

**STRATEGIES FOR ECOTOURISM DEVELOPMENT - A CASE OF  
WAYANAD WILDLIFE SANCTUARY FOREST AREA &  
ENVIRONS**

THESIS REPORT

Submitted by  
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*to*

*the APJ Abdul Kalam Technological University in partial fulfilment  
of the requirements for the award of the  
Post Graduate Degree of M. Planning in  
Urban Planning*



**URBAN PLANNING**

**DEPARTMENT OF ARCHITECTURE**

**THANGAL KUNJU MUSALIAR COLLEGE OF ENGINEERING**

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**CERTIFICATE**

Certified that the Project entitled “**Strategies for Ecotourism development – A Case of Wayanad Wildlife Sanctuary Forest Area & Environs**” submitted by **Akshay J S (TKM20MUP001)** of MUP (2020-22) BATCH, in partial fulfilment of the requirements for the award of Post-Graduate Degree in Urban Planning, under the APJ Abdul Kalam Technological University is a bonafide work carried out by them under our guidance and supervision.

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I hereby declare that the project entitled “**Strategies for Ecotourism development – A Case of Wayanad Wildlife Sanctuary Forest Area & Environs**” is a bonafide record of the study done as part of Thesis work under the supervision of Dr Annie John during the **Fourth Semester M. Plan (2022)** Post Graduate Degree Course in the Department of Architecture, Thangal Kunju Musaliar College of Engineering, Kollam. To the best of my knowledge, I declare that the work reported herein does not form part of any other project report or thesis on base with a degree or award conferred earlier to any other candidate.

Place: Kollam

Date: 14/09/2022

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## **ABSTRACT**

Ecotourism is a sort of responsible tourism that aims to educate visitors while raising funds for environmental protection, economic development, and respect for various cultures and human rights. The idea combines conservation, community, and long-term growth through travel. Over the last several decades, conservation groups, ecological disciplines, policymakers, and community planners have all shown an interest in applying eco-tourism concepts to maintain and preserve an area's biological richness while simultaneously boosting the economic well-being of the local people. Over the last decade, countless ecotourism studies have established a knowledge framework for sustainable tourist growth. Most earlier research has concentrated on the benefits of ecotourism sites for the economy and the environment.

The eco-tourism development significantly contributes to Wayanad's expansion as a premier global tourism destination. The main contribution of Wayanad's economy is agriculture and tourism. The study includes ecotourism spots of Wayanad Wildlife Sanctuary and its environs which also includes heritage & culture tourism spots of Wayanad. Ecotourism hotspots should be on the agenda of both domestic and foreign tourists even though the infrastructure and other amenities are inadequate. Climatic change, irregular climate behaviour, poverty, unemployment, and inequality have all been identified as threats to which eco-tourism techniques have been acknowledged as viable solutions. This thesis looks at formulating strategies for ecotourism development in Wayanad Wildlife Sanctuary & environs to build economic, social, and environmental characteristics at ecotourism sites and in local communities. Information gathering and observation methods were used to obtain data from ecotourism spots in the Wayanad Wildlife Sanctuary Forest area. The environs and the materials were evaluated using ecotourism ideas and principles. This also assisted in exploring multiple alternatives that aid in uplifting local inhabitants and how to develop transportation & infrastructure facilities without jeopardizing the environment in many ways. Strategies are provided to enhance eco-tourism that would be both responsible and profitable.

***Keywords: Ecotourism, Socio-Economic & Environmental conditions, Development Strategies***



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## List of Abbreviations

<b>EIA</b>	Environment Impact Assessment
<b>Co-C</b>	Community-Oriented Collaborative
<b>EDC</b>	Eco-Development Committee
<b>VSS</b>	Vana Samrakshana Samithi
<b>SHG</b>	Self Help Group
<b>HKS</b>	Haritha Karma Sena
<b>TEPS</b>	Thenmala Ecotourism Promotion Society
<b>PTR</b>	Periyar Tiger Reserve
<b>FPC</b>	Forest Protection Committee
<b>KTDC</b>	Kewzing Tourism Development Committee
<b>SDF</b>	Sikkim Development Foundation
<b>ECOS</b>	Ecotourism and Sikkim Conservation Society
<b>CBEP</b>	Community-based Eco-tourism Programs



## **Chapter 1. Introduction**

*This chapter explains the background, needs and aim of the study. The purpose and objectives of the study are also listed out here. The methodology adopted for the research and arriving at strategies are explained here in detail.*

### **1.1 Background**

Ecotourism is a form of responsible tourism; the purpose may be to educate the traveller, provide funds for ecological conservation, directly benefit economic development, and foster respect for different cultures and human rights. (Global Ecotourism Network, 2016) Ecotourism, sometimes known as "nature tourism," tries to reduce the environmental impact of tourism. Sustainable development is advocated by the idea of uniting communities, conservation, and tourism. Ecotourism focuses on unadulterated, pristine natural environments.

- It aids in building cultural and environmental awareness.
- It fosters positive experiences for both visitors and hosts.
- It minimizes the impact of tourism on the environment.
- It boosts employment and economic opportunities for local people.
- It provides financial benefits to conservation.

Tourism has had a negative influence on certain areas' natural beauty. This results from commercialising travel locations to meet industry forms; nature tourism has been a boon amid this difficulty. In recent decades, it has been rising. The influence of ecotourism is favourable and advantageous for both hosts and tourists who are generally travelling the world. Professionals that work in ecotourism can get new perspectives on the globe while also enhancing the standard of living in their local communities. (Patnaik, 2019).

### **1.2 Need for study & feasibility study**

The interest in using the concept of ecotourism is that of conservation groups, ecological policymakers, and community planners to protect and maintain the region's natural affluence and the local people's economic prosperity. In recent decades, it has been on the rise. Adopting ecotourism practices is a practical remedy to address the threats of climate change, unpredictable climate behaviour, poverty, unemployment and inequality. By

discovering the splendour of nature and its complex relationships and changing the perception of the natural and cultural environment, we generate sufficient income for ecosystem conservation and raise visitors' awareness of conservation. The development of ecotourism is an essential complement to the growth of Kerala into one of the world's leading tourist destinations. This will help improve the sector's contribution to the economy of Kerala. The state can offer tourists a variety of attractions, including Heritage tourism, religious tourism, nature tourism, cultural tourism, healthcare, etc. This is a must-see for domestic and foreign tourists. However, infrastructure and other equipment are not up to standard. (MeeraRanjith, 2020).

Wayanad has higher eco-tourism potential, especially at Wayanad Wildlife Sanctuary, located in Noolpuzha Panchayath & Thirunelli Panchayath. Eco-development committees manage ecotourism in Muthanga & Tholpetty under the supervision of the Kerala forest department. Wayanad wildlife sanctuary provides activities such as jeep safari, camps, eco shops etc. However, the transportation, infrastructure facilities, and local community involvement are not up to the mark like Thenmala, Thekkady Eco tourism. Ecotourism development proposal - Wayanad Wildlife Sanctuary Management plan 2012- 2022

### **1.3 Research question**

- What are the opportunities for eco-tourism development in the Wayanad Wildlife Sanctuary Forest area?

### **1.4 Aim**

- To formulate strategies for eco-tourism development in Wayanad Wildlife Sanctuary forest area & environs

### **1.5 Objectives**

- To study about relevance of eco-tourism development through literature reviews.
- To study about regional setting and existing conditions of the Wayanad Wildlife Sanctuary Forest Area.
- To assess the various potentials and issues of Wayanad Wildlife Sanctuary Forest Area.

- To propose strategies for eco-tourism development at Wayanad Wildlife Sanctuary Forest Area

## 1.6 Methodology

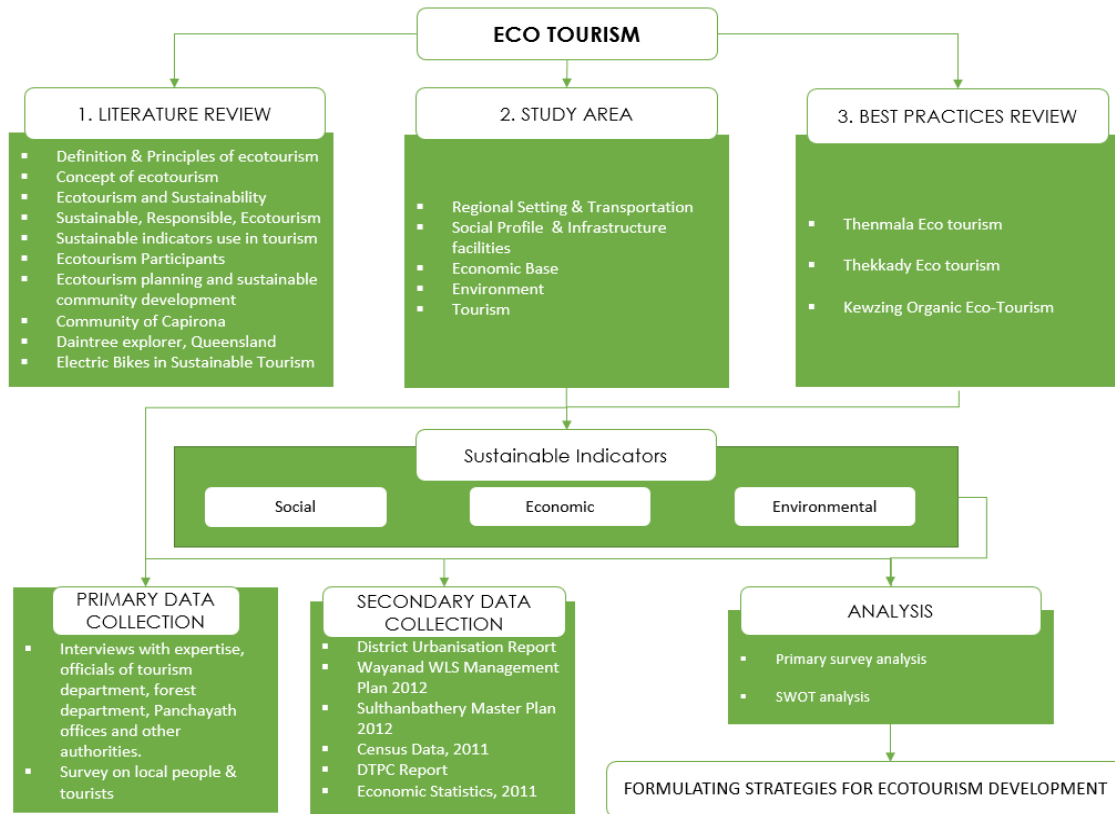


Figure 1 Methodology

## 1.7 Scope

Have a higher potential for eco-tourism development in Wayanad Wildlife Sanctuary, so the study will help to understand the various possibilities and opportunities for eco-tourism. The study also highlights the importance of local community involvement and their upliftment.

## 1.8 Limitation

The planning area is limited to the Wayanad Wildlife Forest Area, which includes Panchayath areas of Noolpuzha, Thirunelli and the municipal region of Sulthan Bathery and nearby nodes Panchayath areas of Nenmeni, Pulpally, & Mulonkolly.



## **Chapter 2. Literature review**

*This chapter reviews relevant literature related to definitions & principles of ecotourism, the concept of eco-tourism, ecotourism and sustainability, sustainable indicator use in tourism, Eco-tourism participants, Ecotourism planning and sustainable community development.*

### **2.1 Definition & Principles of Ecotourism**

According to the current definition of ecotourism, it is "responsible travel to natural areas that maintains the environment, helps the well-being of local people, and incorporates interpretation and education."

Conservation: Ecotourism helps safeguard our beautiful planet's natural and cultural history by providing effective economic incentives for conserving and promoting bio-cultural diversity.

Communities: Ecotourism is an excellent tool for empowering local communities worldwide to fight poverty and achieve sustainable development by enhancing local capacity building and employment opportunities.

Interpretation: Ecotourism encourages a more profound knowledge and respect for nature, the local society, and culture, focusing on enhancing individual experiences and environmental awareness via understanding.

Principles of Ecotourism:

- Reduce the physical, social, behavioural and psychological effects as much as possible.
- Promote environmental and cultural awareness as well as respect.
- Ensure that both visitors and hosts have a good time.
- The practice of providing direct financial incentives for conservation.
- Provide financial benefits to both residents and private businesses.
- Provide guests with unforgettable interpretive experiences that assist them in becoming more aware of the host countries' political, environmental, and social climates.
- Facilities with low environmental impact should be developed, built, and operated.

## Strategies for Ecotourism development – A Case of Wayanad Wls forest & environs

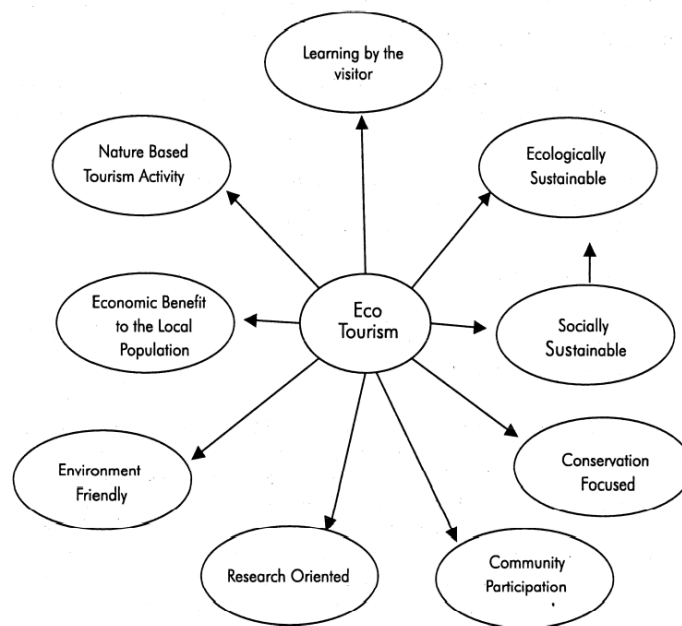
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- Respect the rights and religious convictions of the indigenous people in your community and collaborate with them to foster empowerment. (TheInternationalEcotourismSociety, 2019).

<b>AUTHOR</b>	<b>DEFINITION</b>
<b>Kenton Miller (1978)</b>	Nature-based travel to relatively undisturbed areas with an emphasis on education.
<b>Ceballos-Lascurain (Early 1980s)</b>	Travelling 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 (both past and present) found in these areas.
<b>Ziffer (1989)</b>	A form of tourism inspired primarily by the natural history of an area, including its indigenous cultures. Ecotourism visits relatively undeveloped areas in the spirit of appreciation, participation, and sensitivity. Ecotourism practices a non-consumptive use of wildlife and natural resources and contributes to the visited areas through labour or financial means aimed at directly benefiting the conservation of the site and the economic well-being of the residents.
<b>Wight(1993)</b>	The tourism activities that conducted in harmony with nature, as opposed to more traditional, mass tourism activities.
<b>Goodwin (1996)</b>	Ecotourism is low-impact tourism that contributes to the maintenance of species and habitats either directly through a contribution to conservation and/or indirectly by providing revenue to the local community sufficient for local people to value, and therefore protect, their wildlife heritage area as a source of income.
<b>World Conservation Union (IUCN) (1996)</b>	Environmentally responsible travel and visitation to natural areas, to enjoy and appreciate nature (and any accompanying cultural features, both past, and present) that promote conservation, have a low visitor impact and provide for beneficially active socio-economic involvement of local peoples.
<b>Martha Honey (1999)</b>	Ecotourism is travel to fragile, pristine and usually protected areas that strive to be low impact and (usually) small scale. It helps educate the traveller; provides funds for conservation; directly benefits the economic development and political empowerment of local communities, and fosters respect for different cultures and human rights.
<b>Worldwide Fund for Nature (WWF) (2000)</b>	Ecotourism is tourism within nature that, in contrast with mass tourism, does not exceed the carrying capacity of the area in which it is developed, while at the same time promoting the conservation of the natural and cultural environment and helping sustain social cohesion.
<b>Weaver, 2001</b>	Ecotourism is a form of tourism that fosters learning experiences and appreciation of the natural environment, or some component thereof, within its associated cultural context.
<b>Department of Ecotourism, Kerala</b>	Ecotourism is a purposeful journey to natural areas to understand the cultural and natural history of the environment, taking care not to alter the integrity of the ecosystem, while producing economic opportunities that make the conservation of natural resources beneficial to local people.

## 2.2 Concept of Ecotourism

Ecotourism is a purposeful journey of taking care of the ecosystem, understanding the nature and culture of a particular area also developing economic opportunities that make the conservation of natural resources beneficial to the local people. Ecotourism and nature tourism are conducive to enriching and enhancing the standing tourism based on natural heritage and the local population and keeping with the sites' carrying capacity. Developing countries are more about improving the living standards of the regional/rural people. But for the developed countries, it is more about the nature experience given that the standard of living in the countryside is relatively high. Ecotourism society defines it as responsible travel to natural areas, conserving the environment and improving the local people's welfare. The four pillars of ecotourism are nature-based, ecologically sustainable, the possibility of conducting research and the involvement of local people.



**Figure 2 Concept of Eco-Tourism**

Source : *Ecotourism for Eco-Friendly Guest and Green Host - A Case Study on Thenmala Ecotourism Project, Kerala, Vol 3 No. 1*

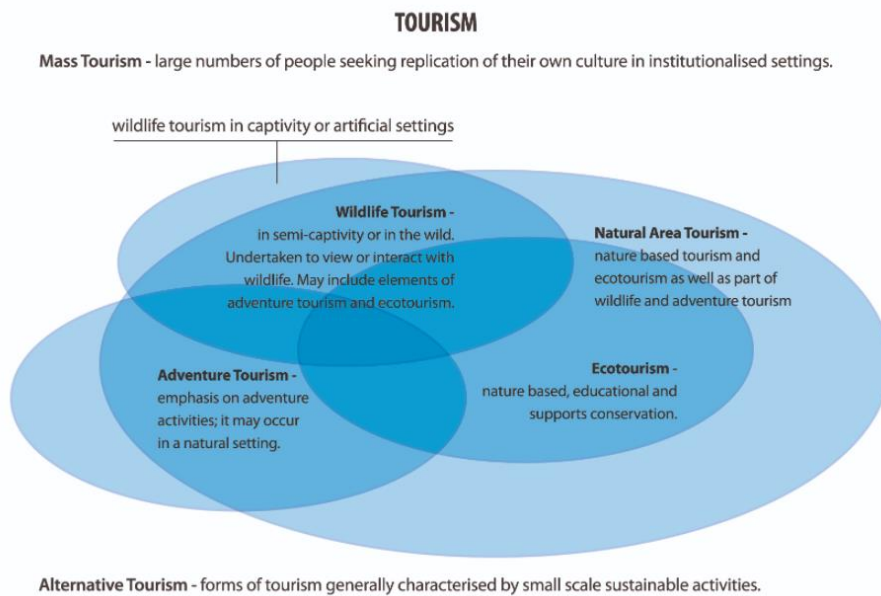
(Binoy, July 2008)

### 2.3 Ecotourism and Sustainability

MASS TOURISM	ECO TOURISM
• Large groups of visitors	• Small groups of visitors
• Urban	• Rural
• Touristic general marketing activities	• Eco-marketing activities.
• Impact on natural environment	• Very less impact on the natural environment
• Management based on macroeconomic principles	• Management based on local economic principles
• Anonymous relationship between visitors and local community	• Personalized relationships between visitors and local community
• Intensive development of tourism facilities	• Local development and conservation objectives
• Behavior-oriented leisure activities/entertainment, opponents to education and training actions.	• Loyalty in the process of training and education for appropriate conduct for the natural environment
• General development goals.	• Reduced development of tourism facilities.

**Figure 3 Difference between Mass tourism and Eco tourism**

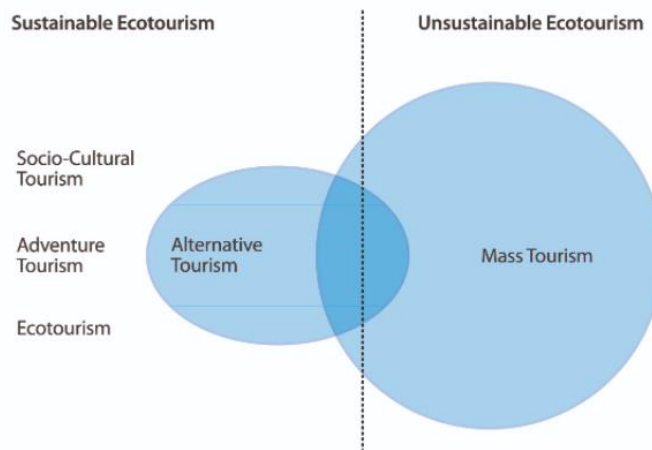
Source : *Advances in Landscape Architecture*



**Figure 4 Relationship of ecotourism to other forms of tourism**

Source : *Advances in Landscape Architecture*

Conceptual model of tourism



**Figure 5 Conceptual model of tourism**  
 Source : *Advances in Landscape Architecture*

The three main sustainability goals of ecotourism practised globally are listed below.

