0	26	24
251 – 300	300	0	9	20
301 – 400	400	0	2	19
401 – 500	500	0	84	19
501- 1000	1000	0	39	7
1001-2000	2000	0	4	1.4
2001 -5000	5000	0	4	0.8
5001 - 10000	10000	0	2	0.3
Total			708	

The feasibility of the conservation of the forest by collecting funds from the public depends on various socioeconomic and demographic determinants of the willingness to pay. In order to identify the feasibility we estimate the logistic regression.

3.3.2.1. Demographical, social and economic factors determining the WTP for the conservation of Athirappily-Vazhachal recreation site

In the logistic regression model people's willingness to pay for the conservation of Athirappily-Vazhachal recreation sites and the adjacent forest area is considered as the dependent variable. The independent variable is classified into three categories such as demographic (*age, family size, and schooling*), social (*religion*) and economical (*income*) (Table 3.9).   In the sample, the maximum and minimum family size is 18 and 2 respectively with an average family size of 5. The average monthly income of the family is 29703.

The odds ratio of willingness to pay is higher among the age group 20 to 60 than that of 60 and above which reveals the probability of willingness to pay for the conservation is higher among the present generation than the older generation. The probability of willingness to pay is high among the educated one, in this analysis years of schooling is taken as a measure of education. The calculated odd ratio (2.5) is higher among the group of people who have 15 to 22 years of schooling experience while the odd ratio of those who have only less than 15 years of experience is only 1.16. The analysis revealed a small positive relationship between the willingness to pay and the family size. With a family size of 2 to 3 taken as a reference category we get an odd ratio of willingness to pay for family size 2 to 5 as 0.2 and that of family size above 6 members as 0.6 which is higher than that of a lower family size. The probability of willingness to pay to a Non-Governmental Organisation to conserve biodiversity is lower among the higher income group due to their lower dependence on the forests (Table 3.10). The estimated odd ratio of willingness to pay in favour of the income group above 10000 is -7.56 while that of lower income group (5000 to 10000) is -2.2. Moreover the calculated odd ratio shows an inverse relationship between income and the probability of willingness to pay for the conservation of forest and other natural resources. It is identified that almost 89 per cent of the different groups are willing to pay for the conservation of the Athirappily forest at varying amount. The survey result highlight that an average recreation value put by a tourist over the natural resources is Rs 775 (Appendix 3.4). The total recreation value (TRV) of the Athirappily for the sample of 708 visitors is Rs 548417.

3.3.3. Contingent Activity Method of estimating the RV

In the contingent Activity Method we use a hypothetical activity to identify the recreational surplus derived by a tourist. In this study, we directly ask the respondents that suppose this site was away, what is the additional distance (in Kms) you are willing to travel to visit this site? In the sample, 761 visitors are willing to travel additional distances, while others were either hesitant or indifferent to the question. The aggregate additional distance willing to travel by the 761 visitors is 7200.58 Km. The average additional distance willing to travel by tourists is 9.46. The average travel cost of the sample is Rs. 18 per kilometer. Thus, in rupee terms, the additional amount that the person willing to sacrifice is Rs. 170 which is considered as the recreational surplus (Appendix 3.5).

3.3.4. The Recreational Surplus and Total Recreation Value

The estimated recreation surplus per person is equal to Rs 185 as per the travel cost method (Table 3.11). The total recreation surplus of the sample and the visitor flow in 2003 is equal to Rs 21,72,487 and Rs. 10,64,41,970. As per the Contingent Activity methodology, estimated consumers surplus per tourists is equal to Rs. 170 while that of the sample and total visitors in the year 2003 are equal to Rs. 1,29,370 and 9,78,11,540 respectively. Instead of recreation surplus total recreation value is estimated by using the Contingent Valuation Method (CVM). The estimated total recreation value of per person, total sample, and that of the total visitors of the 2003 are equal to Rs. 775, 5,48,417 and 44,59,05,550 respectively.

3.3.5. Total Economic Value (TEV) of the Affected Forest Area

The TEV per hectare of Athirappily tropical forest based upon the estimates of different tangible and intangible benefits is Rs. 3.828 lakhs per hector. Based on these estimates the total economic value of the affected forest area (1.33 sqkm) of the Athirappily – Vazhachal recreation sites is worked out to Rs. 509.124 lakhs (Table 3.12 & Figure 3.10). The direct use values of the affected forest area amounts to Rs. 254.429 lakhs. The value of carbon stock of the

Benefits	Estimated Value per Ha (Rs. lakhs)	Estimated Value of Affected Area133 Ha (Rs. lakhs)
Table 3.12. Total Economic Value of Affected Forest Area of Athirappily-Vazhachal recreation sites		
Direct use values		
Timber & Fire wood	1.91*	254.03
Non-Timber	0.003*	0.399
Indirect use value		
Carbon Stock	1.173*	156.009
Recreation Value	0.3**	39.9
Option Value of Biodiversity	0.442*	58.786
Total Economic Value (TEV)	3.828	509.124
* Source: Amjath (2002) , ** Present Observation		

affected forest area is Rs. 156.009 lakhs and that of recreation (present value) is Rs. 39.9 lakhs. The option value of the affected area is Rs. 58.786 lakhs.

3.4. Forecasting ecotourism in Vazhachal recreational site

Applying the least-square method for forecasting, this takes the form of,

$Y_t = a + bt$, where, Y_t = expected number of visitors in each year

a = intercept term, or it is the expected visitors (trend value) in the base year 1998

b = slope coefficient or marginal decrease of visitors in each year

t = is the variable, it is the difference between year and base year. The estimated trend

line is $V_t = 233100 - 5203\,t$ in which V_t is the estimated visitor flow at time t.

The expected visitor flow becomes Zero when t is equal to 45 (Figure 3.11 & Table

3.13). The visitor flow to the site become zero when the difference between the year and

Fig. 3.11. Actual & Estimated Flow of Visitors (Vazhachal)
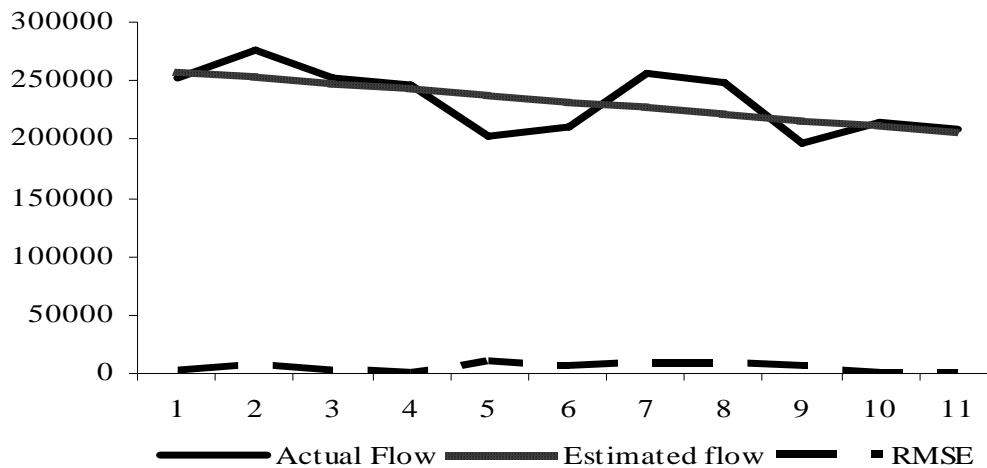
the base year is equal to 45. We take the year as A, then A- 1998 = 45 and A = 2043.