<p>➤ <b>Environmental sustainability goals of ecotourism</b></p>	<ul style="list-style-type: none"> <li>• Promotes environmental protection</li> <li>• Provides environmental education                             <ul style="list-style-type: none"> <li>-increases public environmental consciousness</li> <li>-fosters healthy attitudes and behaviors towards nature</li> </ul> </li> <li>• Encourages donations to contribute to the protection of local natural resources air quality</li> </ul>
<p>➤ <b>Sociocultural sustainability goals of ecotourism</b></p>	<ul style="list-style-type: none"> <li>• Promotes local peoples active participation</li> <li>• Promotes local ownership</li> <li>• Empowers local people                             <ul style="list-style-type: none"> <li>-e.g. builds up local peoples confidence/self-esteem</li> </ul> </li> <li>• Enhances local communities equilibrium</li> <li>• Encourages intercultural appreciation and communication between host communities and tourist</li> </ul>
<p>➤ <b>Economic sustainability goals of ecotourism</b></p>	<ul style="list-style-type: none"> <li>• Contributes to lasting local economic development</li> <li>• Creates permanent jobs for local people</li> <li>• Drives the development of other related industries</li> <li>• Upgrades local infrastructure</li> <li>• Profits earned retained within local communities</li> <li>• Equal distribution of revenues</li> <li>• Promotes consumption and production</li> <li>• Finances the establishment and maintenance of protected areas</li> <li>• Uses natural resources efficiently</li> </ul>

**Figure 6 The three main sustainability goals of ecotourism**  
 Source : *Advances in Landscape Architecture*

(Tugba, 2013)

## 2.4 Sustainable indicator use in tourism

Indicators have the potential to condense enormous amounts of data into a more manageable shape without sacrificing vital information. Indicators reduce pertinent data into easily observable phenomena of interest. On the other hand, statistics provide raw data

with no meaning, while sustainability indicators offer a sense that transcends beyond the features directly linked with the numbers. The World Tourism Organization (WTO) of the United Nations created sustainability indicators to assist tourism managers in obtaining and using the information to better support decision-making for greater tourism sustainability. Indicators are the cornerstones of sustainable tourism, and they're meant to be utilised as tools to help managers respond to pressing challenges. According to the World Trade Organization (WTO), indicators are gauges of the severity of existing concerns, signs of potential problems, and risk measures. Indicators are a way of identifying and tracking the outcomes of actions. Indicators are data sets used regularly to track significant changes in tourism development and management. They can measure:

a) Changes in tourism's internal structures and factors; b) Changes in external factors that affect tourism; c) Tourism's adverse effects. Sustainability indicators can be developed using both qualitative and quantitative data.

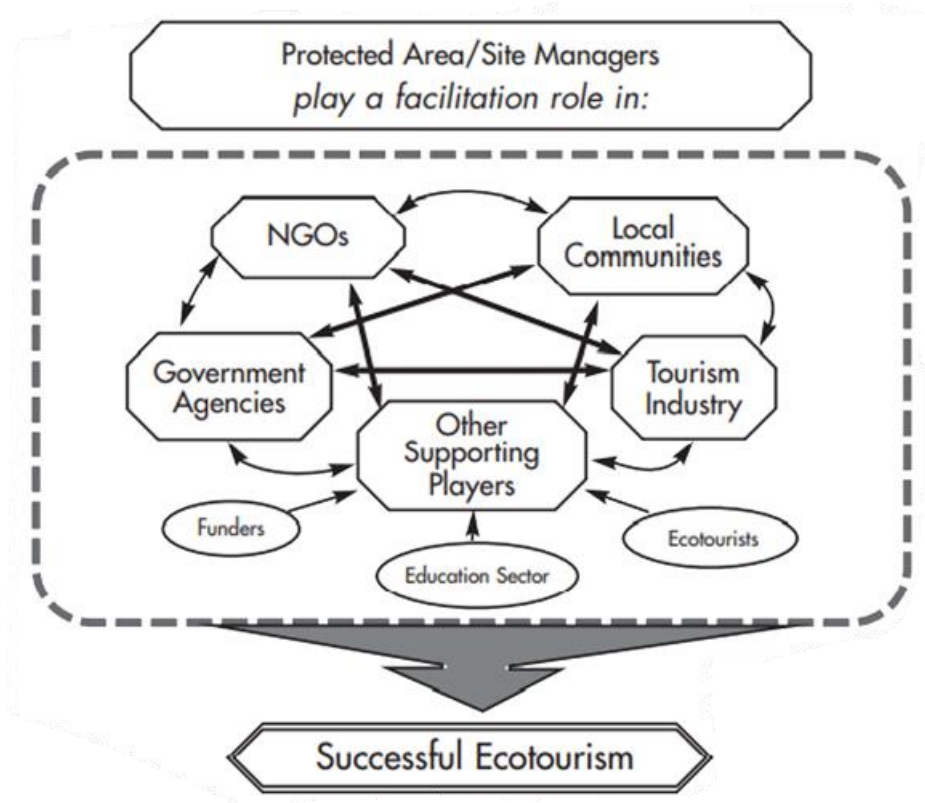
When indicators are used correctly, they can become valuable management tools or performance metrics that provide vital information to tourist managers and other stakeholders. "Good indicators can provide real-time information to deal with immediate concerns and drive a destination's long-term development" (WTO 2007: 4). Tourists are expecting more environmentally friendly tourism experiences as they grow more aware of their impact on the environment (Okech 2009). These shifting market trends, combined with the state's devolution of natural resource management rights and responsibilities to communities, have put communities in a great position to use their natural and cultural assets to capitalise on rising visitor arrivals and receipts to alleviate poverty in rural areas. Community, conservation, and tourism are the key factors that must be managed well for these CBE initiatives to succeed and sustain.

<b>Issue</b>	<b>Indicator</b>
<b>Social issues</b>	
<b>Social indicators</b>	
1. Local satisfaction with tourism	1.1 Local satisfaction level with tourism 1.2 Local community complaints
2. Effects of tourism on communities	2.1 Percentage who believe that tourism has helped bring new services or infrastructure 2.2 Other effects of tourism on the community
3. Education	3.1 Education of tourists 3.2 Education of community 3.3 Training and skills development of staff members
4. Community decision making	4.1 Community decision-making structures
5. Community benefits	5.1 Community benefits from tourism
6. Culture	6.1 Cultural appreciation and conservation
<b>Economic issues</b>	
<b>Economic indicators</b>	
7. Sustaining tourist satisfaction	7.1 Level of tourist satisfaction 7.2 Perception of value for money 7.3 Percentage of return visitors 7.4 Perception of sustainability 7.5 Tourist complaints
8. Tourism seasonality	8.1 Tourist arrivals by month 8.2 Occupancy rates for accommodation by month 8.3 Percentage of tourist industry jobs which are permanent or full time (compared to temporary/seasonal jobs)
9. Economic benefits of tourism	9.1 Number of local people (and ratio of men to women) employed in tourism 9.2 Revenue generated 9.3 Revenue spent in area
<b>Environmental issues</b>	
<b>Environmental indicators</b>	
10. Energy management	10.1 Per capita energy consumption (per person day) 10.2 Energy-saving measures 10.3 Percentage of energy consumption from renewable resources
11. Water availability and conservation	11.1 Water use (total water volume consumed and litres per tourist per day) 11.2 Water conservation measures
12. Drinking water quality	12.1 Water treated to international potable standards
13. Sewage treatment	13.1 Sewage treatment systems
14. Solid waste management	14.1 Waste volume produced 14.2 Waste disposal (landfill, recycling, etc.)
15. Controlling use intensity	15.1 Number of tourists per square metre of the site
16. Biodiversity and conservation	16.1 Local community involvement in conservation projects in area
<b>Crosscutting issues</b>	
<b>Crosscutting indicators</b>	
17. Development controls	17.1 Existence of a development planning process including tourism
18. Networking and collaboration	18.1 Partnerships and collaborations

**Figure 7 Evaluation Framework Listing the Selected Issues and Indicators**

Source : *Applying Sustainable Tourism Indicators to Based Ecotourism Ventures in Southern Africa* (Mearns, 2015)

## 2.5 Ecotourism Participants



**Figure 8 Ecotourism Participants**

Source : *Ecotourism Development: A Manual for Conservation Planners and Managers, Volume 1*

1. Protect area managers/officers
2. Local community
3. Non-governmental organisation
4. Tourism industry
5. Ecotourists/Travelers
6. Academics
7. Funders
8. Govt. agencies (Andy & Alan, 2002)

## 2.6 Planning ecotourism and sustainable community growth: Theoretical considerations for Nepal



Figure 9 Eco-tourism spots in Nepal

### 2.6.1 Issues faced in Nepal

- The authors discovered that integrating local populations into the tourist operations is insufficient in Sagarmatha National Park (SNP) and the Annapurna Sanctuary Trail (AST), two of the country's oldest ecotourism sites.
- The local tourist industry has been dominated mainly by foreigners, particularly the trekking companies in significant towns like Pokhara and Kathmandu.
- The wealthy foreigners and local elites receive most of the economic advantages. We discovered that ecotourism had hastened environmental degradation, loss of authenticity, and cultural legacy in these regions.
- With a fragmented strategy, Nepal's PAs has failed to promote inclusive development and greater community cohesion.
- Except for the Annapurna route, where communities are somewhat aware of the initiatives, most people learn about policies and plans only after the PA authority has made choices.
- A diminished sense of place and unfair distribution of tourism-related advantages to local communities are caused by a lack of community empowerment and their full inclusion in tourism-related entrepreneurial activities;

- Coordination and collaboration between and among local and regional stakeholders are lacking, as is access to education, information, skills, and resources in local communities.
- Contradictory in nature, the outmigration of villagers to cities in pursuit of employment and better amenities is critical for promoting sustainability in the destinations.

2.6.2 Solution

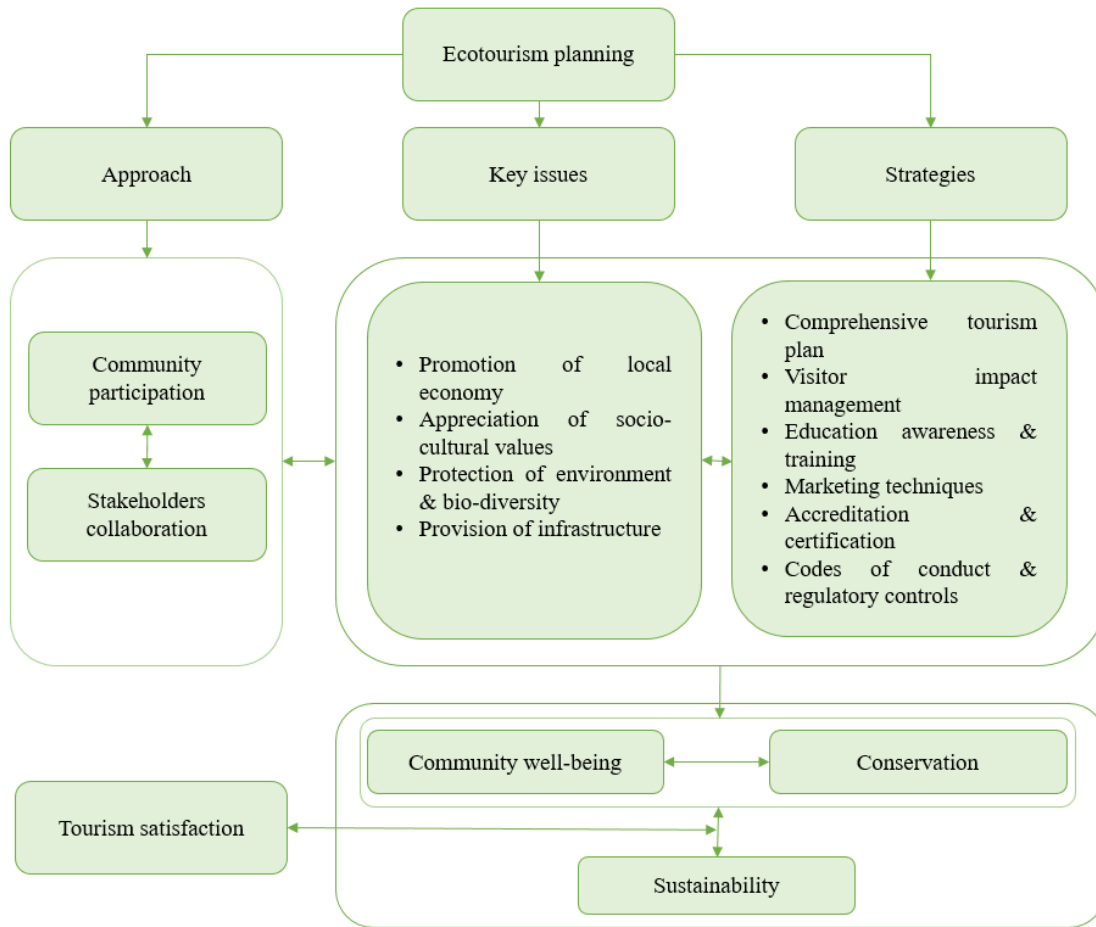


Figure 10 Community-Oriented Collaborative (Co-C) Ecotourism Planning

Source : *Ecotourism planning and sustainable community development: Theoretical perspectives for Nepal*

"Community-Oriented Collaborative (Co-C) Ecotourism Planning" is a concept proposed as a suitable strategy for fostering local community growth about local heritage preservation. Instead of offering a final answer, the goal of this framework is to provide a different direction to explore the problems of appropriate planning further.

Planning efforts must employ a continuous, process-based approach with the following primary considerations:

**Promotion of Local Economy:** Strengthening linkages between neighbourhood economic activity and the more significant tourism industry is crucial. It might assist small, medium, and micro tourism businesses in local communities. When marketing local culture and goods to the global tourism industry, it is essential to determine what causes weak links and foreign currency earnings leaks.

**Appreciation of Socio-cultural Values and Traditions:** When tourists connect with locals, the quality of life, value system, labour division, family relationships, attitudes, behavioural patterns, traditions, and artistic expression of the hosts, as well as the hosts' community, change as a result.

**Protection of Environment and Biodiversity:** By producing income that can be utilised to manage and maintain natural habitats and species and allowing local people to gain economically, ecotourism supports PAs. Economic rewards are the primary motivator for communities to safeguard the environment and biodiversity. Environmental management techniques should also be used by eco-tour operators, tour guides, and land and tourist management organisations.

**Provision of Tourism Infrastructure and Services:** Environmentally friendly designs and construction methods must be used to build infrastructure that meets the demands of the community and the tourism sector. Through a participatory and partnership approach, a comprehensive land use plan with designated zones for various uses, including tourist information centres, museums, art and craft centres, hiking trails, recreational facilities, and conservation and landscape areas, could be created and put into action.

**Community Participation:** Genuine suggestions, contributions, and inclusive local engagement are required to participate in decision-making and create local community NGOs. Therefore, it is essential to foster sustainable community development to provide communities with the economic, social, psychological, and political power they need through the distribution of authority and the adoption of an inclusive approach to decision-making. (Chan & Bhatta, 2013)

## **2.7 The Community of Capirona in Ecuador's Amazon Region**

This initiative was started in 1990 to deter invasive oil development. Since then, the ecotourism business has become a model for other ecotourism projects and a more efficient way to ensure indigenous land sovereignty. Three-quarters of the 2,000 hectares that make up Capirona's area are still covered in primary forest, and the remaining half is land that the 70 households in the community have set aside for farming.

### **2.7.1 Local community involvement**

A community-owned ecotourism initiative called Capirona has 30 beds in the cabanas are split between double rooms and dorm-style quarters. Shortly, the community intends to transform this structure into a fully functional cabana. During each visit, guests are treated to a cultural show of singing, dance, and the creation of Quichua handicrafts in a theatre created especially for the occasion. Visitors are also requested to share a tale, song, or hop from their own culture as part of this intercultural encounter.

A birders' viewpoint point, a salt lick cavern, and simple jungle excursions to enormous Ceibo and vibrant Capirona trees are all included in the ecotourism programme. Visitors are frequently urged to participate in a project that benefits the community. Every visitor to Capirona is given a tour of the neighbourhood, including the soccer field, chapel, and school buildings. The four professionally trained guides oversee guest activities, community contacts, and special requests. Capirona will keep investing in its human capital by arranging for more guide courses and further training for those currently working in ecotourism.

The nearby field station of the local conservation NGO Foundation Jatun Sacha collaborates with the community to assist in the training of tour guides. Also, it sends Ecuadorian and international students to learn from the Capirona case study and understand how tourism can be used to preserve indigenous culture and the environment. Around 1,000 tourists visit the town annually, producing substantial sums of money that have increased individual and family subsistence earnings and established a communal fund for health and education. To spread the advantages of tourism and to counteract any possible adverse effects.

Based on the Capirona concept, the Quichuan community in the Upper Napo area established RICANCIE (Red Indigenous Community of the Upper Napo of Convivencia,

## Strategies for Ecotourism development – A Case of Wayanad Wls forest & environs

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Interculturality, and Ecotourism), a network of villages. A centralised office in Tena, the provincial capital, is currently where this network accepts clients.

(Andy & Alan, 2002)



**Figure 11 Ecuador map with amazon jungle**

Source : <https://www.camiadventures.com/amazon/>



**Figure 12 cabanas**

Source : <http://bluelinecuador.com/amazon.html>



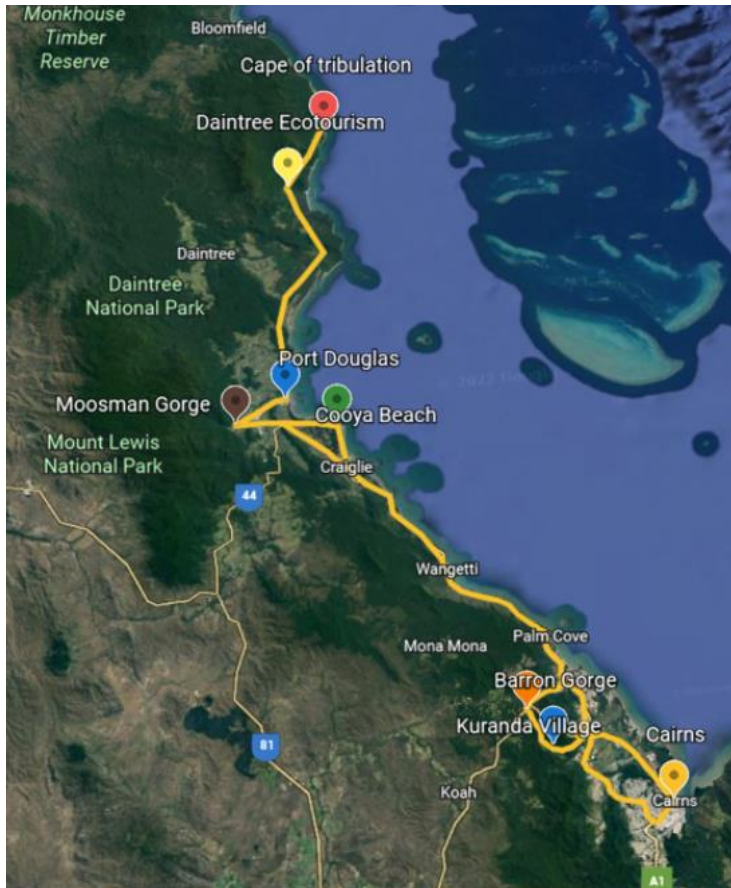
**Figure 13 Community feast for tourists**

Source : <https://cnr.ncsu.edu/news/2022/03/from-the-andes-to-the-amazon/>

## 2.8 Daintree Explorer, Queensland, Australia

Daintree explorer has a tourism circuit connecting Cairns, Kuranda village, Barron gorge, Cooya Beach, Port Douglas, Mossman gorge, Daintree ecotourism, and Cape of tribulation.

### 2.8.1 Tourism circuit



**Figure 14 Tourism circuit**

Source : Author Generated with reference to Google earth

Start- Cairns;

Finish - Cairns;

Destination - Queensland, Australia

Age - min 15;

Theme - Exploring;

Style - comfort;

Journey - 5 days

Transport - Private vehicle & Ferry

Accommodation - Resort (4 nights)

Meals: 4 breakfasts, two lunches, two dinners

### **2.8.2 Trip Routes**

#### **Day 1:**

Cairns - Port Douglas, 1.5 hrs journey

Activities -

Cairns - Barron Gorge Lookout

Kuranda - Kuranda Village Visit

Port Douglas - Local Dinner

Port Douglas - Leader-lead Orientation Walk

Port Douglas - Trinity Bay Lookout.

#### **Day 2:**

Port Douglas - Daintree, 30mins ferry journey

Activities -

Cape Tribulation - Lookout & Beach Walk

Daintree Rainforest - Nature Walk with Local Guide

Daintree Rainforest - Cooper Creek Guided Boat Ride

Daintree Rainforest - Heritage Restaurant Lunch.

#### **Day 3:**

Daintree - Port Douglas, 45mins journey

Activities -

Exploring Port Douglas town.

#### **Day 4:**

Port Douglas - Mossman Gorge, 30mins journey

Activities -

Mossman Gorge - Guided rainforest walk

Kuyu Kuyu/Coya Beach - Kuku Yalanji Cultural Habitat tour & aboriginal Painting Class.

#### **Day 5:**

Port Douglas - Cairns, 1 - 2 hrs journey

Activities -

Back to Cairns, Airport.

## **2.9 Daintree ecotourism, Queensland, Australia**

### **2.9.1 Introduction**

The Daintree National Park was formed in 1981 and 1988 and became a World Heritage Site. The Daintree, which comprises the Daintree National Park and parts of State Forest and privately held property, is the largest continuous tropical rainforest in the world and the largest rainforest on the Australian continent. It is commonly said that the Daintree Rainforest is where the "reef meets the rainforest" since it extends to the Coral Sea's edge. (TravelOnline, 2022)

While preserving the delicate ecosystem of the Daintree Rainforest, the Daintree Discovery Centre gives visitors the chance to learn about and experience one of Far North Queensland's few unspoilt pockets of lowland rainforest.

### **2.9.2 The Main Attractions:**

**23m Daintree Canopy Tower:** The Tower features information on each of its five levels, a micro-weather station on the top level that is part of the Oz Flux Rainforest Research Program, and was constructed to survive storms. People of all ages may explore the many stories of the rainforest, from the forest floor to the highest peaks of the canopy, thanks to its five distinctive observation platforms.

**The 10m High Aerial Walkway:** The Aerial Walkway offers breath-taking vistas and unmatched access to the mid-level jungle. The boardwalk allowed wheelchair access and was built with visitor comfort and safety in mind. It is environmentally sound since it keeps people off the ground and lets air, sunshine, and rain reach the forest floor. It also features a mesh system that helps prevent mosquitoes from reproducing.

**Over 900m of Elevated Rainforest Boardwalks:** Route through the jungle, safeguarding the delicate rainforest ecology while letting the general people experience this untamed wildness for themselves. Around the boardwalk are strategically positioned viewing platforms where you may relax and take in the atmosphere of the rainforest at your own pace.

**Interpretive Display Centre:** Over 410 square metres of space in a sizable, open facility. A plethora of information on the forest is provided. Easy-to-read text and graphics are both included in colourful presentations. To make it simple to access a range of information appropriate for all ages, the Center also has several interactive information kiosks with

touch screen displays. Displays of native fish and reptiles, a 3D Cassowary, a presentation on climate change, and freshwater creek ecology.

- Audio Visual Theatres
- Self-Guided Audio Tours: Audio Tours of the Daintree Rainforest are available
- Take Home Colour Guide Book Included
- Optional Guided Group Tours
- Coffee Shop & Souvenir Shop.

(centre, 2017)



**Figure 15 Daintree Mapping**

Source : <https://www.travelonline.com/tropical-north-queensland/daintree/location-map.html>



**Figure 16 a) Daintree Boardwalks b) Canopy Tower**

Source : <https://www.discoverthedaintree.com>

## **2.10 Electric Bikes Are Helping Sustainable Tourism**

### **2.10.1 News report**

Following the epidemic's effect, there has been an increase in tourists to India's tourist destinations, who make sure their journey has a minimal carbon imprint, travel safely, and engage in more tourist activities. Adopting electric bikes has been one of the finest techniques for reducing pollution. Travellers want to experience the sights and sound more hygienically as the hinterland sees increased tourism. Therefore, e-bikes show to be a fantastic fit for the same. Particularly during high season, tourist destinations are jam-packed with automobiles. Visitors staying at hotels like The Taj Hotels or Club Mahindra, as well as those using Airbnb, have access to organised E-bike trips that let them explore secret routes and unexplored vacation areas in unique places like Goa, Jaipur, Coorg etc. E-bikes are quickly emerging as the ideal future transportation choice. Additionally, they make excellent leisure transportation since they mix the convenience of a car with the enjoyment of riding, making it simple to adopt a sustainable lifestyle. Additionally, these bikes allow users to travel across challenging terrain, typically challenging to travel over without an electric motor.

Considering that two-wheelers are responsible for up to 75% of the vehicle pollution in India, utilising a greener and more breathable transportation option while on vacation, such as an e-bike, only helps in that effort. Making electric vehicle adoption in India successful depends on encouraging the higher use of bicycles. (Kholkar, 2021)

## Chapter 3. Study Area and Analysis

*This chapter discusses the study area context and the present conditions of Social profile, Economic base, Environment, Ecotourism and its analysis for formulating strategies for Ecotourism development.*

### 3.1 Introduction

#### 3.1.1 About Wayanad Wildlife Sanctuary Eco tourism

The Wayanad Wildlife Sanctuary Forest Range comprises two discontinuous units at Tholpetty (WSI), which covers 77.67 Sqkm and the Muthanga forest division, which covers 266.77 Sqkm. The larger of the two (WS-II) lies within the geographical extremes of latitudes 11°35' N-11°49'N and longitudes 76°13' E-76°27' E and falls in the Sulthan Bathery taluk of Wayanad revenue district. The other bit (WS-I) lies within latitudes 11°50' N-11°59' N and longitudes 76°02' E-76°7' E and falls in the Mananthavady taluk of Wayanad District.

The Wayanad WLS areas were created from ecologically diverse and adjacent territories of the former Kozhikode territorial division, and the government officially recognised Wayanad territorial divisions in 1973. The WS-II portion of the sanctuary was part of the erstwhile Bathery and Chedaleth Range of Kozhikode forest division, while the WS-I portion was out of the Begur Range of Wayanad Forest Division. However, the management of the sanctuary's areas remained with concerned territorial divisions for some time. The perceptible shift in managing the areas as sanctuary areas came only in the late eighties after the Kerala Government order of 1985. (K.K. Sunil Kumar, 2012)

Accommodation: Dormitory – 50 beds, Seram by – 2 no's, two rooms (2+1bed), Tourist Guest House (Govt.)and PWD Rest House at Sulthan Bathery (about 2 km). There are also private hotels at Bathery

Best season to visit: December to May, Special Attractions: Waterfalls at Chedalayam, Jeep Safari: 7 am-10 am & 3 pm-5 pm, Eco shops for honey sale. (Department, 2022).

Table 1. Wayanad WLS Forest Range & Area

Range	Head Quarters	Percentage	Area 344.37 SqKm
<b>Tholpetty</b>	Begur	22%	77.7
<b>Muthanga</b>	Muthanga	22%	74.29
<b>Kuruchiyadu</b>	Chethalayam	31%	106.45
<b>Sulthan Bathery</b>	Kuppady	25%	86.03

Source : *Wayanad wildlife sanctuary management plan 2012-2022*

### 3.1.2 An overview of the research area

Noolpuzha Gram Panchayath (Forest Range - Kuruchiyadu, Bathery & Muthanga) -

Location - East of Wayanad district, Sulthan Bathery Block. Encompassing the states of Tamil Nadu and Karnataka. Continuation of the Nilgiris Ecological Zone and north and east border of Mysore district in the form of Karnataka, Area - 242 sqm

History - Scheduled Tribe cultures and culture of self-sufficiency. Globally significant migration from other Keralan regions occurred during the 1930s and 1940s. Places of worship of all religions were established in the panchayat. King Pazhassi spent his last days in the war against the British at Kurichiad in this panchayath. The fruit-rich area became known as 'Kurichai' and later as 'Kurichiad'. The Eechakkunnu temple here is believed to have been built by King Pazhassi in the way it is today. Muthanga Wildlife Sanctuary is situated here. Major crops - Coffee, pepper, coconut, paddy and tubers.

Nenmeni - Location: Adjacent to Noolpuzha Panchayath, Sulthan Bathery Block. The forest land is in Tovarimalain, the panchayath. Area - 69.38 Sqkm

History - Edakkal Caves are evidence of the existence of highly cultured people in the Nenmeni area thousands of years ago. Remains of rock formations and large earthenware vessels used for burying corpses can still be seen in areas such as Cherumad and Edakkal. These tribes, with their unique rituals, still live as a single community. Historians believe that the ancestors of the aboriginal Mulluvakurumas carved the Edakkal cave paintings. Evidence that the ancestors of the Mulluvakurumas inhabited this area of forest, hills and

fields for many generations has been found at Kuppakolli, Tovarimala, Cherumad and Mangalamkunnu in this village, where the remains of Neolithic culture have been found. Living in Nenmeni and its surrounds, King Pazhashi and Tippu Sulthan, two individuals who opposed the British, were there for major historical events that affected their lives. The main crops are the main crops of large paddy fields, coffee, pepper, tea, rubber, ginger, banana, coconut, squash, cardamom, various grains, legumes, and vegetables.

Pulpally Gram Panchayath (Pulpally Gap - Reserve Forest) - Location: north of Mullankolli Panchayat, south of Poothadi Panchayat, west of Kabanipuzha (Thirunelli) and Panamaram Panchayats, and east of Kannarampuzha (Karnataka Forest), Sulthan Bathery Block. Province: 77.7 Sqkm.

About - Towards 1950, Pulpally became known as an immigration centre in Kerala. People from the southern parts of Kerala started coming to the fertile soil on the banks of the Kabani. The Naxalite attack has played a crucial role in changing the face of Pulpally. Pulpally panchayat was formed in 1962, and elections were held in December 1963. The first election was non-political. There were six wards then. The panchayat also has a historical place called 'Mavilamthodu', where Veera Pazhassiraja, who led the battles of the British rule in Malabar during the British government, surrendered to the British. Major crops - Coffee, Pepper, Areca nut, Kappa, Chana, Chuk and paddy

Mulankolly Gram Panchayath (Pulpally Gap) - Location: North by Kabini river, east by Kannarampuzha, west by Reserve Forest and Pulpally panchayat and south by Pulpally panchayat. Area - 71 Sqkm

About - In 1976-77, Mullankolli was divided into a separate panchayat from Pulpally. KC Joseph was the first nominated president of Mullankolli panchayath. Jains and Buddhists have been visiting the area for a long time; Kabini, one of the east-flowing rivers of Kerala, flows through the boundaries of this panchayat. 1970-The agricultural sector is shifting to cash crops. The covered Sita Devi Temple, situated on top of a hill, is well-known for its temples. Major crops - Cotton, Paddy and street turmeric

Thirunelli Gram Panchayath (Tholpetty Range) - Location: By North Karnataka, South Mananthavady Panchayat, East Karnataka, Pulpally Panchayat and West Mananthavady Panchayat, Mananthavady Block Area - 201 Sqkm

Until 1940, the panchayat had only upper caste landlords and their dependent Scheduled Tribes. Paddy cultivation was the primary source of livelihood. Forests cover 72% of the total area. Most of the forest area is part of the Wayanad Wildlife Sanctuary. 33% of the population of the panchayat was Scheduled Tribes. Thirunelli Temple, also known as South Kashi, and the famous Trishileri Temple are located in this panchayath. Major crops - Coffee, Cotton and Paddy.

Sulthan Bathery Municipality (Kuruchiyadu & Bathery Range) - Location: North of Noolpuzha and Nemeni, Sulthan Bathery Block is about 100 Km east of Kozhikode. Area - 103 Sqkm History - 19th-century Sulthan Bathery was known as Ganapathivattam. This was because of an old idol of lord Ganapathy in that region. Ganapathivattam owes its new name Sulthan Bathery to the erstwhile ruler of Mysore - Tippu Sulthan. During his invasion of the Malabar region, he dumped his ammunition and parked his artillery in an old Jain temple. This place was named Sulthan Bathery, a corrupted form of Sulthan's Battery. Many trade centres were developed around the Ganapathivattom temple during the middle ages. Soon the town starts to develop potentially. Major crops - Coffee, Pepper, Areca nut and paddy. (Mission, 2022)

**Table 2. Study Area (Panchayaths & Municipalities)**

<b>Study area</b>	<b>AREA (SqKm)</b>
<b>Noolpuzha</b>	242
<b>Nenmeni</b>	69.38
<b>Sulthan Bathery</b>	103.22
<b>Pulpally</b>	77.7
<b>Mulonkolly</b>	71.58
<b>Thirunelli</b>	201.16
<b>Total area</b>	<b>765.04</b>

Source : *Census data 2011*

### 3.1.3 Area Delineation

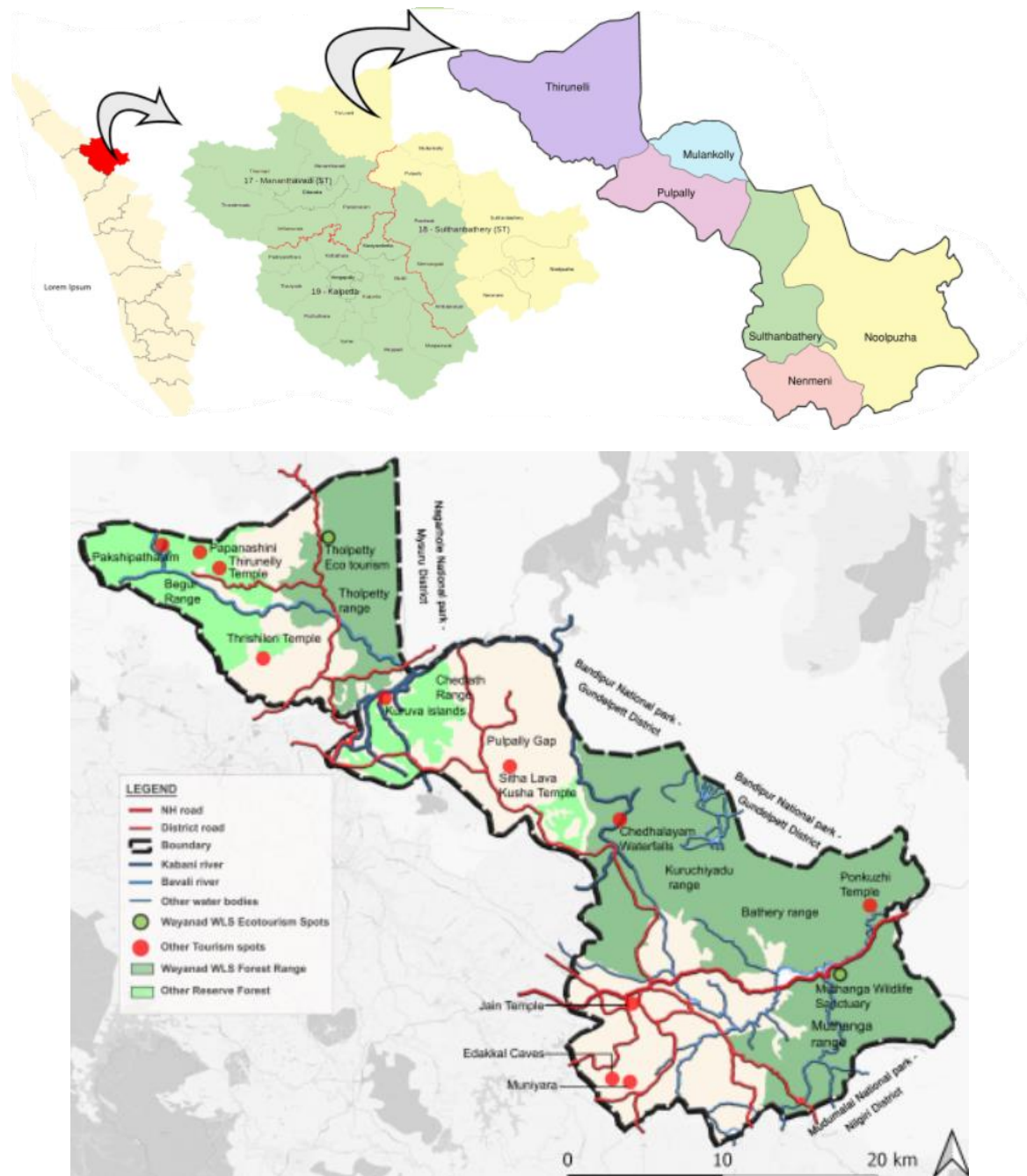
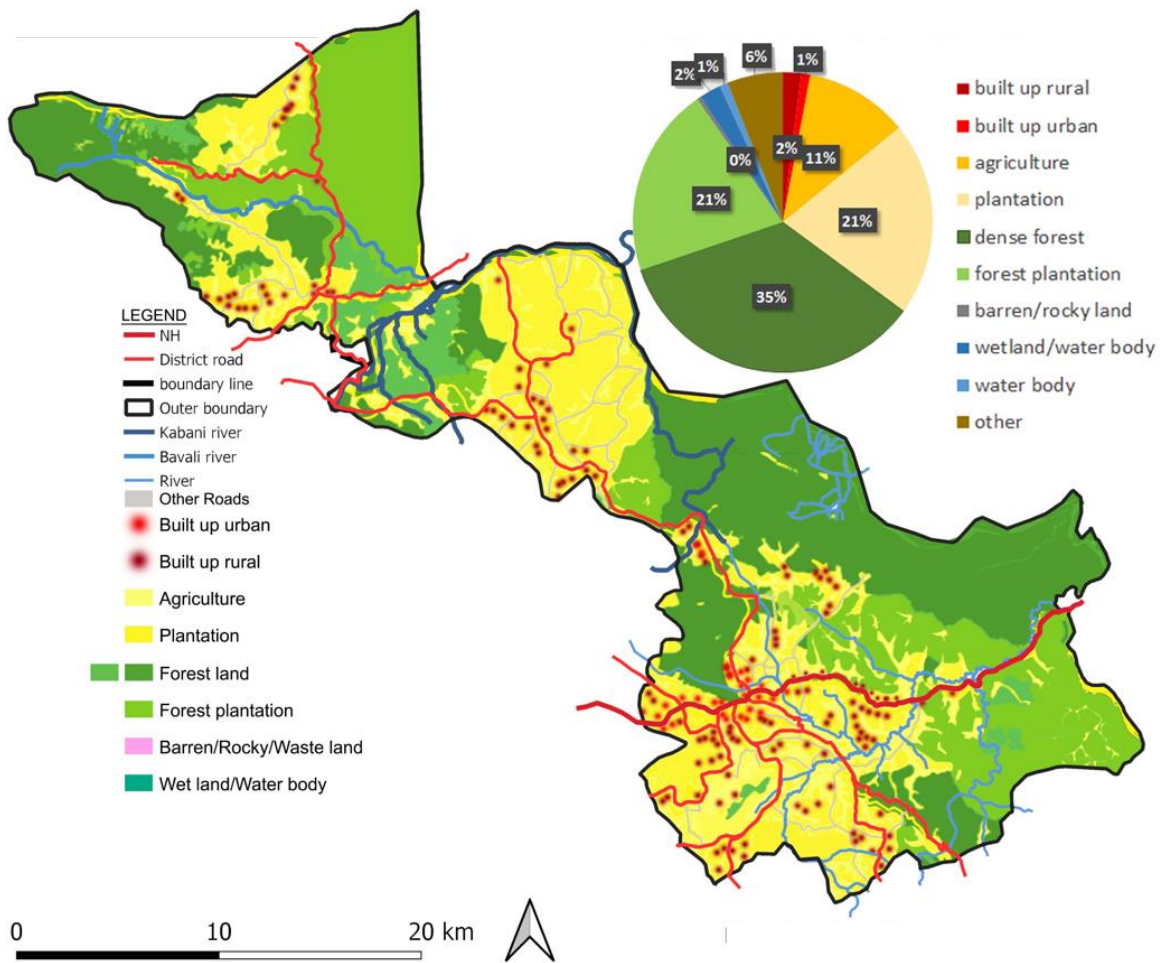


Figure 17 Study Area – Area Delineation

Source : Author Generated

### 3.2 Land use



**Figure 18 Study Area – Land Use**

Source : Author Generated with reference to Bhuvan 2015- 2016

**Table 3 Land use and Area in Sq. km**

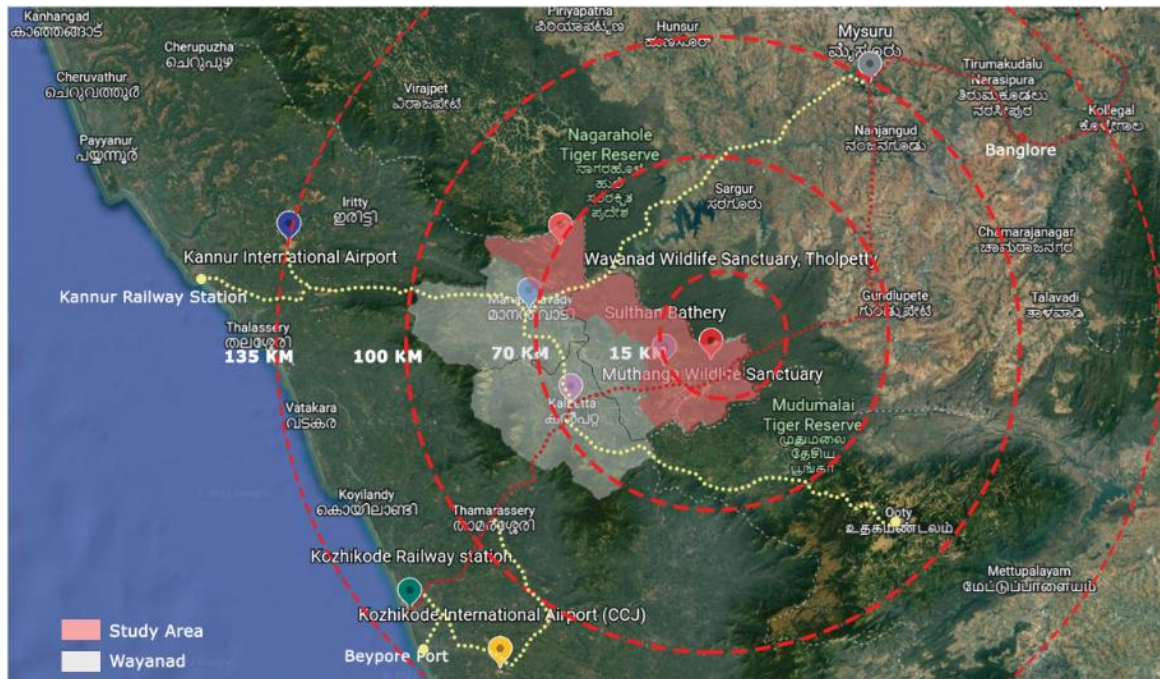
Land use	Area (sqkm)	Land use	Area (sqkm)
<b>Builtup rural</b>	15.3	<b>Forest plantation</b>	160.06
<b>Builtup urban</b>	7.65	<b>Dense forest</b>	267.75
<b>Agriculture</b>	84.15	<b>Barren/rocky</b>	3.45
<b>Plantation</b>	160.06	<b>Water body</b>	11.47
<b>Wet/waterbody</b>	15.3	<b>Other</b>	45.9