It is thus be concluded that if the falling trend is continuing persistently the visitor flow

towards the site become around zero or economically negligible around the year 2043.

The projected life span of Athirappily-Vazhachal is 38 years from 2005 given the present

scenario with all things remaining constant.

3.5. A Rational Recreation Price

"*A rational recreation price would be one which encourage tourism, increase income

and reduce forest dependence of the depending community and also ensure the

conservation and expansion of the forest area*." Recreation is a social necessity of the

wellbeing of a community and ecotourism provides a nature friendly recreation facility.

Fixing a higher or a price which is equal to or higher than the recreation surplus of

tourists is not a wise decision as it has various adverse social implications since the net

satisfaction of the community will become zero or negative. The nature can rejuvenate

the productive and positive aspects of an individual thus the recreation facility should be

offered to all and not only to those who have the high willingness and ability to pay. We

cannot leave our people in despair in the name of the conservation of forest on the one

hand and on the other the forest cannot be opened up for unnecessary degradation for

ecotourism but we must ensure a balanced development. A rational price (Box 3.13)

should be equal to the average cost of value created in the site plus an average cost of

conserving the forest area intact. Estimating Recreation Price by conservation Margin

Pricing method the rational price arrived at is Rs. 12 per tourist.

3.6. Residents' perception of tourism development

3.6.1. Respondent profile*:*   The descriptive statistics of the residents in Athirappily-

Vazhachal is provided in Appendix 3.6. With an average family size of 4, the sex ratio of

the sample is only 937 female population per 1000 male population, with 73.5 per cent of the respondents married in the age group below 40 years. High level of literacy was noted with 95.75 per cent of the total sample population has school level education. Primary sector dominance is observed in the economy with 34 per cent unskilled labourers, followed by 10.8 per cent agriculturalists, 7.26 per cent business and services together and a meager 0.88 per cent who have migrated to gulf regions. The government sector occupies only 2 per cent of the total sample size.

In the sample 28.3 per cent of the residents are indebted, with an average debt burden of Rs.47,686 per indebted family. Co-operative bank is the major credit provider (74.4 %) whereas the money lender contributes to only 0.2 per cent. All the respondents were born and raised here in Athirappily.

With an average land holding size of 1.3 acre, mixed crops dominate the cropping pattern with 78 per cent of the cultivated area followed by rubber (11 %), coconut (8 %), plantain (2 %) and pepper (1 %) of the total cultivated area. The mixed crops include coconut, plantain, pepper, tapioca, jack and vegetables. The per capita land availability of the agriculture depending population is only 0.95 acre, thus it is very evident that there exists a high degree of subsistence pressure over the landholding which will have adverse impact on the natural forest in the surrounding area**.** Total land area is 192.8 acres out of this 86.8 acre is wet land which accounts for 45 per cent.

Developing livestock in the fringe areas of the forest land without adequate development of the alternative fodder sources leads to deforestation. Only 22.4 per cent of the sample possesses livestock and approximately 5.9 per cent of families have reported the experience of wild life attack on their cattle. The people pointed out that deforestation and wild fire are the major cause of increased wild life attack in the area. The major fodder source is the natural forest (50 %) and the remaining breeding livestock provide for from the homeland and stall feed.

Dependence on the natural resources (Table 3.14) is determined by the socioeconomic conditions of the residents. The estimated fodder dependence of community over the forest is equal to 38.24. Fire wood, another major requirement of the local community is often met from the forest which is an open source for the people living in the fringe areas but excessive collection of firewood accelerates the process of deforestation. Of the sample 52.6 per cent depend on forest for firewood at varying degrees of intensity. The estimated fuel dependence index of the sample households is 50.55. The residents also collect various raw materials (bamboo, bamboo leaves, poles, among others) from the forest for construction purposes. Here, it is observed that mainly three parts of the house can be constructed by using the forest products, which are roof, wall and doors. The estimated housing dependence index of the sample in the study area is only 1.54. The Estimated Income Dependency of the sample household is 0.06 which mean that 0.06 per cent of the aggregate income of the sample household is contributed by the forest. In this area only the tribes depend on the forest for income. Forests offer various type of medicine to the residents, due to the development of modern alternative medicinal

facilities, the medicinal dependency of the people over the forest is falling. The medicinal

dependency of the residents is 3.51 as they also use allopathic and ayurvedic medicine. It

implies that on an average 3.51 per cent of the total medicinal requirement of the people

is met by the forest.

Forest dependence of the residents in Athirappily-Vazhachal is the sum total of

the income, housing, fuel, fodder, and medicinal dependencies. The over all forest

dependence of the sample is 18.78, which is comparatively low. Here, the major

dependency is by the tribal community.   The dependency index for fuel is very high

when compared to other factors. The government priority when assessed indicated first

priority for fuel itself. In other words, it indicates that keeping conservation and

sustainable management in mind alternate solutions must be worked out in order to

reduce the pressure/dependency on forest

3.6.2.   Ranking and marking of Social and Environmental Priorities

The respective priorities of the local community has been ascertained subjectively by

ranking and scaling techniques by introducing four alternative scenarios/choices, viz.,

enhancing tourism, hydro-electric project, conserving biodiversity and others against

which the people have stated their respective ranks.

Of the sample (Figure 3.12), 77.5 per cent gave first priority to the projects enhancing

Fig.3.12.   Social and environmental priorities [%]
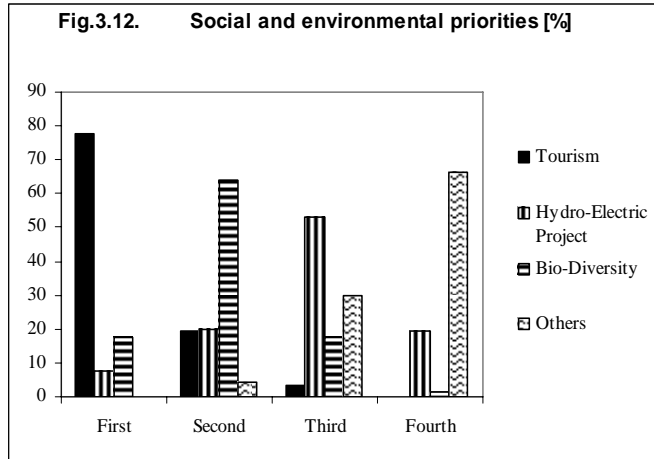
tourism, 17.6 per cent gave priority to the conservation of biodiversity in the area and 7.7 per cent to the proposed Athirappily hydroelectric project. No priority was accorded to any other alternative projects in the area. The second priority among different choices is such that 63.8 per cent of the households support conserving biodiversity and hydro electric projects (19.7 %) got   followed by tourism projects (19.2 %) and other projects (4.1 %).

 In case of the third priorities 53 per cent favored the proposed hydroelectric projects followed by other projects such as improving agriculture sector, manufacturing sector etc (29.7 %) and conserving biodiversity (17.5 %) and only a meager 3.3 per cent gave third priority to the enhancement of tourism in the area.

       In case of fourth priorities Other projects occupies the highest percentage support with 66.2 per cent 19.6 per cent give fourth priorities to the hydro-electric projects and 1.2 per cent to bio-diversity conservation. Nobody consider eco-tourism as their fourth priorities. In general, the social and environmental priorities of the community are distributed among different choices in such a way that Tourism and Conservation of

biodiversity occupies the largest support from the households in the first and second priorities respectively. The hydroelectric project is the third highest priority of the community and any other projects in the area is only the fourth highest priority of the community.

The priorities of the communities are identified by assigning marks to different ranks in such a way that first, second, third and fourth ranks gets 4, 3, 2 and 1 rank respectively. The total mark is equal to 608 which is the product of number of respondents and the highest mark assigned to the first rank. The mark secured by Enhancing tourism, Conservation of the bio-diversity, Hydro- electric project, and others are 565, 443, 254 and 102 respectively (Table 3.15 & Figure 3.13). In percentage terms enhancing tourism scored highest (92.93), followed by the conservation of biodiversity (72.86), Hydro electric project (41.78) and other projects (16.78).

Fig. 3.13. Community's marking of Socio-Environmental Priorities
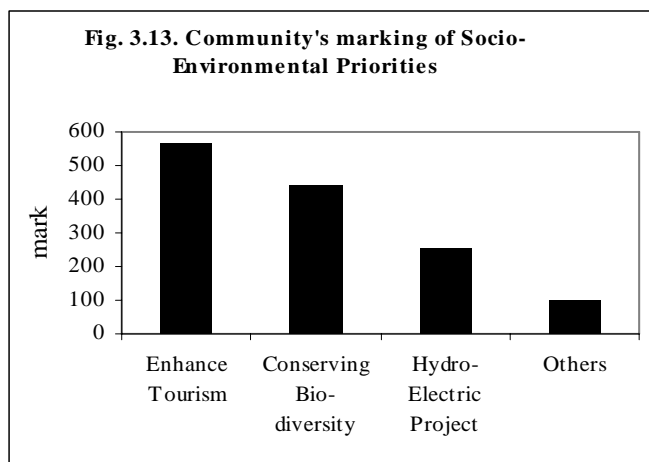
3.6.3. Distribution of recreational benefit

The recreation benefits to the local community are numerous and the most important of all is the employment it generates. Of the sample only 30.9 per cent agreed that they are benefited as a result of tourism development in Athirappily –Vazhachal, while 53.3 per cent of families pointed out that they do not get any direct benefit and 69.1 per cent did not respond to the question (Figure   3.14). The distribution of the benefit among the community is highly unequal in nature. Even though the distribution of benefit is unequal 82.9 per cent of the households want to conserve the recreation site while only 0.7 per cent is against the conservation and promotion of the recreation facility due to the increasing social and economic adverse implications.

Types of benefit and earning: The local community, especially those residing in the immediate vicinity of the recreational sites has been earning an income out of the employment provided by the VSS, self employment, contract labour, unskilled labour among others. Majority of families failed to reap any benefit due to the lack of managerial skills, entrepreneurship, initiatives and capital. The immediate visible benefit to the community is by way of employment (21 %) and local business undertakings (9.2 %) (Figure 3.15). Since the local community is basically poor, they are getting only small benefits like the daily wage unskilled labour work, but their day to day subsistence is substantially dependent on it. The average monthly benefit from employment generated is Rs. 976 and that from business in the area Rs. 8214.

3.6.4. Community perception of opportunities threats and benefit from tourism

The major economic benefit from tourism is the emerging employment and business opportunities in the recreation area (Table 3.16). Of the sample 32 families are benefited by way of employment and 14 with business opportunities and 3 families pointed out that developing recreational site leads to the overall development of the economy as it brings infrastructure and generates demand in the local economy. The expanding recreation facility increases the land price which is the primary assets of the people in the area. Developing ecotourism in the region is changing the social and economic attitudes of the people. The local community is becoming more environmental conscious, their social and economic status is fast improving. The ecotourism in the area is reducing the subsistence pressure of the population over land and other natural resources. Increasing avenues of service sector development is reducing the dependence of the population over the agriculture sector and helps to reduce the disguised unemployment in the local economy.

Table 3.16. Perceived opportunities, Threats and Benefit from the communities point of view					
Opportunities		*Threats*		*Benefit*	
	Families		Families		Families
Employment	32	Accidents increased	1	Economic Development	21
Business and Employment	14	Atmospheric pollution.	2	Business increased.	3
Development of the area	3	Pollution	5	Increasing land price	11
Not Responding	103	Plastic & other waste pollution	4	Changing social & economic attitudes	4
		Social tensions	3	Income to the people and Govt	8
		Not Responding	137	Not Responding	105
Total	152	Total	152	Total	152
Source. Primary data estimate					

Despite the socioeconomic benefit of the tourism, it also posses several threats to the peaceful existence of the community. These threats vary from increased accidents to increased social tension in the area. Increased alcohol consumption of the tourists creates various social tensions in the area. Increased pollution due to solid waste, water and atmosphere pollutants also reduce the quality of life of the community. In other words, the increasing tourist flow exerts recreation pressure over the forest. In order to tackle this recreation pressure more workers need to be employed in the recreation sector, i.e., the employment opportunity will increase, it will lead to increasing local income and reducing subsistence pressure. Thus, the economic use of recreation potential will reduce recreation as well as subsistence pressure on the forest thereby leading to the development as well as the conservation of the area.

3.7. The economic impact of tourism and societal benefit

Nature tourism has multiple social and economic benefits. The outdoor recreation system with its economic parallels identifies certain comparisons between the recreation economy and market economy (Table 3.17).