Source : Author Generated with reference to Bhuvan 2015- 2016

### 3.3 Location & Transportation network

#### 3.3.1 Proximity Mapping

Nearby nodes area - Airport: Kozhikode (120 Km ); Kannur (120 Km); Mysuru (135 Km); Railway Station: Kozhikode (110 Km); Kannur (146 Km);



**Figure 19 Proximity Mapping**

Source : Author generated with reference to Google maps

#### 3.3.2 Transportation Network

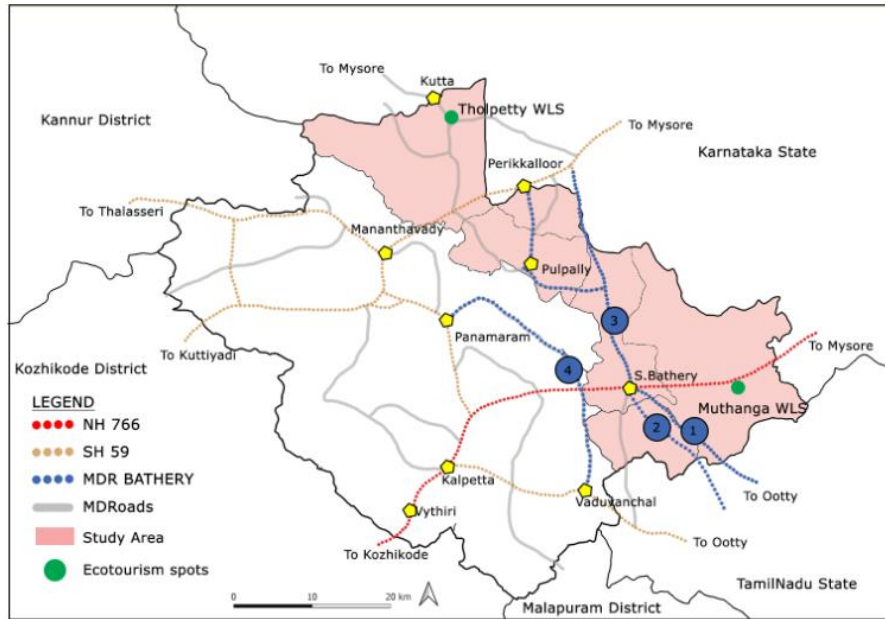
Major Highway Roads:

- NH 766: Kozhikode - Kalpetta - Sulthan Bathery - Gundlupet - Mysore - Kollegal (Muthanga Eco tourism)
- SH 59: Kalpetta - Panamaram - Mananthavady - Mysore

(Department, 2022)

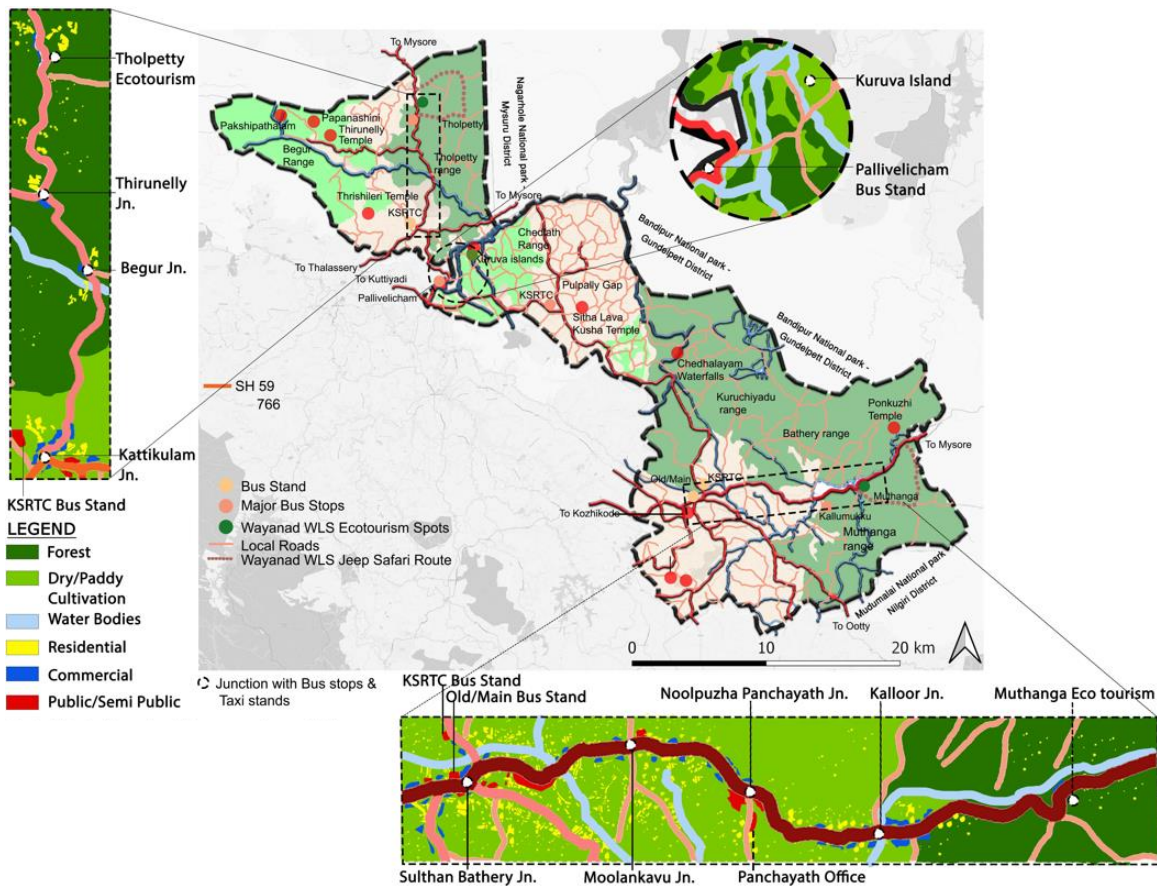
Major District Roads:

- Sulthan Bathery – Pattavayal- Gudallur – Ootty road (Tamil Nadu S.H)
  - Sulthan Bathery - Thaloor – Gudallur road
  - Sulthan Bathery - Pulpally – Perikkalloor road
  - Sulthan Bathery - Panamaram – Mananthavady - Kutta Road (Tholpetty Eco tourism)
- (Bathery, 2017)



**Figure 20 Transportation Network**

Source : Sulthan Bathery Master Plan, 2017



**Figure 21 Major Bus stands & Bus Stops**

Source : Author Generated with reference Google maps & Bhuvan 2015- 2011

**Table 4. Distance and Junctions from Sulthan Bathery Jn. to Muthanga Wls**

<b>Junction</b>	<b>Distance</b>
<b>Sulthan Bathery Jn. - Moolankavu Jn</b>	4 km
<b>Moolankavu Jn - Noolpuzha Panchayath office</b>	3 Km
<b>Noolpuzha Panchayath office - Kalloor Jn</b>	3 Km
<b>Kalloor Jn - Muthanga Wls</b>	4.5 km

Source : *Author Generated with reference to Google maps*

**Table 5. Distance and Junctions from Kattikulam Jn. to Tholpetty Wls**

<b>Junction</b>	<b>Distance</b>
<b>Kattikulam Jn. - Begur Forest office</b>	5 Km
<b>Begur Forest office - Thirunelli Jn.</b>	3 Km
<b>Thirunelli Jn. - Tholpetty Wls</b>	5.5 km

Source : *Author Generated with reference to Google maps*

Tholpetty has KSRTC and private buses every 45 minutes, but after 7 pm, buses stop their service. The last Private Bus stop is 3km from Muthanga, with fewer KSRTC buses. The Buses are less to Kuruva Island, and the last bus stop is in Pallivelicham, 5kms away. Similar to Muthanga and Kuruva Islands. Jeep safari routes 10 Km in Tholpetty & 12Km in Muthanga.

### 3.4 Demography

#### 3.4.1 Population & Household for the whole Study area

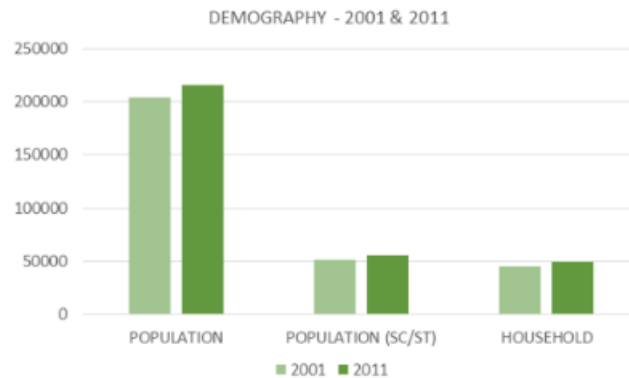


Figure 22 Population & Household for the whole Study area

Source : Census data 2001 & 2011

The total population is 6% rise; SC/ST population 7% rise; Household rise 9%.  
(Director of Census Operations, 2011)

#### 3.4.2 Population & Household of each Panchayath of the Study area

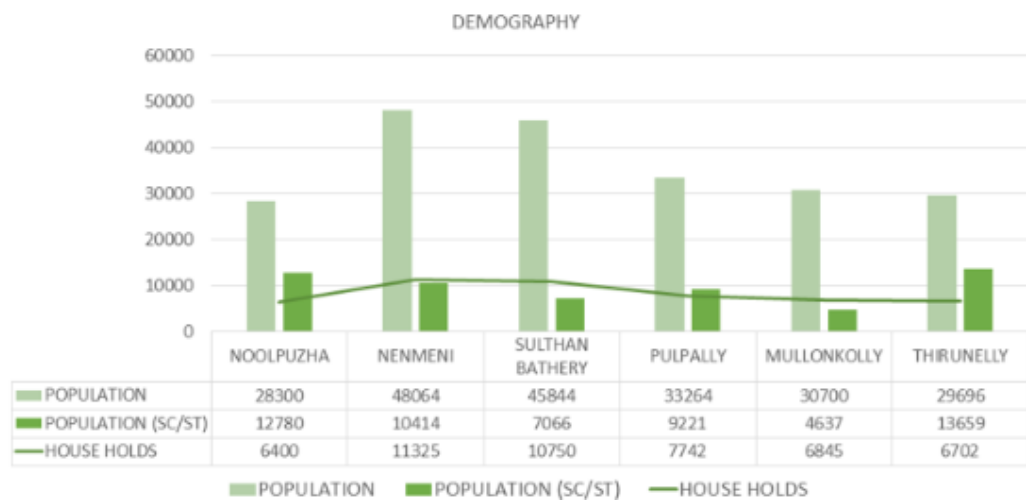
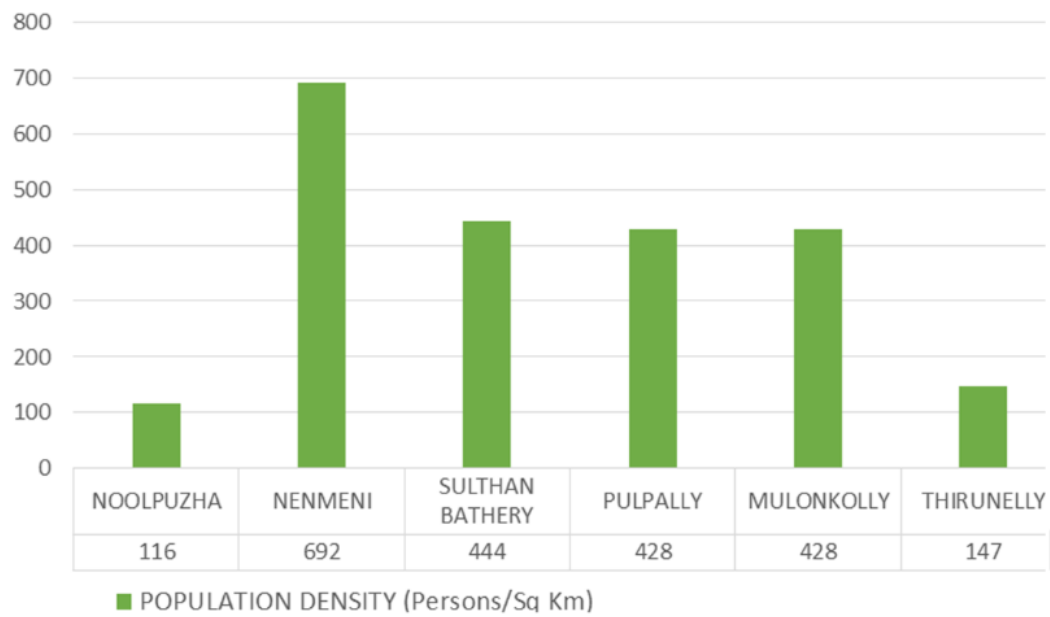


Figure 23 Population & Household of each Panchayath of the Study area

Source : Census data 2011

Nenmeni & Bathery Municipality (highest population), Thirunelli & Noolpuzha (lowest population). It is observed that the lowest population are in the forest areas of Wayanad Wildlife Sanctuary (Ecotourism Spots), Thirunelli (Tholpetty Range) and Noolpuzha (Muthanga & parts Kuruchiyadu Range) Panchayaths. And the SC/ST population is highest in these Panchayaths. The number of households is most elevated in Nenmeni and lowest in Noolpuzha Panchayath. (Director of Census Operations, 2011)

### 3.4.3 Population Density

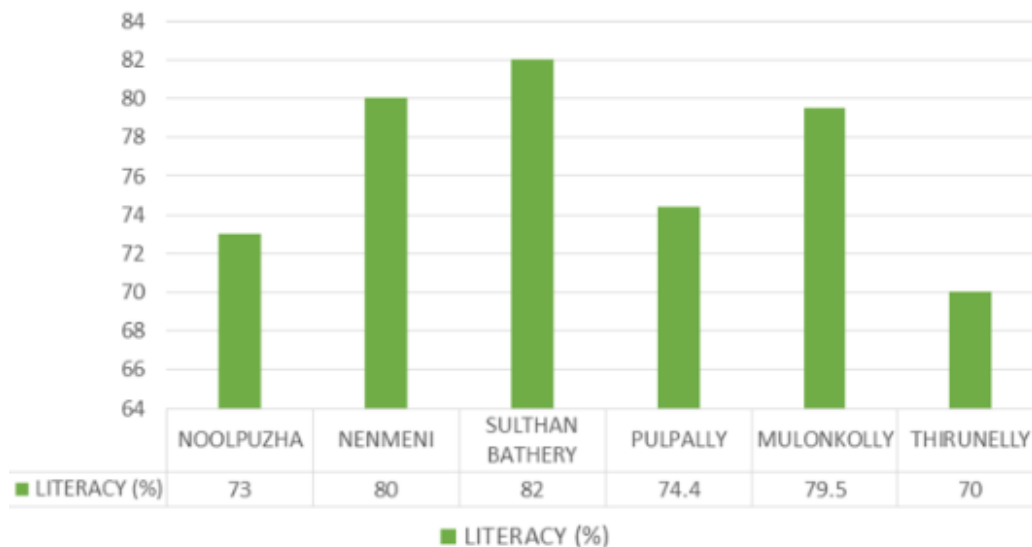


**Figure 24 Population Density**

Source : *Census data 2011*

Population Density is highest in Nenmeni (692) and lowest in Noolpuzha (116) (Director of Census Operations, 2011)

### 3.4.4 Literacy



**Figure 25 Literacy**

Source : *Census data 2011*

Literacy is highest in Sulthan Bathery (82) and lowest in Thirunelli (70). (Director of Census Operations, 2011)

3.4.5 Workers Concentration

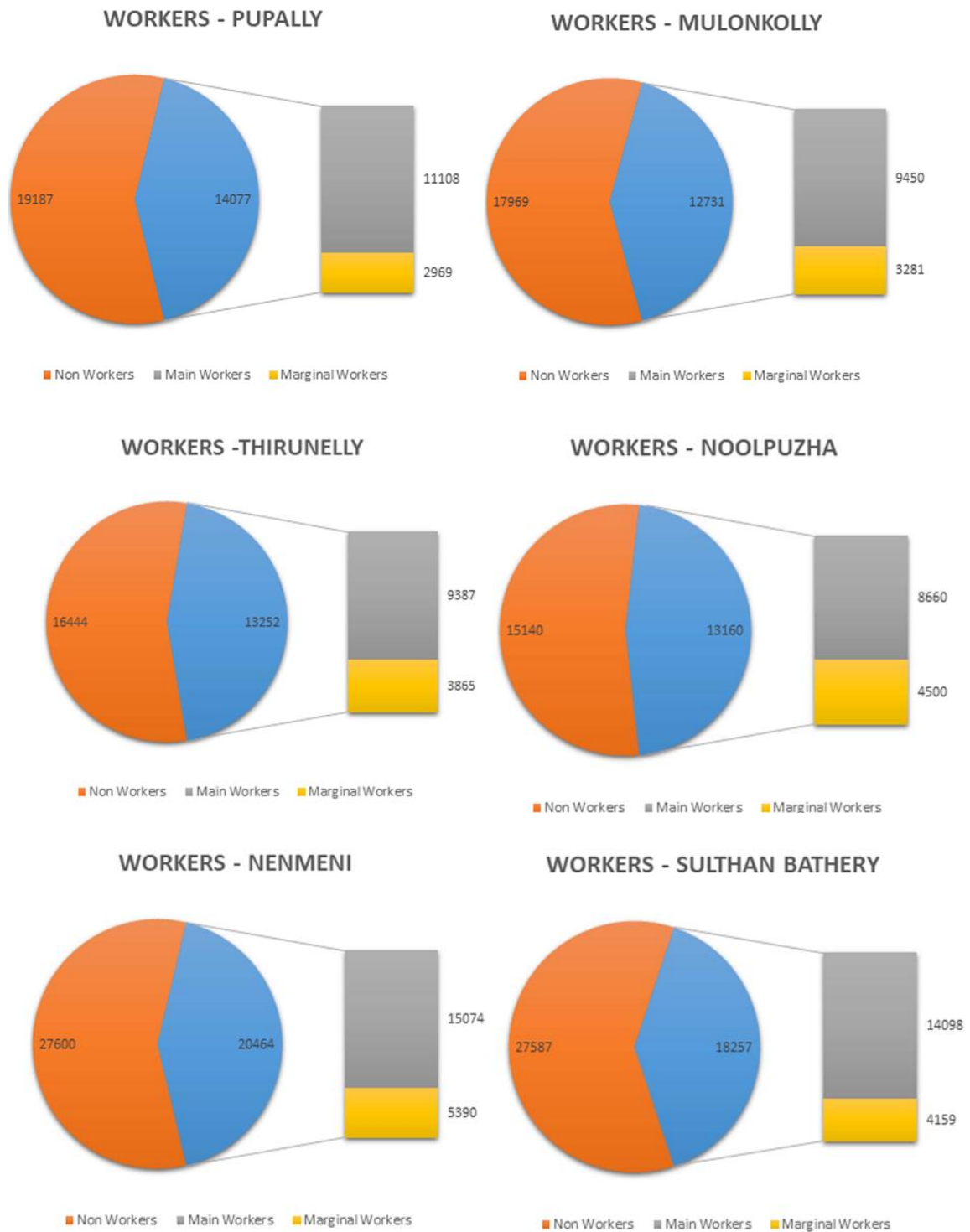
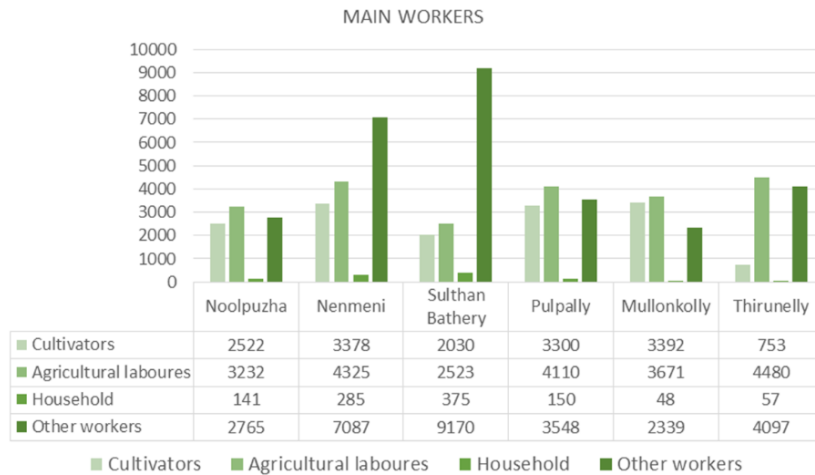