The recreation activities supported by government represent a significant source of employment and regional economic activity. It brings in expenditures from outside a region and creates employment opportunities for local residents within their region. A theoretical comparison of costs in the recreation and market economy is given in the Table 3.18. To the extent that such areas contribute to a positive quality of life and provide opportunities for recreation, the availability of quality service system may influence business relocation and

expansion decisions in communities. Athirappily- Vazhachal is also a basis to the growing economic sectors such as adventure and eco tourism.

3.7.1. Potential impacts of tourism in communities

As has already been understood working with communities is fundamental to achieving conservation goals and strategies including tourism (Table 3.19).   Without community participation there will be resource degradation, increasing economic inequity,

incompatible economic development, increased commercial threats, and alienation from traditional sustainable use. With the Forest Department opening up trek paths for the nature admirers it is all the more necessary to involve the local people who know the forest well and thereby opportunities are made available to them to earn income and share knowledge which could be a two way process.

Table 3.19. Potential impacts of tourism in communities in Athirappily-Vazhachal		
Positive (with community participation)		
	For communities	*For the recreation sites* (Athirappily-Vazhachal)
1.	Sustainable income	Potential opportunities
2.	Improved socioeconomic conditions	People's participation in the conservation activities
3.	Social and economic security	Increasing market price of recreation site
4.	Improved services	Developing all sectors of the economy related to tourism
5.	Cultural empowerment	Demand driven growth of the sites
6.	Increase in demand for the products	Reduced commercial threats
7	Increased business and employment opportunities.	Compatible economic development
8	Environmental awareness	Maintaining the recreation site clean and tidy,
9	Developing basic infrastructures	Reducing accident rate due to the community participation in tourism
10	Reducing subsistence dependence on forest	Controlling high recreation pressure and ensuring efficient use of productive resources

3.7.2. Income – Product Flow in Athirappily and Vazhachal Recreation Economy.

Economic linkages have been identified amongst three operational sectors in Athirappily-Vazhachal economy, viz., the agriculture and households, business and VSS and the

recreation sectors (Figure 3.16). As the households buy products from the business sector for which they pay their income as price, it establishes a flow between the two sectors. The flow is such that income flows from agriculture & household sector to business sector on the other hand products flow the business sector to agriculture sector. The household rendering their services as employment to business sector earns a wage. The recreation sector injects income into the local economy by paying entrance fee and price of the product and services offered by business sector. Government imposes tax, which is an outflow of income from the economy and the government investment is an inflow into the economy. The forest conservation and development of the local community depends upon the outflow of income from the economy and inflow of income into the economy. There must be a balance between the inflow and outflow whereby both subsistence and recreation pressure can be reduced simultaneously.

In Athirappily-Vazhachal recreation economy income flows from the recreation sector to other sectors such as agriculture and business sector. Here, the industry sector is not well developed. The recreation sector is not producing anything but generating large demand for the goods and services produced by other sectors in the economy. The income generated by the sector is flowing among the different sectors i.e., agriculture, household, business and recreation sectors. In this analysis income generated by the recreation sector is considered as its output.

Agriculture sector: Various agriculture products produced by the sector include rubber, coconut, pineapple, tapioca, pepper, cashew nut, areca nut, among others (Table 3.20).

Production here is basically for self consumption with very less commercialization. Hence, the linkages between agriculture and the recreation sector is very poor resulting in low income flow (injection) from recreation sector to the agriculture sector. Here, in Athirappily-Vazhachal the farmers are not producing for the recreation sector and so the income flow from recreation sector to the agriculture sector is low. Instead of selling their products directly to the visitors, they depend on the business people and middlemen. A moderate amount of income flows from the agriculture sector to the business sector.

Table 3.20. Agriculture Products flow to Business Sector.			
Agriculture Products	Price (local market)	Quantity/ Number	Monetary Value
Rubber	35.25**	24225.277	853941
Coconut	4.50 *	138010.67***	621048
Plantain	3.8**	40858.421	155262
Pepper	76.85**	5050.8003	388154
Pineapple	8.50**	9133.0588	77631
Tapioca	2.90**	160615.86	465786
Cashew nut	28.65**	4064.4677	116447
Areca nut	0.35*	221802.86***	77631
Total			2755900
* Price per number, ** Price per Kg,*** In number, Others in Kg			
Source : Primary data			

Business sector: The business communities are directly benefited from the increasing visitor flow. There are various types of business in this area which includes hotels, amusement parks, and street vendors among others (Table 3.21). They sell various products and render different services to the visitors. By providing employment to the local people in their firms, the income flows from the recreation sector to the business sector and from the business sector to the household sector. The business community

Table 3.21. The Recreation Sector in Athirappily-Vazhachal		
Type of Business	Sales Items	Number

Tea Shop	Tea, Coffee, Snack, Cool drinks, etc	12
Hotels	Lunch, Meals, etc	13
Venders	Tender nuts, Fancy & Toy item, etc	12
Textiles	Textiles items	3
Stationery Shops	Stationery Items	5

Primary data estimates

buys various products from the agriculture sector thus income flows from the business

sector to the agriculture sector also. In short, income flows from the business sector to the

local economy in two ways via employment and via agriculture products. Due to the

underdeveloped character of the local agriculture sector the business people are forced to

buy products from nearby town Chalakudy thus instead of injecting income in the local

economy and circulating among the local people, the income flows out of the economy.

Recreation sector: The recreation economy consists of the activities of tourists such as

paying entry fee and buying various products from the local economy. The recreation

sector is generating huge demand for the products produced and / or imported by other

sectors of the economy. The recreation sector is employing the local people for the

cleaning and maintenance of the recreation area. Thus, the service of the local people

flows to the recreation sector and income flows from the recreation sector to the local

economy. In short income flows from the recreation sector to the local economy in two

ways via employment and via selling products. The flow of output of the different sectors

in Athirappily-Vazhachal is depicted in the Transaction matrix (Table 3.22). The total

annual agriculture production of the sample households is Rs. 27,55,900. For the

simplicity of analysis we include the labour services provided by the agriculture

households into the agriculture production thus, Rs 27,55,900 is the sum total of the value

of agriculture output produced and the value of labour services supplied by the household

sector. The input output matrix (horizontally) highlights that out of the total production of

the household sector, 50 per cent (13,78,250), 46 per cent (12,69,070), and 4 per cent

(1,08,580), are used by the household, business and recreation sectors respectively. The

total output of the business class is Rs. 1,37,34,400, Out of this total output, 3 per cent

(4,42,000), 39 per cent (53,03,400), 58 per cent (79,89,000) are used by the household,

business, and recreation sectors respectively. In addition, to the demand created for the

agriculture and the business sectors in the economy the recreation sector paid fee

equivalent to Rs. 24,11,116 (Table 3.23) which is considered as its output.

The input requirement of different sectors is depicted vertically in the transaction matrix.

The agriculture and business sector use Rs. 18,20,250 and Rs. 65,72,470 as inputs

respectively. While, recreation sector generates an income equivalent to Rs. 1,05,08,696.

Out of the total income generated by the recreation sector 1 per cent Rs.1,08,580, and 76

per cent Rs.79,89,000 flow to agriculture and business sectors respectively. The

recreation sector paid a fee equivalent to Rs. 24,11,116 (23 %) a part of this go to the

local economy as wages and the other half as welfare spending by the VSS and

government investments in the area.

The Structural coefficient matrix (Table 3.24) projects the relative values of various

inputs and outputs. From this the relative values of output distributed in different sectors

can be determined. These relative values of outputs are also called structural coefficients,

which is determined using the following formula $a_{1n} = X_{1n} / X_n$,

Where a_{1n} = structural coefficient of sector with respect to product n

  X_{1n} is the output of sector X_1 used in the production of X_n

X_n is the total output of the sector n. The structural coefficient matrix (Table 3.24) shows

the higher linkages between business and recreation sector and lower linkages between

agriculture and recreation sector in the area in the area. Even though the linkages between

agriculture and business are high, the reverse linkage is poor in the recreation economy.

Because of the poor linkages between agriculture and recreation sector in the area, it

necessitates high rate of import of agriculture products from nearby town such as

Chalakudy, Palakkad, and Coimbatore, which leads to an outflow of income from the

local economy.

The strategies (Table 3.25) for better linkages in the economy will , (i) ensure more

benefit to the agriculture sector from tourism, with enhanced linkages between

agriculture sector and recreation sector, (ii) reduce the outflow of income from the local

economy by increasing the linkages between business sector and the local economy, (iii) generate more income into the local economy, by providing more spending avenues to the tourists at Athirappily- Vazhachal.

3.7.3. Tourism employment and income multipliers

The positive impacts of tourism in an area can also be measured through employment and income multipliers. Tourism employment multipliers summarize either the direct, indirect and induced employment generated by an additional sum of tourism expenditure in the economy. One of the most tangible links between the recreation sector and the local communities is through the employment opportunities generated in the recreation economy. Local people in Athirappily-Vazhachal have received income and employment benefits from tourism development in the area. The employment elasticity helps us to identify the responsiveness of the labour sector to the tourist flow. It helps to identify the labour intensive character of the recreation sector. In other words, it shows the responsiveness or the ability of the labour class to acquire benefit out of the tourism sector. The arc employment elasticity of visitor flow during the period 2002-03 is equivalent to 4.7 (Figure 3.17 & Table 3.26)**.** The arc employment elasticity reveals the responsiveness of employment opportunities to the changes in the visitor flow during 2002 to 2003. The estimate of the employment elasticity highlight that 1 per cent change

in the visitor flow leads to 4.7 per cent change in the level of employment, during the

period 2002-2003.

Fig.3.17.Labour share & Fee Collected 2002-03
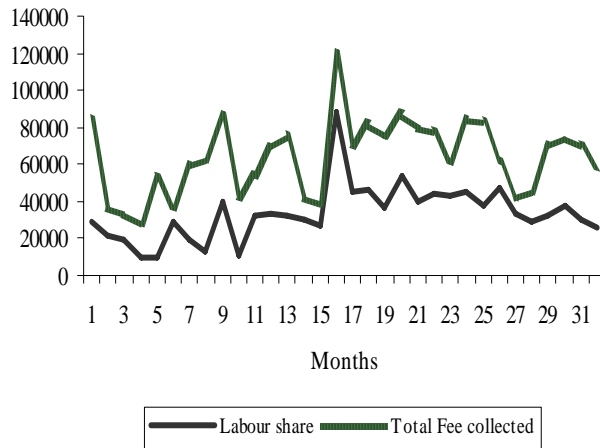
The Vazhachal VSS is a tribal VSS, thus the employment is given to only tribal people

that is the calculated employment elasticity shows the employment elasticity of the tribal

people. Thus, labour intensive investment in tourism will ensure employment security.

The recreation sector in an economy creates huge amount of demand and income in the

economy. This added income is multiplied in the economy based on the income

multiplier. The Keynesian multiplier adopted for identifying the income multiplier effects

in the economy is equal to 1/1-mpc, where 'mpc' is the marginal propensity to consume.

Consumption Function and income multiplier of people : Consumption is a function

of income. Symbolically C = f (Y) where, C is the consumption, Y is the income and f is

the functional relationship. As per the Keynesian theory as income increase consumption also increases but not as much as the increase in income. Thus, it is assumed that there is a linear relationship between consumption and income. The estimated consumption function (Box 3.14) is equal to C = 1253.86 + 0.56 Y with 0.78 as an adjusted R^2 value. The marginal propensity to consume is equal to change in consumption due to a small change in income. The estimated marginal propensity to consume is equal to 0.56. The estimated income multiplier is equal to 2.27. The income multiplier reveals that one unit increase in income by the recreation sector will result 2.27 unit increase in the aggregate income of the economy in the area. The income multiplier point out that the net effect of one unit spending either by the tourists or by the government will result in 2.27 unit increase in the net income of the local economy.

3.8. Tourism sustainability assessment: a conceptual approach

The recreation system in Athirappily –Vazhachal economy has two dimensions, i.e., the human and eco-dimension. Sustainable economic development based on ecotourism is possible only if there is sustainable addition to the ecology and economy and the sustainable use of the productive resources of the systems. The two dimensions have different indicators (Table 3.15).

3.8.1. Scale of sustainability: Scaling of sustainability is based on the ordinal perception statement of the primary stakeholders in the study area. In order to make a scale of sustainability cardinal values are allotted to different statements of the people.

The scale of sustainability consists of four categories. Here, the four point scale has been adopted of 25 points each totaling 100 (Table 3.16).

The scale of sustainability is developed based on the ordinal perceptions of the people about various parameters of different indicators. Different ordinal perceptions about various indicators are assigned cardinal marks (Table 3.17). There are two types of parameters pertaining to sustainability, positive and negative parameters. In case of the positive parameters, higher the level of parameter, higher will be the sustainability of the development of recreation economy and vice versa. In case of negative parameters, higher the level of parameter, lower will be the sustainability of the development of recreation economy and vice versa.

3.8.2. Human Dimension: Human dimension consists of the local people, business people, government and tourists to the area. The human dimension has three indicators, political, socio-cultural and economic indicators. An indicator has various sites specific parameters pertaining to the sustainable development of recreation economy in the area.