Figure 26 Workers Concentration in the study area

Source : Census data 2011

The highest working population is in Nenmeni and Sulthan Bathery; the highest primary workers concentration is in Nenmeni & Sulthan Bathery; Marginal workers concentration is highest in Nenmeni & Noolpuzha. (Director of Census Operations, 2011)

**3.4.6 Main Workers Concentration**

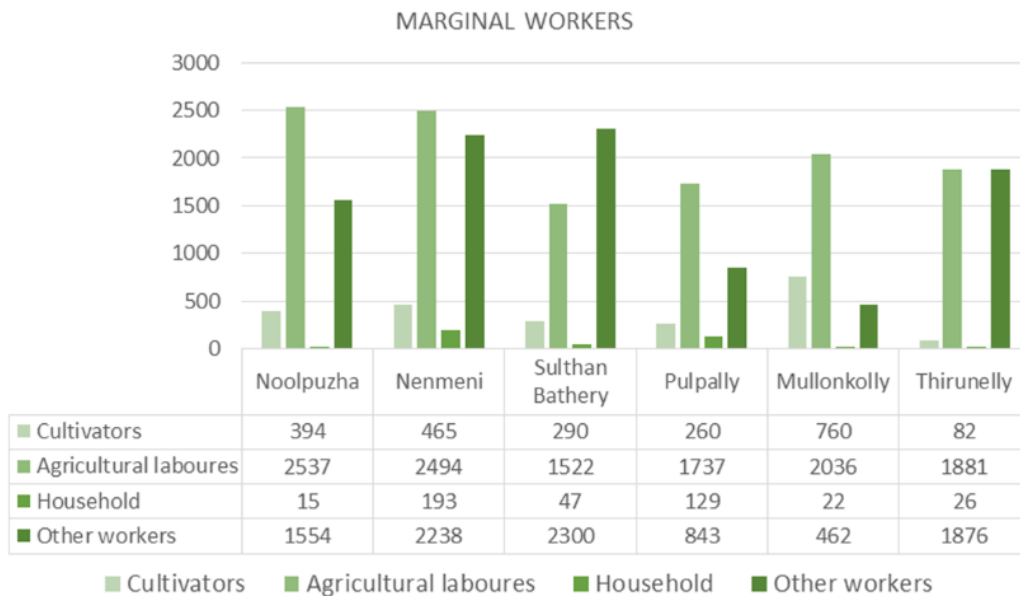


**Figure 27 Main Workers Concentration**

Source : *Census data 2011*

The highest cultivator’s concentration is in Nenmeni & Mulonkolly; Agricultural laboures highest in Pulpally & Nenmeni; the highest household industry laboures in Bathery and Nenmeni; other workers concentration is highest in Bathery & Nenmeni. (Director of Census Operations, 2011)

### 3.4.7 Marginal Workers Concentration

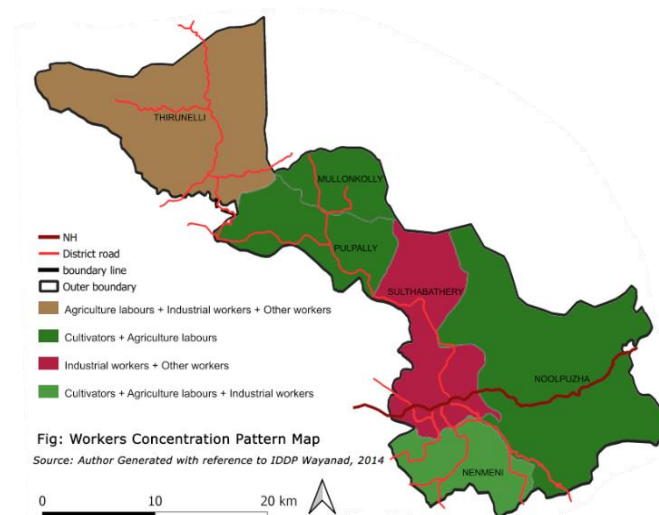


**Figure 28 Marginal Workers Concentration**

Source : *Census data 2011*

The highest concentration of cultivators in Mulonkolly & Nenmeni; Highest agricultural laboures concentration in Nenmeni & Noolpuzha; Highest household industry labour concentration is in Nenmeni & Pulpally; Other workers concentration is highest in Bathery & lowest in Nenmeni. (Director of Census Operations, 2011)

### 3.4.8 Workers Concentration Pattern



**Figure 29 Workers Concentration Pattern**

Source : *IDDP Wayanad, 2014*

Agriculture laboures and cultivators are higher in Thirunelli, Noolpuzha, Nenmeni, Pulpally and Mulonkolly. Industrial and other workers are more elevated in Sulthan Bathery. (Committee, 2014)

### 3.5 Settlements

#### 3.5.1 Settlement Hierarchy

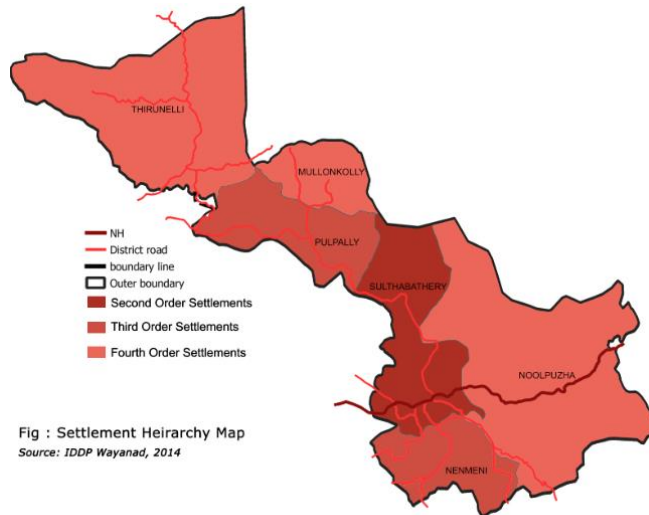


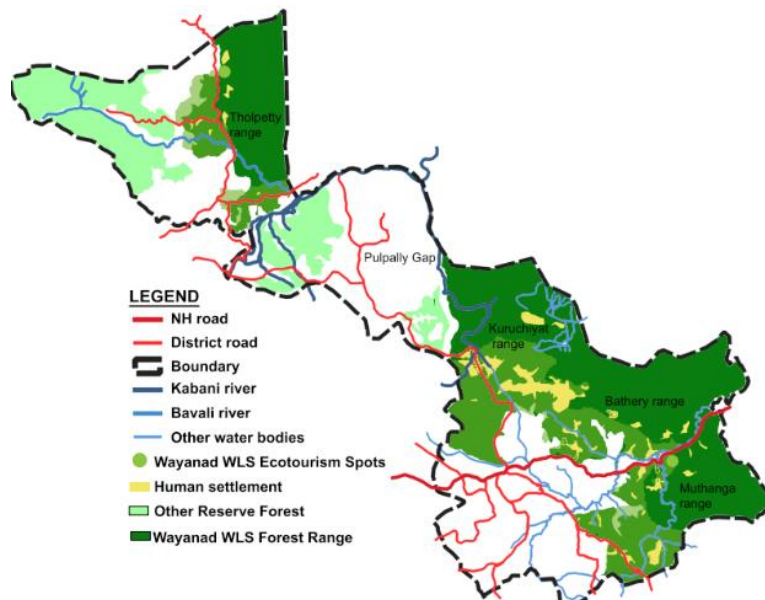
Fig : Settlement Hierarchy Map  
Source: IDDP Wayanad, 2014

**Figure 30 Settlement hierarchy**

Source : IDDP Wayanad, 2014

Noolpuzha, Thirunelli & Mulonkolly are less urbanised than Sulthan Bathery, Pulpally and Nenmeni. (Committee, 2014)

#### 3.5.2 Enclosure & Fringe Settlements



**Figure 31 Enclosure & Fringe Settlements**

Source : IDDP Wayanad 2014

**Table 6 Population in Fringe & enclosure**

RANGE	NO. OF SETTLEMENTS	NO. OF FAMILIES	POPULATION
<b>FRINGE</b>			
MUTHANGA	13	132	548
BATHERY	12	331	1266
KURICHIAT	9	169	664
THOLPETTY	10	243	1102
<b>TOTAL</b>	<b>44</b>	<b>875</b>	<b>3580</b>
<b>ENCLOSURE</b>			
MUTHANGA	14	525	2184
BATHERY	20	593	2086
KURICHIAT	18	328	1225
THOLPETTY	11	291	1268
<b>TOTAL</b>	<b>63</b>	<b>1737</b>	<b>6763</b>

Source : *Wayanad wildlife sanctuary management plan 2012-2022*

Infringe the higher concentration of human settlements are in Bathery followed by Tholpetty. (K.K. Sunil Kumar, 2012)

**Table 7 Relocated Settlements**

Name of Settlement	Range	No. of families	Location
Kommenchery	Kurichiat	6	Buffer
Thenkuzhi	Kurichiat	7	Buffer
Kumazhi	Muthanga	49	Buffer
Chukkalikuni	Muthanga	45	Buffer
Ponkuzhi	Muthanga	25	Buffer
Kalladikolly	Muthanga	15	Buffer
Mykara	Muthanga	30	Buffer
Koolur	S. Bathery	81	Buffer
Kumbrankolly	S. Bathery	15	Buffer
Karamad	Tholpetty	33	Buffer
Koottiyur	Tholpetty	17	Buffer
Edakkode	Tholpetty	28	Buffer

Source : *Wayanad wildlife sanctuary management plan 2012-2022*

Settlements relocated Gooloor, Ammavayal, and Sulthan Bathery etc.

Table 8 Colonies in Fringe & Enclosure

RANGE	KATTUNAYIKKAR	PANIYAR	ADIYAR	URALI	KURUMAR	KURICHIYAR
<b>FRINGE</b>						
MUTHANGA	✓	✓	✗	✗	✓	✗
BATHERY	✓	✓	✗	✓	✓	✗
KURICHIAT	✓	✓	✗	✓	✓	✗
THOLPETTY	✓	✓	✓	✓	✓	✗
<b>ENCLOSURE</b>						
MUTHANGA	✓	✓	✗	✓	✓	✓
BATHERY	✓	✓	✗	✓	✓	✗
KURICHIAT	✓	✓	✗	✓	✓	✗
THOLPETTY	✓	✓	✓	✓	✓	✓

Source : *Wayanad wildlife sanctuary management plan 2012-2022*

Kattunayikkar, Paniyar & Kurumar, all three colonies are in all ranges in fringe and enclosure. Primarily engaged agriculture activity 65%, then honey collection 15%, 3% in ecotourism rest 7%. (K.K. Sunil Kumar, 2012)

### 3.6 Infrastructure

#### 3.6.1 Education & Health Conditions

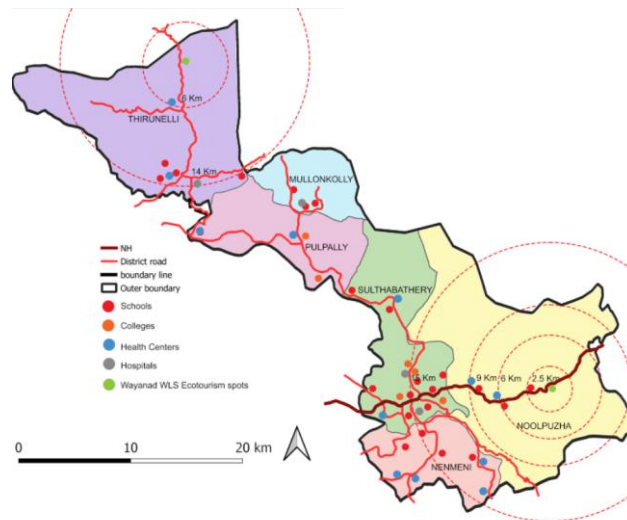
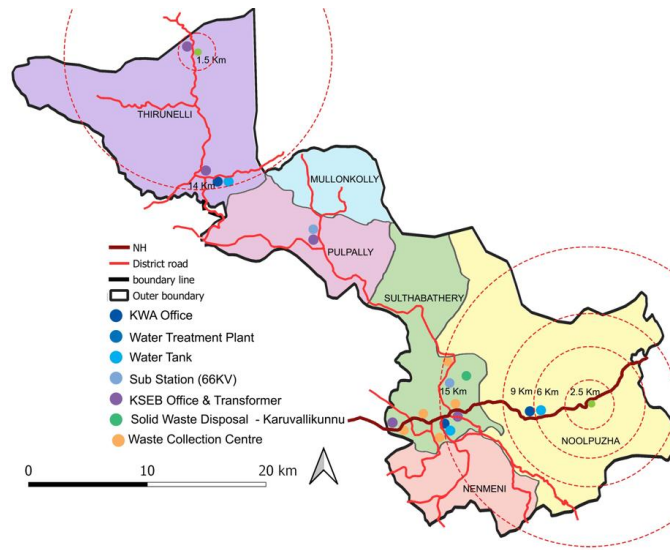


Figure 32 Education & Health conditions

Source : *Author Generated with reference to Google maps*

Colleges & Schools are mainly in the Municipal Area of Sulthan Bathery. Mulonkolly and Noolpuzha have no colleges. Nenmeni has only schools. Mulonkolly and Noolpuzha have less health care infrastructure. Hospitals are in Sulthan Bathery & Thirunelli.

### 3.6.2 Water Supply, Electricity & Solid Waste Management



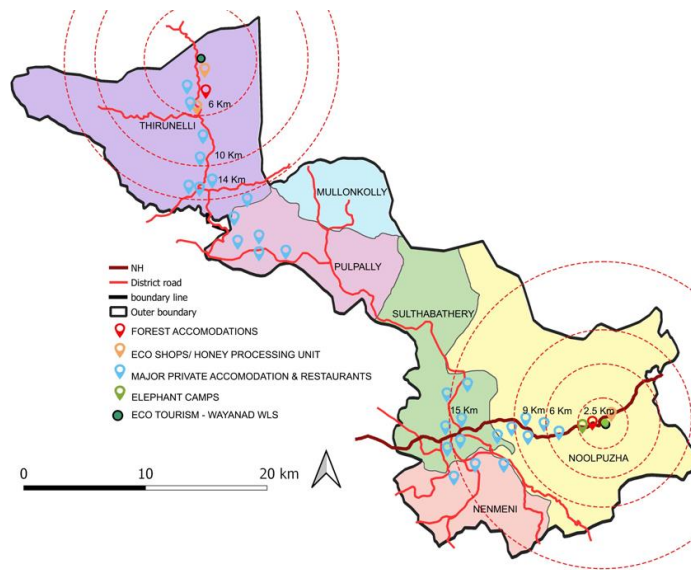
**Figure 33 Water Supply, Electricity & Solid waste management conditions**

Source : Author generated with respect to Google maps

Most people depend on tube well, public wells and other sources. In Tholpetty, people depend on ponds. Most people are getting electricity. Waste collection centres are concentrated in Sulthan Bathery, but no proper waste management is present in the ecotourism spots.

Biodegradable wastes are not collected, and no waste management system is present. Plastic collection bins are there in the eco-tourism, which will be collected weekly by Haritha Karma Sena. 1 - 2kg of plastic waste was produced in each eco-tourism spot daily.

### 3.6.3 Ecotourism Infrastructure



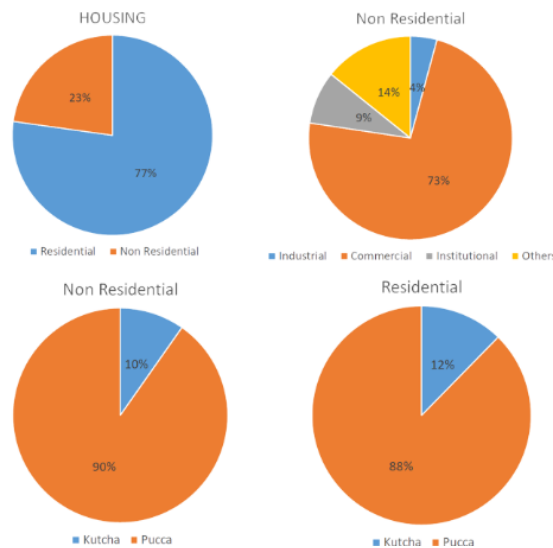
**Figure 34 Ecotourism Infrastructure**

Source : Author generated with respect to Google maps

Govt accommodations and camps are temporarily closed in Muthanga WLS. Jeep Safari is the only activity in both Ecotourism spots. Eco shops are active only when honey is available. The honey processing unit is only Muthanga.

## 3.7 Housing

### 3.7.1 Housing



**Figure 35 a) Housing; b) Non Residential; c) Non – Residential (Kutcha & Pucca); d) Residential (Kutcha & Pucca);**

Source : Census data 2011

Residential housing 77% is higher, Non-residential infrastructure Industrial is 4% followed by Institutional. 10% Kutcha - Non-residential, 12% Kutcha for Residential.

(Director of Census Operations, 2011)

### 3.7.2 Housing Schemes

EMS Total Housing Scheme :

- Started: 2009
- Covered Area: Entire Kerala
- Implementation Agency: LSGD
- Fund Source: GoK, loans from banks, especially co-operative banks and others
- Beneficiary: BPL landless and homeless households
- In Wayanad 12,462 houses have been planned under this scheme. By March 2014, 5,950 houses had been established with Rs.704.6 million

Comprehensive tribal development project under a.t.s.p.:

- Year: 2014 -15
- Panchayaths covered: MUPPAINAD AND NOOLPUZHA
- Funds Source: Ministry of Tribal Affairs
- Beneficiary: Scheduled Tribe Hamlets
- 199 new houses were built, 91 old houses were repaired, 2 km of the new road was constructed, 3.5 km of road was repaired or paved, six community centres were erected, 12 hamlets had sanitation work completed, 350 dwellings had access to drinking water, and 306 homes were electrified. The project's overall budget is 20.45 crores rupees. The cash has already been used to the tune of almost 80%.

Other Housing Schemes:

Indira Awas Yojana, PMAY Housing, Life Mission etc.



**Figure 36 Housing in Noolpuzha Panchayath**

Source : <https://www.stdd.kerala.gov.in/atsp-noolpuzha>

### 3.8 Primary survey analysis - Local community (May - June 2022)

#### 3.8.1 Introduction

The survey was conducted to know about the involvement of the local community and about the benefits they are getting from Wayanad wildlife sanctuary ecotourism.

#### 3.8.2 Procedure

A survey was carried out both online and offline, which involved face-to-face interviews with 65 locals, including members of the Eco-development committee, local tour guides, local businesses, and local residences.

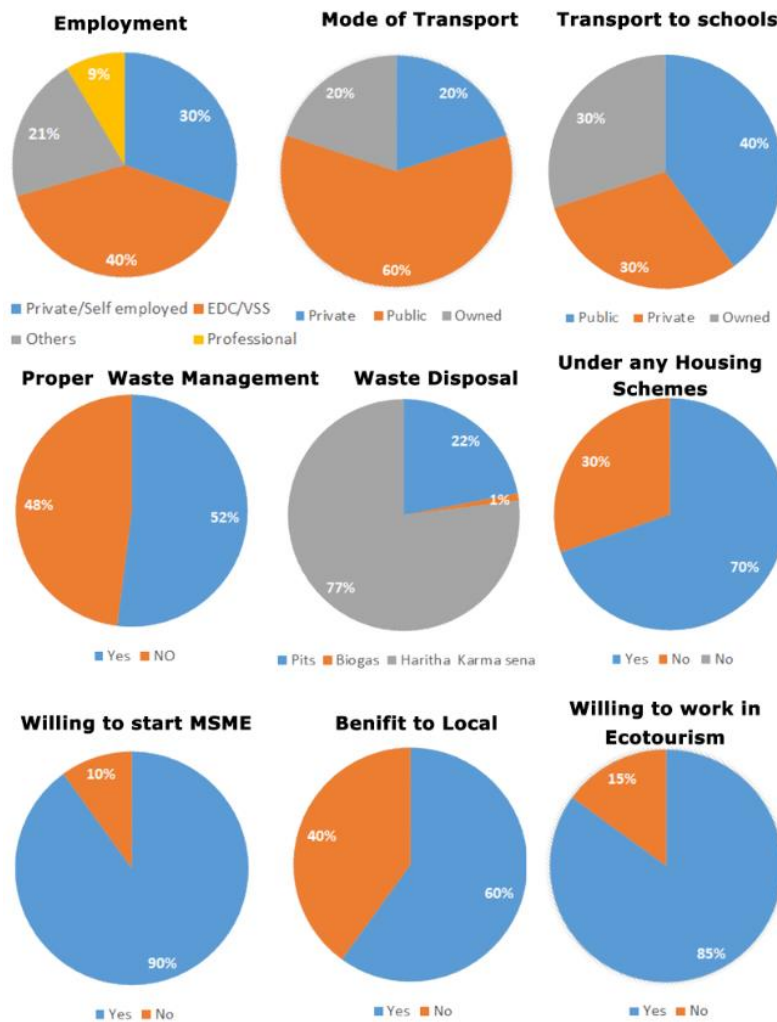


Figure 37 Primary survey analysis – Local community

Source : Author Generated

### **3.8.3 Interview Results**

Eco-development committee and Local community: Wanted more job opportunities and better pay, willing to involve in eco-tourism activity. More initiatives need from govt— Forest department to MSME projects. The income is getting significantly less, and better schools and colleges are concentrated at Sulthan Bathery, which costs more for transportation. Proper waste management is not there.