3.8.2.1. Political parameters of sustainability: Political indicators of human dimension are one of the sustainability determining factors. The site-specific different parameters of the political indicators include:

1. Tourism promoting political activities (+)

2. Cooperation of different departments in tourism promotion activities (+)

3. Participation of the people in the tourism promotion activities (+)

4.   Participation of Non Governmental Organizations in the tourism promotion

activities (+)

The political indictor of the human dimensions consists of positive related to sustainable

development of recreation economy in the area. Various political parameters related to

sustainable

development of

recreation

economy is

estimated using

the questionnaire

method. The

Table 3.18. Number of households and ordinal perceptions about political parameters [mark]				
Parameters	Excellent/ Very low [100]	Good / Low [75]	Medium/ Average [50]	Bad / High [25]
1	41 [4100]	42 [3150]	17 [850]	52 [1300]
2	0 [0]	32 [2400]	37 [1850]	83 [2075]
3	67 [6700]	49 [3675]	19 [950]	17 [425]
4	64 [6400]	53 [3975]	12 [600]	23 [572]
Average mark obtained = 64.18				n=152
Figures in parenthesis is equal to Number of respondent × Mark assigned				

average mark obtained by different parameters of political indicator is equal to 64.18.

This indicates that the political indicator of human dimension ensures potentially

sustainable level of ecotourism development in the Athirappily-Vazhachal. (Table 3.18).

3.8.2.2. Socio-cultural parameter of sustainability: The sustainable development of

the recreation economy is also dependent on the socio-cultural factors of the local

community. The socio-cultural parameters determining the sustainability includes -

1. Social tensions with the tourists (-)

2. Cultural impacts (-)

3. Increase in education status (+)

4. Caste wise discrimination in the tourists area (-)

5. Willingness of the people to participate in the tourism promotion activities (+)

The socio-cultural indicators of human dimension consist of two positive and three negative parameters related to sustainable development of recreation economy in the area. The social tension, cultural impact and caste wise discrimination in the tourist area are considered as negative parameters of sustainability as the sustainable development of recreation economy is inversely related to the level of these parameters. The willingness of the people to participate in tourism promotion activities and the increase in education status are positive parameters. The average mark obtained by the socio-cultural parameters of sustainability is equal to 74.17 (Table 3.19). This reflects that the socio-

Table 3.19. Number of households and ordinal perceptions about socio-cultural parameters [mark]			
Parameters	Excellent/ Very low [100]	Good / Low [75]	Medium/ Average [50]	Bad / High [25]
1	97 [9700]	43 [3225]	9 [450]	3 [75]
2	7 [700]	34 [2550]	56 [2800]	55 [1375]
3	83 [8300]	48 [3600]	17 [850]	4 [100]
4	69 [6900]	57 [4275]	19 [950]	7 [175]
5	47 [4700]	39 [2925]	43 [2150]	23 [575]
Average mark obtained = 74.17 n = 152			
Figures in parenthesis is equal to Number of respondent × Mark assigned			

cultural parameters ensure potentially sustainable development of recreation economy in the area.

3.8.2.3. Economic parameters of sustainability: The production structure of a recreation economy is satisfying the wants of both tourists and the tourism depending local communities. The primary wants of the tourists is a congenial atmosphere of recreation while the local communities want income and the sustainable existence of the natural resources. Thus, Sustainable Tourism Development depends on the expanding recreation facilities, well developed service sector, high quality food, and accommodation and transportation facilities. The people in the area can afford tourism only if increased

visitor flow adds income on the one side and the increased pollution in the area is only at an affordable level. Following are the economic parameters contributing to the sustainable development of recreation economy in the Athirappily-Vazhachal.

1. Recreation facilities (+)

2. Ecotourism potentials (+)

3. Cost of recreation (-)

4. Quality of basic facilities such as transporting and accommodation facilities.(+)

5. Income generating capacity (+)

6. Adverse impact of tourism related pollutants (-)

7. Adverse externality offered by other development in the area (-)

The economic indicator of human dimension consists of four positive and three negative parameters related to the sustainable development of the recreation economy in the area. The data related to the parameters like recreation facilities, ecotourism potentials, cost of recreation and quality of basic facilities such as transporting and accommodation are collected from 798 tourists. While data related to the parameters like income generating capacities, impact of tourism related pollutants and the adverse externality offered by other development in the area is collected from 152 households in the area. (Table 3.20).

The average mark obtained by the economic parameters of sustainability is equal to 57.14 too indicate that the economic parameters ensure sustainable development of the recreation economy in the area. Even though the average mark is come into the category of potentially sustainable, it is very near to intermediate category.

3.8.3. The Eco-dimension: Another important dimension of the recreation system is ecological dimension. Athirappily-Vazhachal attracts thousands of tourists per year with its natural forests, beautiful river, wildlife and the waterfalls. The indicators of eco-dimension on which the sustainable development of the recreation economy depend are

1. general environmental impacts (-)
2. environmental policy and management (+)

Delphi method is adopted to identify and scale various indicators of the eco-dimension. (Tables 3.21 & 3.22). Data has been collected from three groups of people working in the area such as 1) Environmentalists, 2) Officials and academician 3) People representatives.

3.8.3.1. Environmental impact of sustainability: Increased tourist flow adversely affects the natural resources in the area. The natural forest is becoming more and more degradable due to the continuous presence of tourists in the forest and developing more

recreational facilities in the forest areas. The adverse environmental impacts adversely

affect the sustainable development of recreation economy.

Table 3.21. Ordinal perceptions of different groups pertaining to the general environmental impacts [mark]				
Groups	Very low	Low	Average	High
Environmentalists	3 [300]	10 [750]	7 [350]	10 [250]
Officials and Academicians	5 [500]	7 [525]	12 [600]	6 [150]
Peoples Representatives	12 [1200]	9 [675]	6 [300]	3 [75]
Average mark obtained = 63,				n=30
Figures in parenthesis is equal to Number of respondent × Mark assigned				

The average mark assigned by different groups to environmental impact indicator of

sustainability is equal to 63. This indicates, that the environmental impact is not too high

to adversely affects the sustainable development of recreation economy in the area.

3.8.3.2. Environmental policy and Management. There are various site specific

environmental policy and management practices for the conservation of forest and the

sustainable development of recreation economy in the area. For instance, there is the

Vana Samrakshana Samithies formulated under the Participatory Forest Management

programme for the conservation f the forests. Delphi method is used judge, how far these

policies and management practices ensure the sustainable development of eco-tourism in

the area.

Table 3.22. Ordinal perceptions of different groups pertaining to the environmental policy and management [mark]				
Groups	Excellent	Good	Medium	Bad
Environmentalists	0	8 [600]	12 [600]	10 [250]
Officials and Academicians	0	9 [675]	15 [750]	6 [150]

Peoples Representatives	0	11 [825]	10 [500]	9 [225]
Average mark obtained = 50.8,				n=30
Figures in parenthesis is equal to Number of respondent × Mark assigned				

The average mark given by different groups to environmental policy and management practices with respect to the sustainable development of recreation economy in the area is 50.8. It is understood that the environmental policy and management practices ensure only an intermediate level of sustainable development of the recreation economy in the area.