## **3.9 Interviews - Officials & Staff (May - June 2022)**

### **3.9.1 Introduction**

The interview was conducted to learn about the views of government officials of various departments.

### **3.9.2 Procedure**

A survey was conducted offline through face-to-face interviews with staff and officials of the Forest department, Panchayath offices & District planning office.

### **3.9.3 Interview Results**

Forest range officer: Only Jeep Safaris promoted trekking activity, and only 60 jeeps were on each eco-tourism spot of Wayanad WLS. Eco shops are being worked only on honey availability, and some operate continuously. Eco huts and elephant camps are being shut down due to the death of a tourist during an elephant attack the previous year. And the staffs are not enough to manage the eco-tourism activities. Accommodation facilities are temporarily shut down due to less workforce. 37 workers are recruited as guides from the Eco development committee with a daily wage of Rs 550/- per day. Income mainly generated from the honey sale and jeep safari 1crore rupees approx. 2021-2022. Sound pollution caused by jeeps and private cars is also a reason for man-animal conflict. Crop damage is caused by fauna migration.

Eco shop staff: There are two shops each on Muthanga & Tholpetty where honey is the primary production, and the availability is less. Other produce is Nellikka & Tamarind their availability is less.

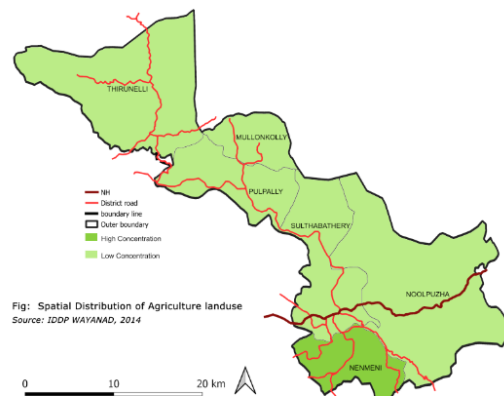
Accommodation Staff: Currently, the Govt. accommodations are closed, and staffs are now periodical tourist guides.

Panchayath Secretary: Relocating started for tribal settlements at the enclosures to buffer zones due to fauna migration. Supports ecotourism & local community upliftment formed various housing schemes and food supplies during extreme conditions.

Assistant Town planer: Supporting ecotourism of Wayanad Wls, in need to increase the tourist arrivals, especially foreign tourists. Kerala tourism department should involve in the development of eco-tourism.

### 3.10 Economic Base

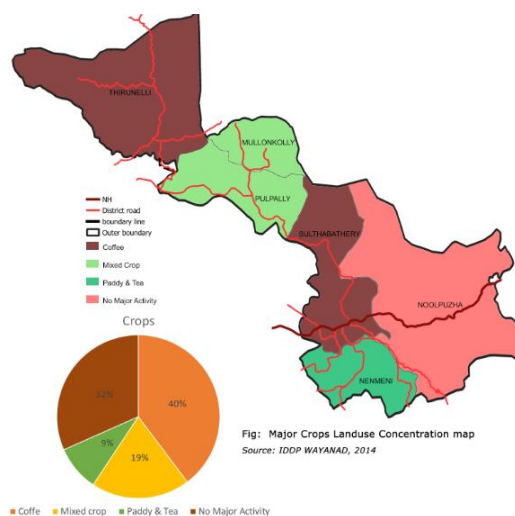
#### 3.10.1 Spatial distribution of Agriculture land use



**Figure 38 Spatial distribution of Agriculture land use**  
Source : IDDP Wayanad, 2014

Agriculture land use concentration is higher in Nenmeni Panchayath. (Committee, 2014)

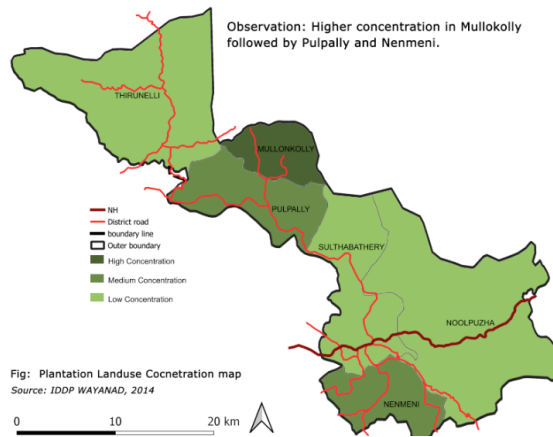
#### 3.10.2 Major crops



**Figure 39 Major crops**  
Source : IDDP Wayanad, 2014

Coffee is the major crop of Thirunelli, and Sulthan Bathery's area concentration is also higher than other crops. Noolpuzha has no significant activity. The mixed crop is higher in Pulpally and Mulonkolly. Nenmeni has both paddy & tea as substantial crops. Higher mixed residential & agriculture land use concentration as the population density is higher with higher paddy and tea production in Nenmeni. (Committee, 2014)

### 3.10.3 Plantation Land use

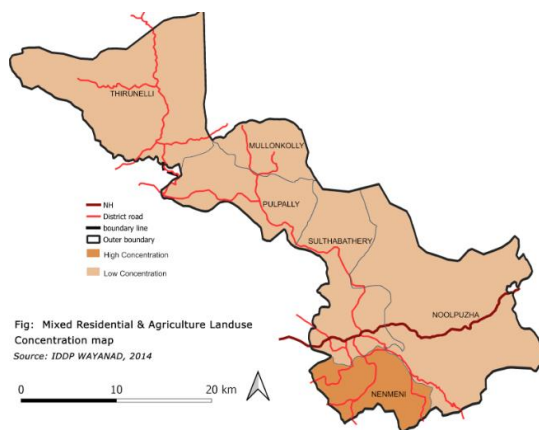


**Figure 40 Plantation Land use**

Source : IDDP Wayanad 2014

Higher concentration in Mulonkolly followed by Pulpally and Nenmeni. (Committee, 2014)

### 3.10.4 Mixed residential & Agriculture land use concentration

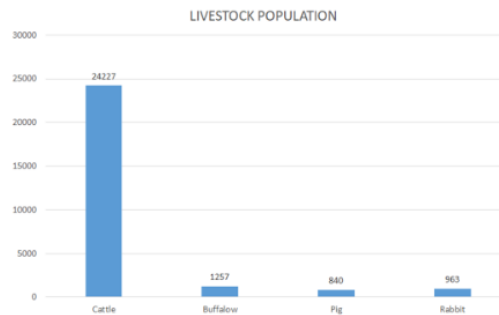


**Figure 41 Mixed Residential & Agriculture land use concentration**

Source : IDDP Wayanad 2014

Higher concentration as the population density is higher with higher paddy and tea production in Nenmeni. (Committee, 2014)

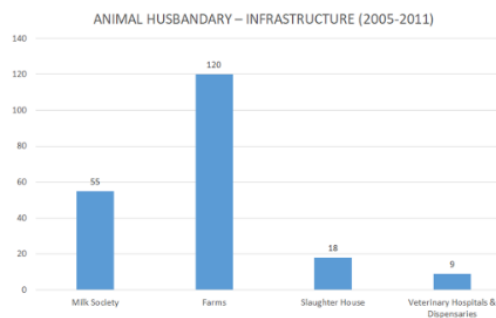
### 3.10.5 Animal Husbandry - Livestock Population & Infrastructure



**Figure 42 Livestock Population**

Source : *Panchayath level statistics, Wayanad district, 2011*

Cattle have a higher population than the rest.



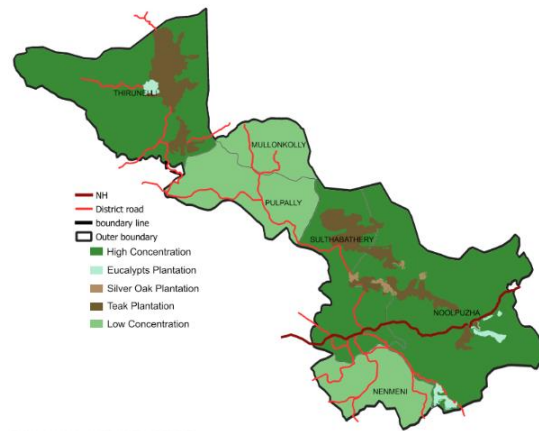
**Figure 43 Infrastructure**

Source : *Panchayath level statistics, Wayanad district, 2011*

Farms are more in which it includes cattle farm, poultry farm & egg farm. Followed by milk society, slaughterhouses and veterinary hospitals & dispensaries. (Department of Economics & Statistics, 2011)

### 3.11 Environment

#### 3.11.1 Forest Land Use & Plantation

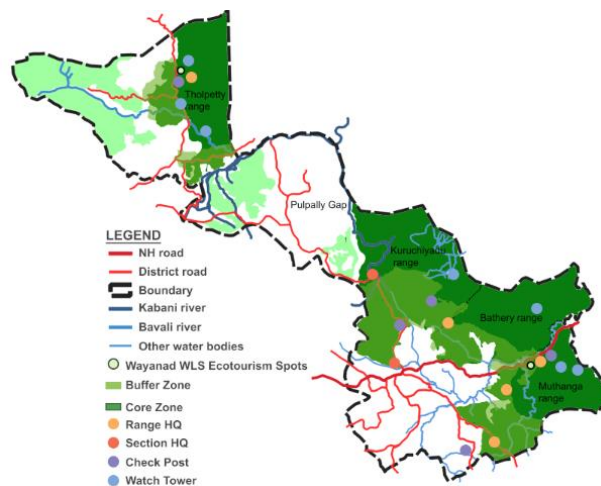


**Figure 44 Forest Land use & Plantation**

Source : *Wayanad WLS Management Plan 2012 – 2022*

A high concentration of forest is in Thirunelli, Bathery & Noolpuzha Panchayath. Teak concentration is in Thirunelli, Bathery & Noolpuzha. Eucalyptus concentration in Noolpuzha, Thirunelli. Silver oak in Bathery & Noolpuzha Panchayath.

#### 3.11.2 Zonation & Infrastructure

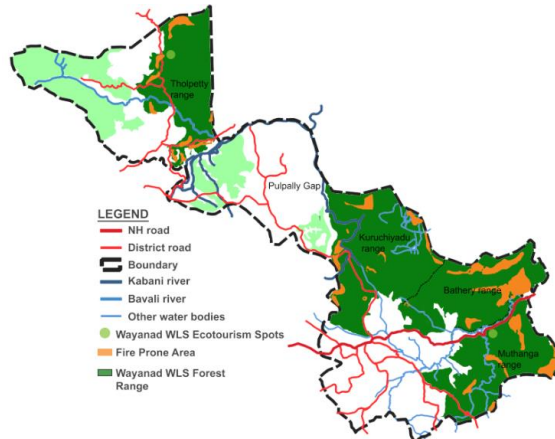


**Figure 45 Forest Land use & Plantation**

Source : *Wayanad WLS Management Plan 2012 – 2022*

Watch towers and check posts are fewer in number. A buffer zone is included with human settlement. The Sanctuary has a demarcated Core Zone (233 Sqkm), mainly along the interstate forest boundaries. The remainder is the Buffer Zone WSI & WSII (111 Sqkm) and a small Tourism Zone

### 3.11.3 Forest Fire Prone Area

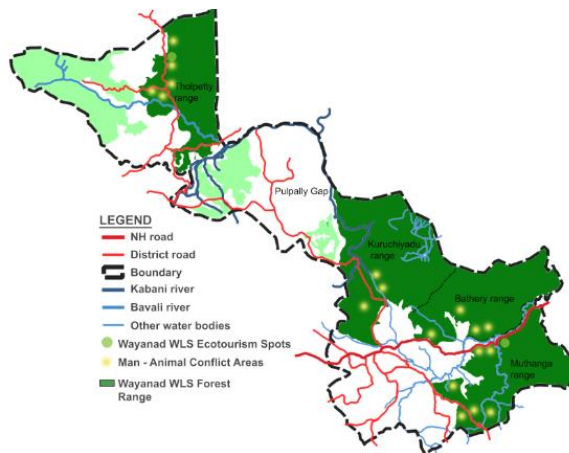


**Figure 46 Forest fire-prone area**

Source : *Wayanad WLS Management Plan 2012 – 2022*

Forest fire is a significant disaster. Bathery and Muthanga are more prone to fire due to dry bamboo and dry grass available, which is an excellent fuel for a forest fire.

### 3.11.4 Man – Animal Conflict Areas



**Figure 47 Man – Animal conflict area**

Source : *Wayanad WLS Management Plan 2012 – 2022*

### 3.11.5 Forest

The Study area is 901m altitude. The natural forests constitute 242.954 and plantations 101.487 sq km. More than 35% of the total study area is dense forest, including buffer zone, and the rivers flowing are Kabani, Bavali and Nigu. The Watershed of the site is the Kabani watershed.

### **3.11.6 Flora & Fauna**

- West-coast tropical evergreen forests
- West-coast semi-evergreen forests
- Southern Wet-Montane grasslands (grasslands)
- Southern montane wet-temperate forests
- West-coast tropical evergreen forests
- Southern Tropical Moist Deciduous Forests
- Southern montane wet-temperate forests
- Southern wet-montage grasslands (grasslands)
- Medicinal Plants: Kunni, Cheevakka, Vayambu, Adalodakam, Cashew, Kiriyaath

Reptiles - Mugger Crocodile, Indian Pond Terrapin, Wayanad Day Gecko, Asiatic House Gecko, Nilgiri Forest Lizard, Garden lizard, Cobra, King Cobra, Krait, Saw Scaled viper, Vine Snake, Banded kukri, Python, Red Sand boa, Common Wolf Snake, Striped keelback, Rat Snake, Monitor lizard.

Fishes: Glass perch, Pearl

spot(Karimeen), Murrel(Vara), Small variety(Varal), Magur(Mushu), Catfish, (Poovaliparal), (Kuruvaparal), etc.

Animals - Indian Elephant (712), Indian Bison, Indian Wild Boar (133), Common Langur (463), Bonnet Macaque (418), Gaur (294), Nilgiri Langur, Lion-tailed Macaque, Tiger (24), Panther (21), Leopard (13), Jungle Cat, Common Mongoose, Jackal, Indian Fox, Flying squirrel, Malabar squirrel (249), Indian Porcupine, Mouse Deer (17), Indian Porcupine, Barking Deer (744), Spotted Deer (1716), Sambar Deer (421), Bear (14), Wild Dog (14 Packs).

Birds - Little Cormorant (28), Little Egret (49), Egyptian Vulture (186-187), Booted Eagle (164), Indian Cuckoo (576), Jungle Owlet (636-637), White-breasted Kingfisher (735-738), Malabar Pied Hornbill (775), White-cheeked Barbet (785) etc.

Mainly found in Pakshipathalam & Kuruva Islands etc.

Timber: Wide variety of trees like Teak. Eucalyptus, Acacia, Bamboo, Rosewood, Anjili etc., (K.K. Sunil Kumar, 2012)



**Figure 48 Fauna of Wayanad WLS**

**a) Deer; b) Elephants; c) Bison; d) Tiger**

Source : <https://lms.chanakyamandal.org/current-event/wayanad-wildlife-sanctuary/>



**Figure 49 Rivers of Wayanad WLS**

**a) Kabani b) Bavali c) Nugu**

Source : <https://reefandrainforest.co.uk/accommodation/kabini-river-lodge;>

[https://en.wikipedia.org/wiki/Bavali\\_River;](https://en.wikipedia.org/wiki/Bavali_River;)

<https://www.youtube.com/watch?v=ZKs9z7snAtY;>

## **3.12 Tourism - Wayanad**

### **3.12.1 Introduction**

The stunning Wayanad district, cared for by the District Tourism Promotion Council, Wayanad, adorns the northern highlands of Kerala. This region is well-known for its numerous hiking and camping paths, breathtaking waterfalls, caverns, bird-watching locations, and significant other spectacular views. Over the years, tourists have long favoured this location. People are especially enthralled by the variety of exotic goods offered here, such as spices, coffee, tea, bamboo items, honey, and herbal plants.

### **3.12.2 Main attractions**

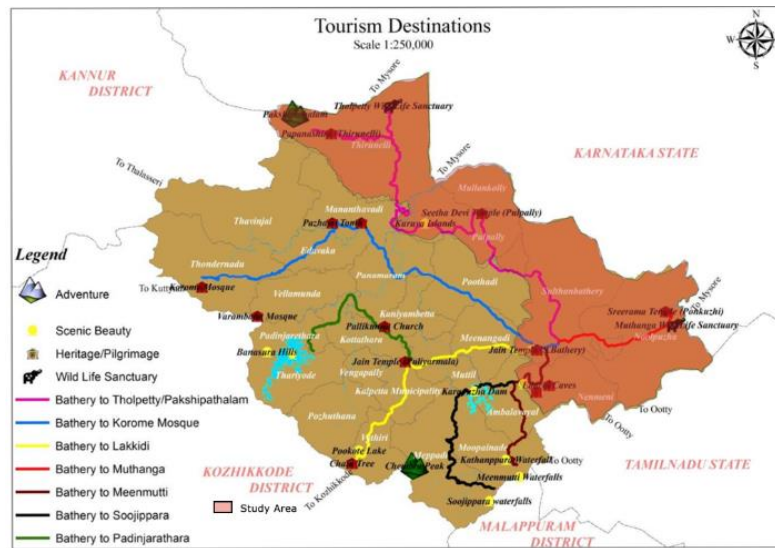
**Main attractions include - Forest:** Around 39.26% of Wayanad's land area comes under forest cover, which is an integral part of the biodiversity 'hot spot' in the Western Ghats. The forests of Muthanga, Tholpetty and adjacent areas represent a high degree of endemism characterized by the presence of endemic plants and animals, such as the Asian Elephant, Gaur and Tiger.

**Plantation & Agriculture:** Wayanad is agrarian, with the plantation economy playing a significant role. The major plantation crops include coffee, tea, pepper, cardamom and rubber. The rice fields of Wayanad are in the valleys formed by hillocks.

**Rivers & Waterfalls:** Kabini and its tributaries constitute the river system of the Wayanad district. Kabini, one of the three east-flowing rivers of Kerala, is an important tributary of the river Cauvery. The waterfalls of Wayanad provide yet another incredible sight which attracts nature lovers from across the globe. Meenmutty, Soochipara, Kanthanpara and Chethalayam are some of the major waterfalls of Wayanad.

**Dams & Heritage:** The breath taking grandeur of the Karapuzha Dam, the Banasura Hills, and the dam in Wayanad beckons you to visit. Cheengari Rock Adventure Center is a must-see destination for adventure seekers. The Edakkal Caves are another location in Wayanad that is a must-see. The caves are two natural rock structures thought to have been produced by a big break in a gigantic rock. (Committee, 2014)

### 3.12.3 Tourist Destinations



**Figure 50 Tourist Destinations**

Source : Author Generated with reference to Sulthan Bathery Master Plan, 2017

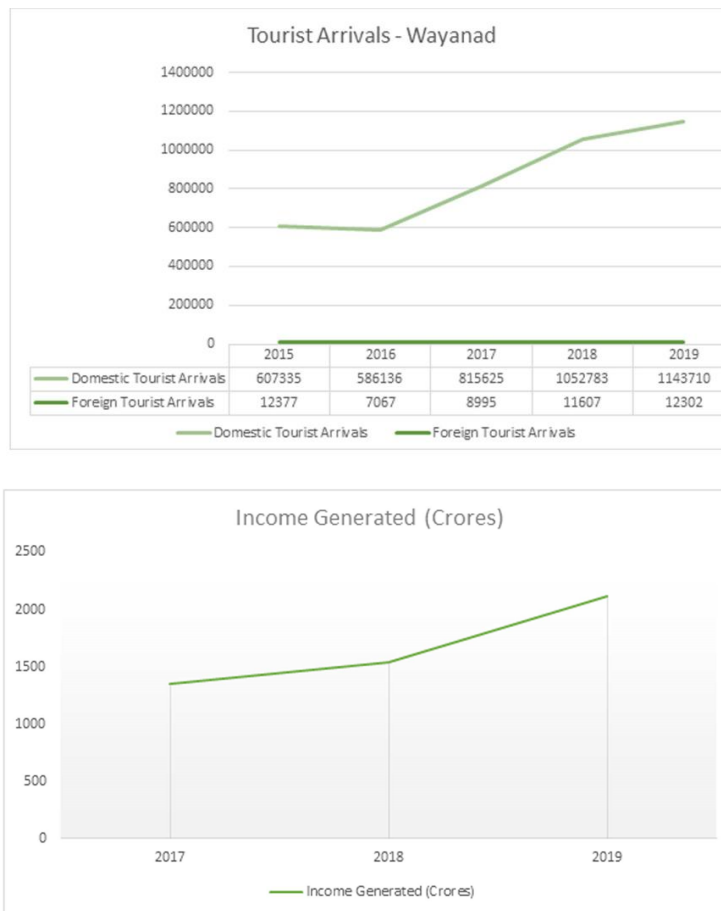
### 3.12.4 Distance of Tourist Destinations from Sulthan Bathery

**Table 9 Distance of tourist destination from Sulthan Bathery**

Sl No.	Name Tourist Spot	Distance from Sulthan Bathery (KM)
1.	Banasura Sagar Dam	50
2.	Banasura Sagar Hills	53
3.	Papanashini (Thirunelli Temple)	70
4.	Puliyarmala Jain temple	27
5.	Pallikkunnu Church	43
6.	Cheengeri Hill	18
7.	Ambalavayal Farm	10
8.	Chain Tree	45
9.	Pulpally Seetha Devi Temple	25
10.	Soojippara Water Falls	29
11.	Meenmutti Water Falls	23
12.	Tholpetty Wild Life Sanctuary	55
13.	Ponkuzhi Sri Rama Temple	16
14.	Thirunelli Temple	70
15.	Chembra Peak	43
16.	Edakkal Cave	12
17.	Jain Temple	1
18.	Kanthanpara Water Falls	27
19.	Karappuzha Dam	19
20.	Kuruva Island	45
21.	Pazhassi Tomb	26
22.	Muthanga Wild life sanctuary	15
23.	Pookot Lake	40
24.	Pakshi pathalam	75
25.	Vallyoorkavu Temple	27

Source : Sulthan Bathery Master Plan, 2017

### 3.12.5 Wayanad Tourism Statistics



**Figure 51 Tourist arrivals and Income generation in Wayanad**

Source : Kerala Tourism Statistics, 2019

Domestic and foreign tourist arrivals dropped in 2016, and from 2017 to 2019 increased, income generation is also increasing.

Inference: Need to increase the number of foreign tourists & income generation by forming a tourism circuit.

### 3.12.6 The economic contribution of tourism

In the Wayanad district, tourism is the second-largest industry after agriculture, and the hospitality sector is sometimes seen as the only source of employment (cafes, hotels and restaurants). Since numerous inputs are required to produce tourism and leisure services, which include the full spectrum of agricultural, agro-food, and industrial production, as well as the production of capital goods, as well as construction and public works, the economic impact of tourism is significantly more significant.

### 3.13 Tourism – Study area

#### 3.13.1 Tourism Mapping

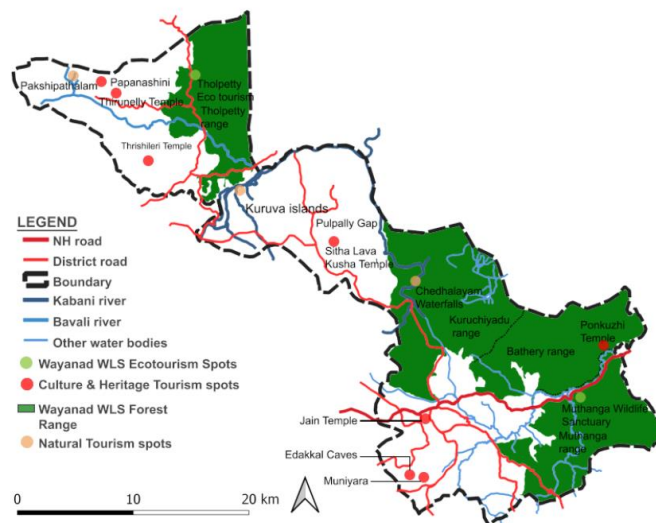


Figure 52 Tourism Mapping

Source : Author Generated

#### 3.13.2 Wayanad WLS

The Wayanad Wildlife Sanctuary, Muthanga, was formed in 1973 and lay next to the protected area network of Bandipur and Nagarhole in Karnataka on the northeast and Mudumalai in Tamil Nadu on the southeast. Located within the Nilgiri Biosphere Reserve, this sanctuary, abundant in biodiversity, is crucial to preserving the area's biological heritage. Plants and animals inhabit the refuge. You may also witness elephants, spotted deer, bison, tigers, cheetahs, wild bears, etc., here. The wildlife sanctuary Muthanga is another name for it.

Night camping in Tholpetty WLS is fascinating. The sanctuary's guard tower overlooks the lake, which serves as the animals' primary water supply. As animals come to the river at night to drink, this makes for an exciting experience. Both plants and animals abound at the Tholpetty wildlife refuge. Elephants, Bison, and Jungle Cats may all be seen here.

#### 3.13.3 Natural

Kuruva Island is one of Wayanad's most popular attractions. Mananthavady is 17 kilometres away from it. This Island is perfect for a picnic because it is deserted. The rulers of this supernal kingdom are rare birds, orchids, and plant species. One must walk across a little brook to get to the island. To get to the island, a ferry service is offered.

Pakshipathalam is positioned 7 kilometres northeast of Thirunelli, 66 kilometres from Kalpetta and 32 kilometres from Mananthavady. The location, Pakshipathalam, gets its name from the abundance of birds that live there. Seventeen kilometres must be travelled through a natural forest to get to Pakshipathalam. Deep rock caverns constructed between massive granite slabs at the northernmost tip of the Brahmagiri serve as habitats for various birds and wild animals. Nowadays, a cave that Rishis (saints) are reputed to have used for meditation is a well-liked tourist spot.

### 3.13.4 Cultural & Heritage

Thirunelli Temple, a 3000-year-old temple devoted to Lord Vishnu, is protected by 30 granite columns. Nearby is the Papanashini creek. The Papanashini is connected to the temple by an aqueduct so that the temple can utilise the water inside its boundaries. Where five rivers formerly converged, there is now a pond named Panchatheertha on the temple's southern side. The pond's centre is marked by a hill, on which a stone slab with the prints of Vishnu's feet is also visible (Vishnu Pad). The pond is devoid of water in the summer. Visitors to Thirunelli Temple include prayer seekers and those performing the Bali ancestor rites. Thousands of people visit Thirunelli temples to complete the “Karkidakavu Vavu” ritual.

Sita Devi Temple is believed to have been built at the time of Pazhassi Raja and is dedicated to Sita Devi. Her sons Lava and Kusa are also adored here. There is 34 km between Kalpetta and the temple. It is believed that Valmiki lived at Ashram Kolli near Pulppally and that Sita was here during her exile. Theyyam and Paniyarkali are performed at this temple during the annual three-day festival.

Jain Temple Sulthan Bathery, earlier known as Ganapativatom, is a quaint town in Wayanad. Tipu Sulthan of Mysore conquered the region and used a Jain temple as a battery, resulting in its name, Sulthan Bathery. Tipu built an imposing fort here during his invasion in the 18th century, but it no longer stands. The Jain Temple of Sulthan Bathery, built in the 13th century, has withstood the tests of time – having served as a place of worship for Jains and Hindus and later used as an ammunition store (battery) by Tipu Sultan’s army. The temple has quite a few exquisite stone carvings.

From the district's administrative centre in Kalpetta, Edakkal Caves is 27 kilometres away. The great Neolithic cave site of Edakkal may be reached after a fun hike up the Ambukuthi

hill close to the town of Ambalavayal. It is a fissure created when a rock corner separates from the main body due to some natural factors. The cleft and fissure are both 30 feet deep. The fact that a massive boulder, weighing many tonnes, fell and formed a roof over a significant piece of the other side of the big gap gives it the appearance of a cave to the average spectator. The etchings found on the cave walls have attracted the worldwide attention of archaeologists and historians. It is believed that the Edakkal caverns had been inhabited at several points in history since there are at least three unique groups of petroglyphs with a combined age of over 5000 years. (Committee, 2014)



**Figure 53 a) Tholpetty Jeep Safari; b) Muthanga WLS**

Source : <https://www.keralatourism.org/ecotourism/trekking-programs/>

<https://www.justdial.com/Wayanad/>

[Kerala-Tourism-Muthanga/9999P4936-4936-171230074355-Q9J7\\_BZDE](https://www.kerala-tourism-muthanga/9999P4936-4936-171230074355-Q9J7_BZDE)



**Figure 54 a) Bamboo rafting at Kuruva island; b) Bamboo bridge at Kuruva island; c) Tree Hut at Pakshipadhalam; d) Hornbill, Pakshipadhalam**

Source : <https://www.wayanad.com/pages/kuruva-island/>

[https://commons.wikimedia.org/wiki/File:Kuruva\\_island\\_bridges.jpg](https://commons.wikimedia.org/wiki/File:Kuruva_island_bridges.jpg);

<https://www.tourmyindia.com/states/kerala/pakshipathalam-bird-sanctuary.html>;

<https://thehotelsnearme.com/listing/pakshipathalam-bird-sanctuary/>;

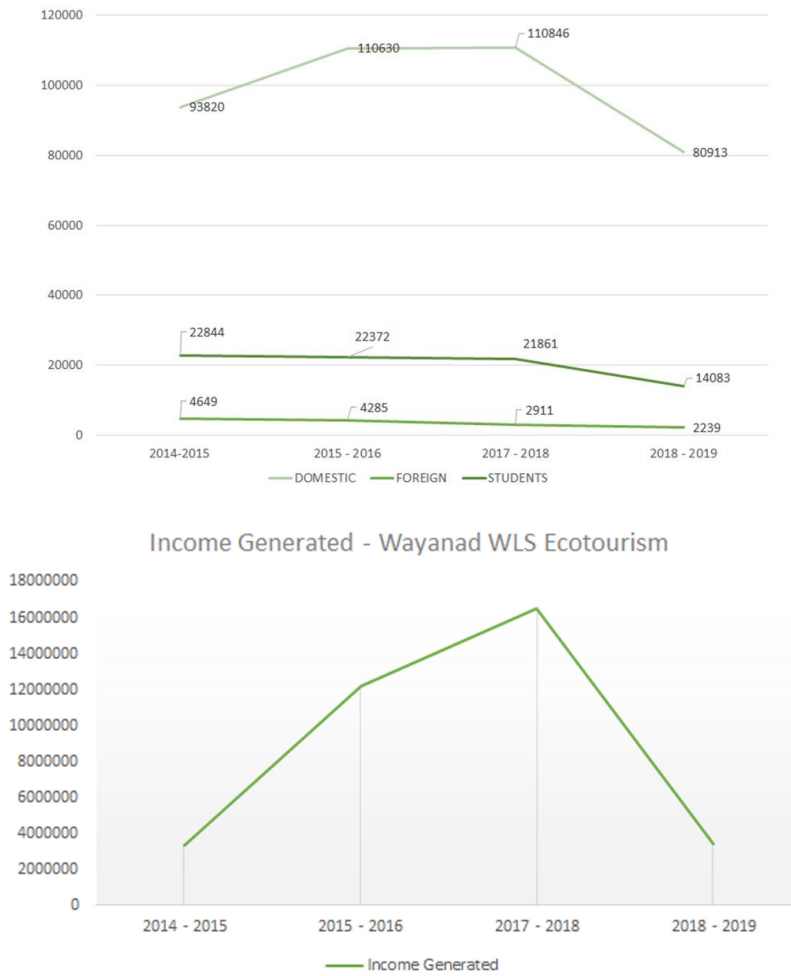


**Figure 55 a) Thirunelli Temple; b) Sita Devi temple; c) Jain temple, Sulthan Bathery; d) Edakkal caves**

Source : <https://pratheep.com/sita-devi-temple/>; <https://pratheep.com/sita-devi-temple/>;

[https://en.wikipedia.org/wiki/Jain\\_Temple,\\_Kidanganad](https://en.wikipedia.org/wiki/Jain_Temple,_Kidanganad); [fundayholidays.com/blog/Edakkal-caves/](https://fundayholidays.com/blog/Edakkal-caves/);

3.13.5 Tourist arrivals & Income generation - Wayanad Wls



**Figure 56 Tourist arrivals & Income Generation in Wayanad WLS**

Source : Kerala Forest Statistics, 2014-2019

Tourist arrivals dropped in 2018 - 2019 caused of floods and Nipah. Thus income was generated less during that period.

3.13.6 Tourist arrivals & Income generation – Pakkom Kuruva

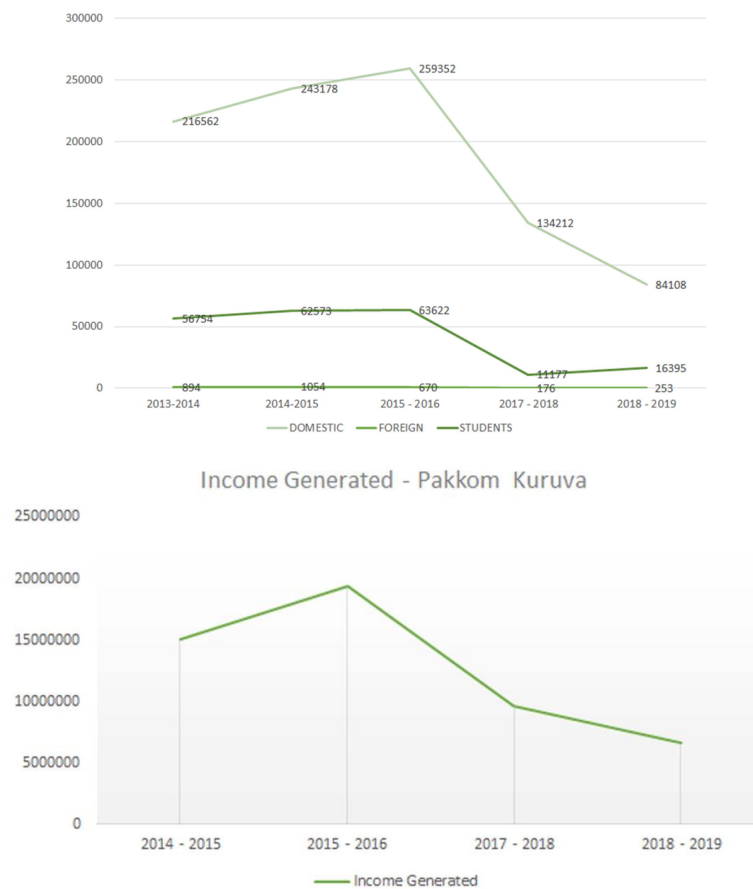


Figure 57 Tourist arrivals & Income Generation in Pakkom Kuruva

Source : Kerala Forest Statistics, 2014-2019

Tourist arrivals dropped in 2018 - 2019 caused of floods and Nipah. Thus income was generated less during that period.

### 3.13.7 Tourist arrivals & Income generation – Edakkal caves

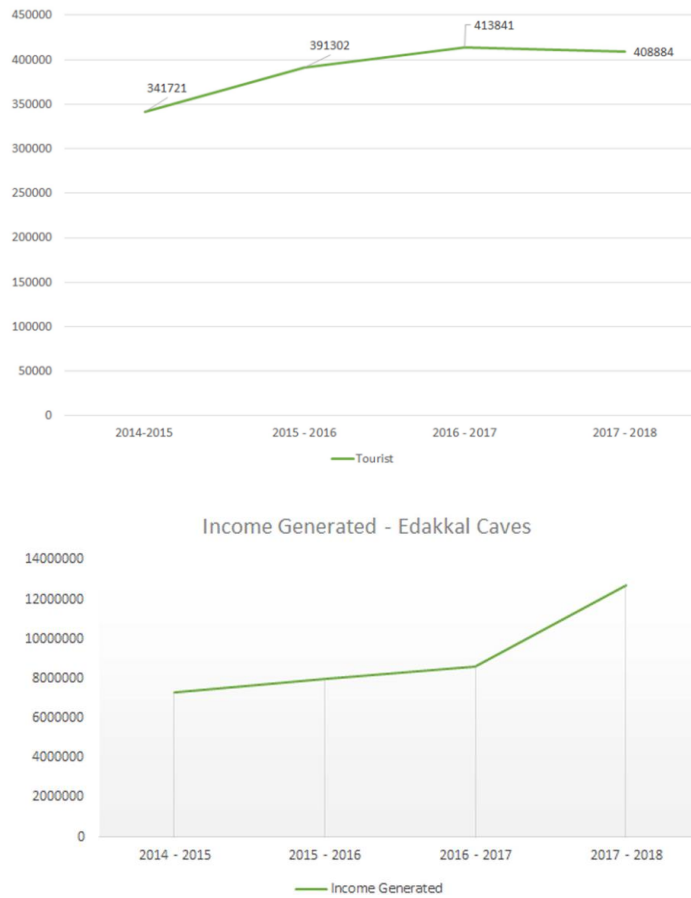


Figure 58 Tourist arrivals & Income Generation in Edakkal caves

Source : Kerala Forest Statistics, 2014-2019

Tourist arrivals slight drop in 2017 - 2018, which did not affect income generation (an increase in ticket charges)

## 3.14 Primary survey data analysis - Tourists (Survey conducted May - June 2022)

### 3.14.1 Introduction

The survey was conducted to determine the perceptions of tourists visiting ecotourism spots in Wayanad Wls.

### 3.14.2 Procedure

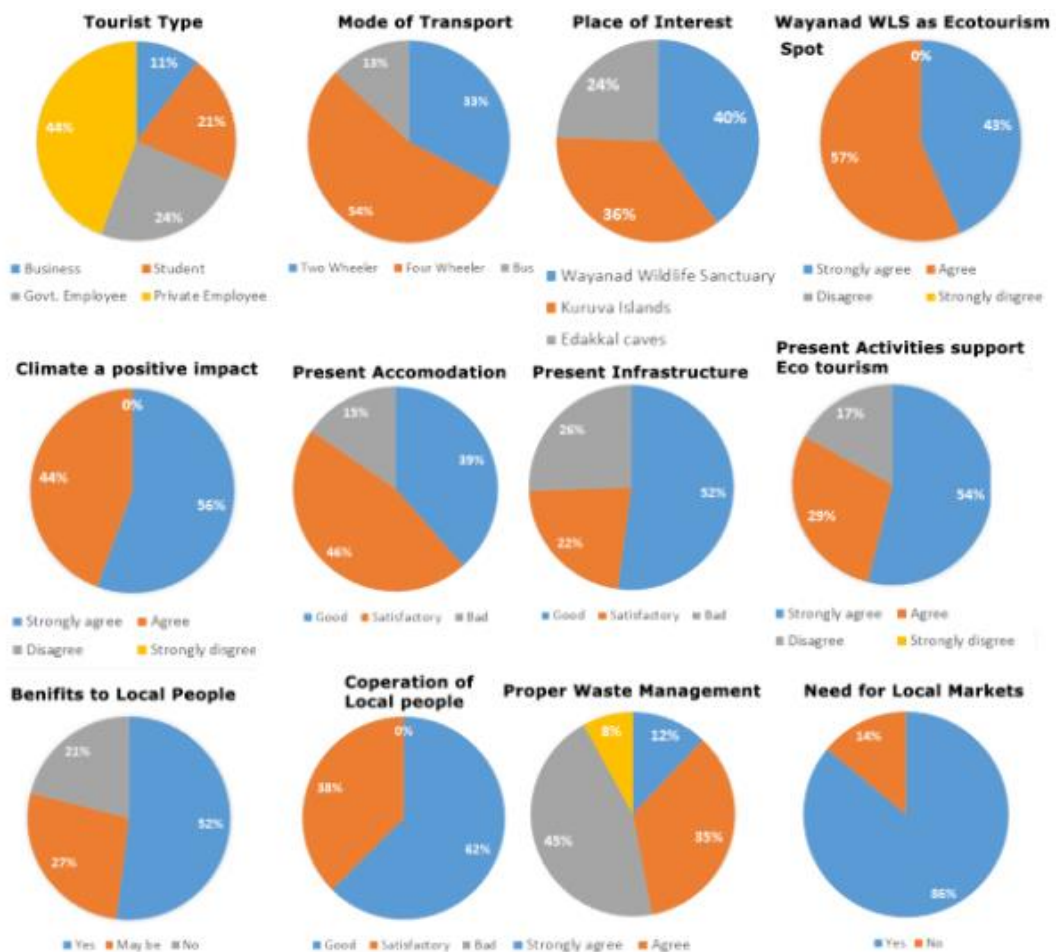
A survey is conducted among 60 tourists from various parts of Kerala and outside Kerala. The age range is 18 - 50 years. Surveys were conducted online and offline, with face-to-face interviews with the tourists.

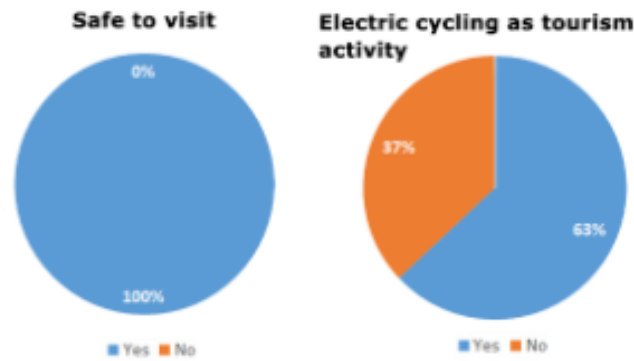
## Strategies for Ecotourism development – A Case of Wayanad Wls forest & environs

Observations: Tourists includes businessman, students, govt and private employees, mainly personal employees visit. The mode of transport is four-wheelers, and the place of interest is Wayanad Wildlife sanctuary.