3.8.4. Sustainability of the recreation system in Athirappily – Vazhachal

The ordinal perceptions can be plotted either on a graph or chart to arrive at a sustainability level. The sustainability chart (Figure 3.17) is divided into two [180^0 each] representing human dimension and ecological dimension. The scale of the chart ranges between 0 and 100 representing different categories of sustainability. The area between 0 to 25 represents the unsustainable region, 26 to 50 intermediate, 51 to 75 potentially sustainable and 76 to 100 sustainable. The human dimension part is divided into three, political, socio- cultural and economical similarly the ecological dimension is divided into two, general environmental impact and Environmental policy and management. The estimates of sustainability (Table 3.23) as per the valuation of the people in the area and tourists coming to the site highlights that the different indicators of dimensions

comes in the categories of potentially sustainable regions except those of the ecological dimension. This indicates that extreme caution is to be borne in the mind while framing

recreation development schemes and programmes in Athirappily-Vazhachal a natural

recreation site, such that the ecosystem is not adversely affected. On the other hand, it

must also mitigate the environmental impact of tourism on the poor.

_____

4. STRATEGIES AND ACTION PLAN FOR SUSTAINABLE TOURISM IN

ATHIRAPPILY-VAZHACHAL

Tourism is a steadily growing sector in Athirappily-Vazhchal, moreover these sites are endowed with greater potential for tourism especially nature tourism. At present the government and the development agencies are focusing mainly in the alleviation of poverty, ensuring good standard of living to the people and the environmental stability. Lack of adequate technologies, unscientific method of agriculture farming, illiteracy and increasing population is culminating into the increasing subsistence pressure over the existing natural resources. Thus, it is necessary to make the conservation activities economically sustainable. Raising the funds from the efficient use of direct non-consumptive use values of forest is a rational way to make the conservation activities economically sustainable. Forest and related natural resources in Athirappily and Vazhachal have great potential to generate income and also alleviate poverty through the expansion of ecotourism. For ensuring environmental stability, ecotourism ventures must be followed by the adequate forest expansion activities, if it is not the case, the degradation of the forest and the economy will be the net result in the long run.

The recreation sector in Athirappily-Vazhachal provides immense scope for development in a rural area in the larger perspective as well as provides for societal welfare. The strategies must be focused on immediate ***economic benefits***, whereby the income earning capacity of the people is enhanced as well as their standards of living; ***non-economic benefits***, whereby capacity building and empowerment takes place and finally on a more ***supportive policy***, as the recreation activities supported by government represent a significant source of employment and regional economic activity (Table 4.1).

95

_____

Table 4.1. Strategies for sustainable tourism in Athirappily-Vazhachal Recreation sites		
Economic benefits	*Non-economic benefits*	*Policy reform/ research*
Increasing business opportunities for the poor	**Human Resource development** improve community infrastructure (*eg. roads, markets, etc.*) and human development Index (*eg. literacy, health and nutrition, housing potable water, women empowerment, etc.*)	**Building a more supportive policy** - The recreation activities supported by government represent a significant source of economic security and regional economic activity. Special emphasis must be placed both on methods of economic analysis and on practical policy instruments that will simultaneously protect natural habitats and alleviate poverty.
Providing employment opportunities for the poor	**Capacity building, Training and empowerment** – Creating necessary human resources – of the resident population through – training (*in confidence building,* – *leadership, managerial skills,* – *accounting, costing, etc.*)	**An integrated planning framework** which encourages ecotourism partnerships where the Forest Department plays the role of a facilitator. Successful ecotourism is with building strong partnerships such that multiple goals of conservation and equitable development can be met. The key participants must include the managing authority, the government agencies, the local community, the NGOs, private sector, community organizations and individuals, among others.
Enhancing collective benefits	**Mitigating the environmental impact** of tourism on the poor	**Promoting participation of the primary stakeholders ,** especially the already functional VSS - devolve control to the local communities, as is being
Economic benefits	**Non-economic benefits**	**Policy reform/ research**

		done under the participatory management approach through the Vana Samrakshana Samithies backed by a legal and policy framework empowering local communities to assume responsibility and authority for natural resource management and land management contracts with representatives of the government.
Revenue generation – tourism offers opportunities to generate revenue in diverse ways, *such a s entrance fees, user fees, concessions*	Addressing **social impacts** of tourism	**Promote private sector** to provide services that benefits the tourists and local community as well. Increasing avenues of service sector development is reducing the dependence of the population over the agriculture sector and helps to reduce the disguised unemployment in the local economy. Private sector concessions include snack shops, restaurants, lodges, gifts shops, tour guides, all these can be privately owned or managed with a portion of the profits returned to the sites.
	Addressing **cultural impacts** of tourism	Putting in place an **institutional arrangement** which supports sustainable development and management which supports sustainable development of tourism in Athirappily-Vazhachal.

_____

4.1. Short term Strategies for tourism development in Athirappily-Vazhachal

1. Compulsorily construct a barricade in the dangerous areas (edges) of the waterfall where the tourists tend to venture.

2. Visitor / tourist zones need to be earmarked and dangerous / restricted areas set out of bounds.

3. Provide clean toilets, bathing facilities for tourists, and mark out a bathing zone to avert any kind of danger.

4. Provide clean drinking water.

5. Construct small eco friendly rest houses for tourists in the recreation site in Athirappily.

6. Abolish plastic and alcohol / aerated drinks in the tourist spot and promote local products such as tender coconut etc.

7. Sufficient attractive sign boards by the authorities may be put up stating the `do's and don'ts' of a natural recreation site, a layout of the recreation spots to visit with pictures (the trek paths, among others), and how they may benefit by visiting these places may be placed at the entry point i.e., the check post at Athirappily and Vazhachal for tourist information as well as in areas which catch tourists attraction.

8. Address the various actual commercial threats the sites face (large number of entry paths, unauthorised collection, unauthorised fishing among others).

9. The upland or upstream of Charpa falls need be afforested in order to maintain the perennial flow, which dries up in the summer months and is currently a tourist attraction being enroute from Athirappily to Vazhachal,.

_____

_____

10. Open up the interpretation center for the common public and have documentary projections too on a payment basis, which will enable tourists to get a glimpse of the Athirappily-Vazhachal forests at close quarters

11. Encourage the private sector to provide necessary services to the tourists

4.2. Long term Strategies for tourism development in Athirappily-Vazhachal

1. The strategies for sustainable tourism in Athirappily-Vazhachal recreation sites ought to focus on the Pro-Poor Tourism giving weightage to economic benefits, non-economic benefits, and policy reform in the area.

2. Research and guidelines on mechanisms to minimize the potential problems of economic leakage, on negative environment and social impacts, inter-generational effects and inadequate income distribution.

3. The carrying capacity of the recreation sites need to be worked out. Carrying capacity information is extremely useful in zoning tourism areas and in setting visitation limits by the authorities.

4. Access to tourism opportunities should be widely available, including access for local people and for the handicapped.

5. Enhance the linkages between recreation and other sectors of the economy.

6. Implementation of the site-specific "*One Tourist, One Rupee, Ten trees programme*" to ensure environmental and economic security in the ecotourism based economy with peoples participation.

_____

7. Improve mutual understanding among different government department working in the area. In other words, bring about integrated approach to the management of tourism in these sites.

4.3. Towards Action Plan

In order to ensure the conservation of the forest area in and around Athirappily-Vazhachal recreational site as well as the benefit to the economy at large, here, a site-specific program called "***One Tourist One Rupee Ten trees Program***" (Figure 5.1) is proposed towards action plan. This program aims at the conservation and expansion of the forest area in Athirappily-Vazhachal recreation area with peoples' participation. In this program one rupee from each tourist (be included in the entrance fee) is collected and set up a common fund called ***Conservation fund***. When the fund increases to Rs.500 one person is employed for planting ***ten trees*** in the recreation area, to start with the *visitor activity zone* or the *affected forest area*. In the program preference should be given to women in the local area who are engaged in labour work. The employed person is directed to plant a tree which is given by the authority and conserve it for a period of six months. This six month period is called ***conservation period*** and during the period the person employed is directed to irrigate the plant at least twice in a week and provide all required protection.

After the conservation period of six month if the tree is sustaining and healthy, the employed person must be paid Rs **500** from the conservation fund as an incentive. This program also envisages to give the ownership of the tree to the person who planted it.

_____

The ownership should be conditional in nature such that the person is the primary owner of the tree and his right is restricted to the conservation only. The main features of the program (Box 4.1) should be such that people are environmentally conscious and feel responsible for conservation.

How to implement

- The VSS secretary (a Forest Department official) should supervise the program

- VSS secretary should provide a plant and direct the employed person to plant the tree in a particular place. The species to be planted may also be identified and listed by the community.

- The site for planting should be initially concentrated on the Affected Forest Area and then move on to degraded forest areas, roadside, school compound or any other public place as identified by the community as a whole.

- There should be a memorandum of understanding between the VSS secretary, the person employed and some (at least two) VSS members as witnesses.

- All the VSS member should be give a chance to plant tree and also act as witnesses in this program.

- A person from outside the VSS can also participate in the program and VSS member should be the witnesses

- VSS secretary should document, explain and report the progress of the program to the VSS members.

- All the VSS members are responsible to monitor and independently evaluate the program.

_____

This program once implemented will ensure economic as well as environmental security in Athirappily-Vazhachal recreation area. This maybe started as a site-specific program and subsequently be extended to the district/State level (rural as well as urban areas) including road sides.

_____

5.   CONCLUSIONS

Tourism as a sector in Athirappily-Vazhachal can be linked to economic development by identifying and assessing its advantages in the development of local economies. It is an important opportunity to diversify the local economies. Tourism here offers labour intensive and small scale opportunities compared to other non-agricultural activities, it employs a high proportion of women and values natural resources and culture. The present study attempted to estimate the economic potential of ecotourism in Athirappily-Vazhachal, the resident perception on tourism development in the area and suggests suitable strategies and a site-specific programme for sustainable tourism that promotes conservation of the natural resources as well as benefits the society at large. The main findings of the study are enumerated here.

- Athirappily –Vazhachal is naturally and socially endowed with high potential features for tourism development in natural areas. Tourism here is nature based with very high concentration of visitors/tourists. The revenue generating potential of the sites indicates a positive relationship between the revenue, number of visitors and number of vehicles, which is steadily increasing over a period of time. Approximately on an average 3.5 lakh tourists visit these sites annually of which the international tourists form only a meager percentage.

- The Willingness to pay (WTP) and recreation surplus are positively related, i.e., one unit increase in the recreation surplus leads to 0.44 unit increase in the WTP. The probability of willingness to pay for the forest conservation is higher among the educated group. The probability of willingness to pay for the conservation of

_____
Kerala Forest Research Institute

_____

forest is lower among the higher income group due to their lower forest

dependence. The study highlights no direct or indirect positive or negative

correlation between income and WTP. WTP is not directly or inversely

proportional to the increase in the income but it depends upon various socio-

cultural, economic, awareness level and environment consciousness of the people

- Average recreation surplus of tourists from Kerala based on Individual Travel

  Cost Method (TCM) is Rs 196/-. The recreation surplus of a tourist by the

  Individual Travel Cost Method (TCM) of the total sample is Rs 185/-. The

  recreation surplus of a tourist by the Contingent Activity Method is equal to Rs

  170/-. The recreation value of a tourist is by the Contingent Valuation Method

  (CVM) is equal to Rs 775/-

- The total Affected Forest Area, approximately 1.33 sq km is the most disturbed

  areas a result of maximum visitor activity. The total estimated value of Affected

  Forest Area (133 Ha) is equal to Rs 509.124 lakhs. The projected lifespan of

  Athirappily-Vazhachal is 38 years from 2005 given the present scenario with all

  things remaining constant. The estimated rational recreation price by

  Conservation Margin Pricing Method is Rs. 12 / - with an average visitor flow of

  5,30,000 per year.

- The Residents' attitudes to tourism related impacts on forests in and around

  Athirappily-Vazhachal covers economic, social and general environmental

  impacts. Tourism is regarded as a revenue generating activity, the study illustrates

  that the support of the local communities is indispensable for the successful

  development of tourism in the community. This brings to the foreground the

_____

_____

importance of the environmental consciousness and sensitivity on the part of local people. Resident perception of development in Athirappily –Vazhachal indicated approximately 77.5 per cent of the sample providing first priority to the project enhancing tourism in the area.

- The major economic benefit from tourism in the recreation area is the employment generated and business opportunities. The economic linkages (input-output analysis) in the economy indicate high linkages between the business and recreation sector and lower linkages between agriculture and recreation sector in the study area. The study estimated that a one unit increase in income by the recreation sector will result 2.27 unit increase in the aggregate income of the economy in the area. Labour intensive investment in tourism ensures employment security in the study site. 1 per cent change in the visitor flow will lead to 4.7 per cent change in the level of employment.

- The tourism sustainability assessment based on scale of sustainability highlights that Athirappily-Vazhchal is fast emerging as a potentially sustainable region for ecotourism development and is a viable alternative to the conservation of forest and enhancing the standard of living of the dependent communities. The strategy should be to emphasize on pro-poor tourism, focusing on increased economic benefits, enhancing non-economic impacts and promoting a more supportive policy. A participatory approach to the development of ecotourism in the site will ensure both economic and environmental security in Athirappily-Vazhachal recreation site.

_____

_____
Kerala Forest Research Institute