- Wayanad Wildlife sanctuary mostly agrees as an ecotourism spot, climate gives a positive impact present is satisfactory as most of the govt accommodations are closed now. Better private accommodations are not near the ecotourism spots
- Present infrastructure facilities are good but not better, the transportation is limited in the ecotourism spots. Present activities support ecotourism and benefit local people, not just unreasonable people (37 Households).
- Local people are cooperative, there is no proper waste management, and there should be more local markets that benefit the local community.
- The ecotourism spots are safe to visit, and most people support cycling tourism

### 3.14.3 Tourist Perceptions





**Figure 59 Tourist perceptions**

Source : *The survey conducted by the authoUR*

### 3.15 Study area analysis

#### 3.15.1 Strength

- The potential biodiversity of flora and fauna.
- Nearby tourist spots like Edakkal caves, Jain temple and Kuruva islands.
- Higher potential for adventure tourism & cycle tourism.
- Greater interest in the local community to MSME projects and ready involve in ecotourism activity.
- The agriculture and tourism sector are the major contributors to the economy

#### 3.15.2 Weakness

- Lack of coordination and involvement of concerned authorities.
- Less staff to address diverse and increasing problems, untrained staff and guides, lack of well-designed tourism packages, etc.
- Carrying capacity of visitation is not fixed.
- Lack of food restaurants, local shops and accommodation facilities.
- No proper transportation and other infrastructure facilities
- Less involvement of the local community.
- No waste management system.
- Lack of job opportunities for local people.
- Lesser industrial projects.

#### 3.15.3 Opportunities

- Scope to attract domestic and foreign tourists to raise the potential of biological, history and social culture.

- Foreign exchange can be improved by increasing foreign tourists and ecotourism product diversification.
- The potential for research and education is very high.
- Development of ecotourism can increase local revenue. Social mobilization can be improved through VSSs, SHGs and EDCs etc.
- Greater scope for MSME projects and local shops

### **3.15.4 Threat**

- Encroachment for Agriculture activities
- Jeep safaris in the core area cause sound pollution.
- Movement of Fauna threats enclosure settlement and also agriculture damage.



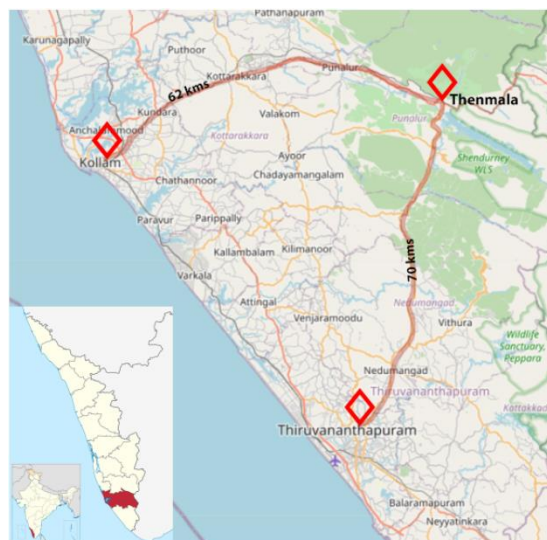
## Chapter 4. Case studies/Best practices

*This chapter discusses case studies/best practices which include Thenmala ecotourism, Thekkady ecotourism & Kewzing organic ecotourism*

### 4.1 Thenmala Ecotourism – Case Study 1

#### 4.1.1 Introduction

Thenmala ecotourism was conceived as India's first planned Ecotourism destination, inaugurated in January 2001. The distance between Kollam and Thenmala is 62 kilometres. Thenmala is a small village situated at the foot of the Western Ghats in the Kollam District. Kallada dam of Kallada irrigation projects of the State is located here. This basin has a water spread area of 22 sq. km within the famous Shenduruni Wildlife Sanctuary. It's about 100 sq. km and has a large variety of flora and fauna. There are 3212 families in this area, with a total population of 11366 people. (Department of Tourism, 2022)



**Figure 60 Connectivity map – Thenmala to Kollam & Thiruvananthapuram City**

Source : *Author Generated with reference open street map.*

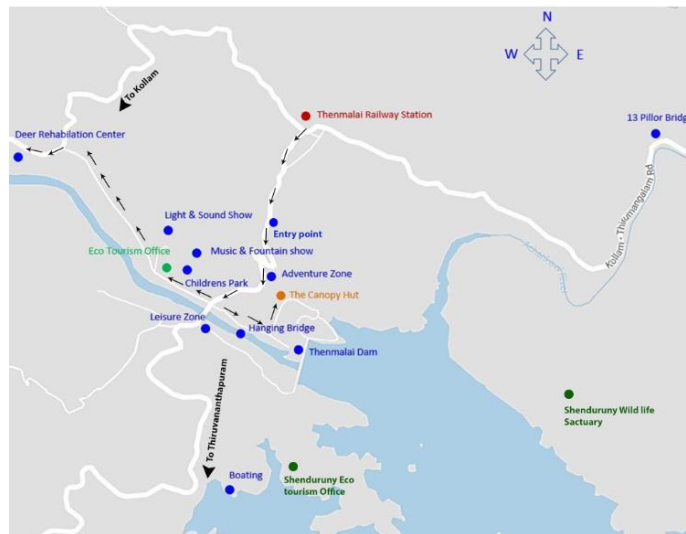
#### 4.1.2 Attractions & Activities :

Vacation paradise for holiday seekers, lush forest parks, adventure parks and children's parks, butterfly safari, musical dance fountains, boats and trekking, hiking and night camps, and Ayurveda centres, among other things. Adventure Zone: Nature Trails take tourists on an adventurous journey. Hills, treetop trekking, rock climbing, crossing rivers, thrills and more. Cultural Zone: Here, you can do art forms and cultural activities at the amphitheatre, local forest products, homemade products, handicrafts and music dances. Leisure zones

such as fountains: wooden boards on the banks of the river, suspension bridges over the river, and sculpture gardens. Deer Rehabilitation Centre: Deer Seed Conservation and Tourists Explore the Centre Pilgrimage Center:

Ayyappa Temple in Kulathupuzha, Aryankavu, Achankovil. Shendani Wildlife Sanctuary: Trekking, cycling and battery-powered boats are available for boating. Waterfalls: Manara Waterfall and Kumbavrutti Waterfall.

(ashrafblr123, 2017)



**Figure 61 Route map of Thenmala Ecotourism**

Source : Author Generated with reference to google maps

### 4.1.3 Ecological Impact

The concept of ecotourism has two components. The descriptive element means that the activity is based on nature, the epicentre of all that occurs. Alternatively, value-based gears mean the existence of educational potential and the need for it to be environmentally sustainable. For the Thenmala Ecotourism Project, you can see these two elements. At Thenmala, ecotourism activities are not only harmless and non-deteriorating but also directly contribute to the management of the sanctuary. The Shenduruni Wildlife Sanctuary is well maintained in Thenmala. Thenmala s most famous attraction, the elevated walkway that runs over the rocks through a large tree canopy, was created without degrading the forest, that is, without logging a single tree. Another sculptural beauty, the sculpture garden, is in the woods without compromising the ecosystem. The Thenmala Nature Trails are built with minimal intervention and are perfect for nature trailers. The battery-powered boats used in the lake show the importance of environmentally friendly energy sources. Thenmala

ecotourism zones are identified as plastic-free zones, minimizing the area of plastic by not allowing plastic products in the concerned area. The amount of time each tourist spends at the destination, commissions to agents and guides, and profits to companies and business establishments account for the highest share, followed by wages to these facilities' employees and other related activities.

### **4.1.4 Social Impact**

Ecotourism is a purposeful visit to a natural area to learn about the ecosystem's nature and natural history. It is essential to preserve the ecosystem's integrity and the residents' natural resources. Creates an economic opportunity to become. The social impact of the Thenmala ecotourism project, detailed below, is based on discussions on how locals have benefited from ecotourism. About 500 households lived in Thenmala [EIA Report]. Their main employment opportunities are in travel provision, accommodation and tourist information. Locals have previously received leadership training from the Thenmala Ecotourism Promotion Society [TEPS], an organisation specialising in the management of ecotourism activities. Other opportunities include developing souvenirs, small shops, hotels, selling local handicrafts and local forest products, creating local art forms, restaurants and more. There are certain small government-owned shops and cafeterias here. The Forest Department formed the Eco-Development Committee, which comprises local communities and is responsible for tracking, bird watching, hiking paths, and forest conservation. The Thenmala Ecotourism Promotion Society also supports a community initiative at Palaruvi, a famous waterfall near Thenmala. According to the interviewees, the Forest Department would defend the region's interests by entrusting the management of the ecotourism centre to Vana Samrakshana Samithi, a group of residents dedicated to ecosystem preservation. He pointed out that he has a particular program. In her opinion, the government and relevant departments must develop appropriate strategies for creating the Thenmala ecotourism project.

### **4.1.5 Economic Impact**

The most significant economic benefit of Thenmala ecotourism is the potential to generate both income and employment. This economic potential is not only limited to the geographical boundaries of the destination, but the surrounding areas have been found to benefit from this activity. Activities include the cost of some visitors and can significantly contribute to the community's income and prosperity. Agency and tour guide fees, companies and corporate profits account for the largest share of each visitor's spending

within the destination, followed by wages and other related activities for employees of those companies. Further influxes can significantly impact community prosperity and living standards, even if direct income and the ability to generate jobs are not reasonably substantive. For example, in Thenmala, the small scale of direct tourism spending means tourism-related sales of forest products, handicrafts, and similar crafts that support the indigenous economy by contributing to sustainable income. Based on income, employment and revenue to the government, the economic impact of Thenmala ecotourism can be analysed.

**Table 10 Number of tourist arrivals in Thenmala**

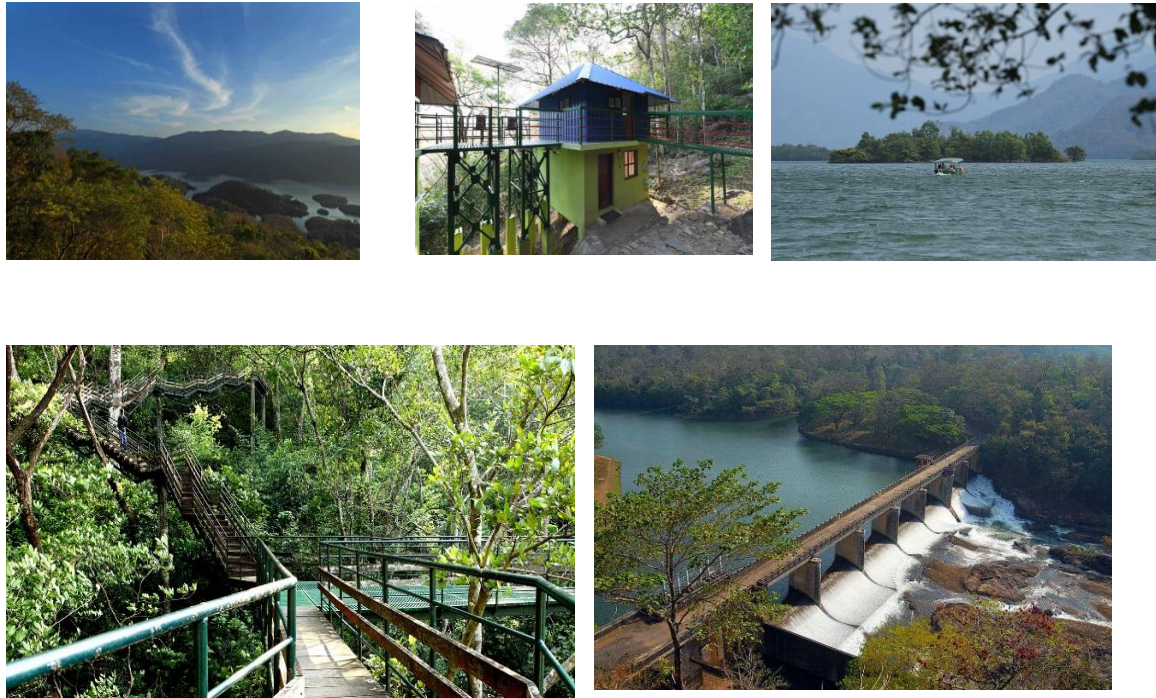
Number of tourist arrivals in Thenmala		
Financial year	Number of Tourists visited	Revenue Generated (in Rs )
2000-01	26148	445437
2001-02	41161	1138839
2002-03	65075	2147985
2003-04	118404	4044571
2004-05	104622	3563820
2005-06	114443	3926430
2006-07	120178	4954459
2007-08	104758	4602536
2008-09	92191	4813440
2009-10	114714	5535195
2010-11	130961	7050000

Source : *Various issues of Economic Reviews, State Planning Board, Govt. Kerala*

The number of tourists in Thenmala is increasing year after year. We can deduce from these data that Kerala has the potential to become a significant ecotourism destination. As visitation to natural areas increases, including ecotourism destinations, the demand for travel professionals to accommodate the tourists (Hawkins and Lamouter 2001). Kerala has recently experienced a dramatic rise in tourism professionals, including tour and travel operators who market the state's eco-tourism destinations overseas and within. Today, Ecotourists thus have many better options and reasons to travel to our state. Hence in Kerala, the number of tourists preferring eco-destination increases yearly.

The economic impact of the Thenmala ecotourism also has a multiplier effect, where the benefits of direct income and employment are internally circulated within the economy to generate additional benefits that, in turn, could create related income opportunities. In contrast to the other forms of tourism, the multiplier effect of ecotourism is even more sizable since ecotourism is expected to be not only environmentally conscious but also aesthetically responsible. In the case of Thenmala, the visitors prefer local food and other products, where their payments are subsequently circulated internally for wages to hostel staff, etc., which influences another economic activity where this staff purchases indigenous products with their salaries. Unlike any other tourist destination in Kerala, there

is not even a single international or-star hotel situated In Thenmala. Money is locally circulating here. It is not a resist that Eco-tourists exhibit a sort of responsibility where they conscientiously try to support the local economy of their destination. (Babu, 2012)



**Figure 62 Pictures of Thenmala Ecotourism a) View from the peak of Thenmala; b) Cottages in Thenmala; c) Boating; d) Connecting Walkways; e) Kallada Dam**

Source : [https://www.keralatourism.org/ecotourism/trekking-programs/thenmala-shenduruy/11?utm\\_source=ebrochure&utm\\_medium=pdf&utm\\_campaign=eco-tourism 2018 ebrochure](https://www.keralatourism.org/ecotourism/trekking-programs/thenmala-shenduruy/11?utm_source=ebrochure&utm_medium=pdf&utm_campaign=eco-tourism%202018_ebrochure)

## 4.2 Thekkady Ecotourism – Case Study 2

### 4.2.1 Introduction

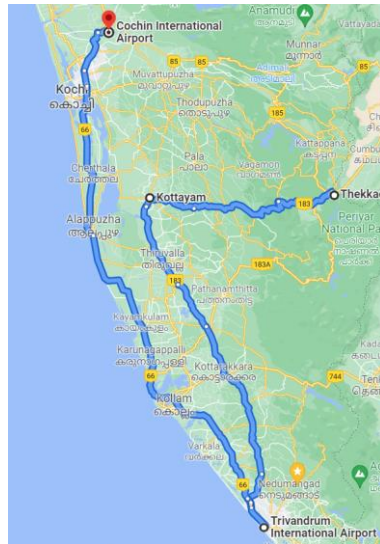
Thekkady (Idukki district) is a town near Periyar National Park, an important tourist attraction in Kerala, India. The project benefited around 40,000 people and 5,540 families.

Thekkady is 257 kilometres (160 miles) from Trivandrum, 145 kilometres from Cochin International Airport, and 114 kilometres from Kottayam railway station. (Lisamma Sebastian, Sajith Mathews, 2021)

The Periyar Wildlife Sanctuary covers 777 square kilometres (300 square miles), with 360 square kilometres (140 square miles) of dense evergreen forest (Kerala, 2014). In 1978, the wildlife sanctuary was designated as a tiger reserve (Thekkaddy, 2020). The Mullaperiyar Dam, which spans the Periyar River and creates a beautiful artificial lake, adds to the park's

## Strategies for Ecotourism development – A Case of Wayanad Wls forest & environs

allure (Multimedia, 2022). The wild elephant, deer, and bison herds that descend to the lake to drink are Periyar's main draws. Trekking, canoeing, or a vehicle safari are several ways to get to the refuge.



**Figure 63 Connectivity map of Thekkady to Kottayam Railway station, Trivandrum Airport, Cochin Airport**

Source : <https://www.google.com/maps/dir/Trivandrum+International+Airport,+Airport+Road,+Chacka,+Thiruvananthapuram,+Kerala/Kottayam,+Railway+Station+Road,+Nagampadam,+Kottayam,+Kerala/Cochin+International+Airport,+Airport+Road,+Kochi,+Kerala/Thekkady,+Kumily,+Kerala/>



**Figure 64 Boating in Periyar Tiger Reserve**

Source : <https://thekkadytours.in/index.php/eco-tourism/>



**Figure 65 Tiger at Periyar Tiger Reserve**

Source : <http://www.thekkadylakeshoreinn.com/thekkady>

#### **4.2.2 Attractions & Activities :**

• Bamboo Rafting • Day Trek • Jungle Inn • Bamboo Grove Education • Tribal Heritage • Wild Adventure • Elephant Ride • Boat • Watchtower and Rest House • Visitor Center • Boat Dock Information Center • Interpreter Center

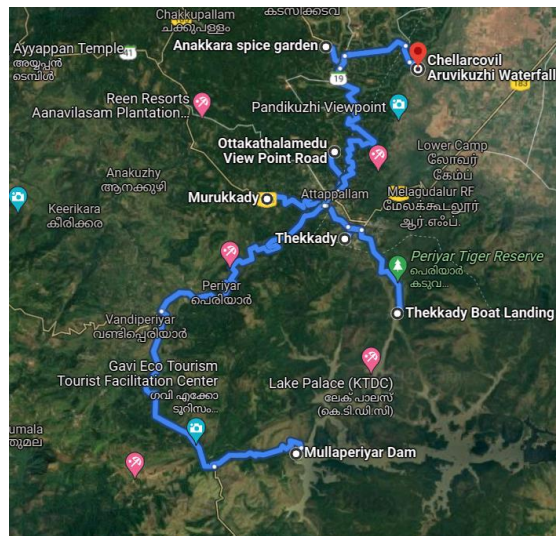
On a hike, Otakata Remedy is one of the tallest mountains. A variety of companies provide Jeep tours.

Kumily. Lake at Thekkady can be viewed from the mountain.

Murikkady: famous for coffee plantations and spices. It is around 5 kilometres from Thekkady.

Anakkara: The hotel is located on Kumily-Munnar road, about 13 km from Kumily. Anakkara has been offered a new airport, which is currently being considered by Indian airport authorities. Anakkara is famous for its spice garden.

Chellar Kovil: It's about 15km from Kumily to the Theni district in Tamil Nadu. There are many picturesque waterfalls and waterfalls in this place.



**Figure 66** Route map in Thekkady tourism

Source : <https://www.google.com/maps/dir/Mullaperiyar+Dam,+Kerala/Murukkady,+Kumily+Alady+Road,+Periyar,+Kerala/Thekkady,+Kumily,+Kerala/Chellarkovil+Tourist+Centre,+Thekkady,+Chellarcovil,+Tamil+Nadu/@9.5974489,77.0693495,27177m/data=!3m1!1e3!4m26!4m25!1m5!1m1!1s0x3b0656fe4018e271:0x13c183bf122ea16b!2m2!1d77.144292!2d9.528843!1m5!1m1!1s0x3b0654f4ac4161dd:0xbe922f3075d7b4c3!2m2!1d77.1255898!2d9.6184368!1m5!1m1!1s0x3b06f8812df2a199:0x468af17958c54ae8!2m2!1d77.161458!2d9.6031088!1m5!1m1!1s0x3b07ab5493f1b807:0x35074cf8e72d7e24!2m2!1d77.1870637!2d9.6621592!3e0>

### 4.2.3 Environmental Impact:

A group of forty indigenous adolescents from the Mannans and Paliyans tribal communities are members of two professional ecotourism eco-development committees centred in Kumily (EDCs). The combined effort of the Periyar Tiger Reserve (PTR) Forest Department and EDC helped uplift the local community and protect the environment.

Periyar wildlife sanctuary is well maintained, conservation-oriented tours, Protecting forest resources and Ensuring waste management. The only facilities are a few bamboo rafts that cross lakes and ponds. No footbridges or other installations to facilitate trekking are planned to be laid out. It is a rule here that those who might enter the same trail should, in principle, not see that others have been there before, even if it has been a campsite.

Each trekking on the Tiger Trail is unique because different paths are chosen randomly. In the beginning, the trekking follows an accessible footpath, but then the team enters shifting terrain and vegetation of varying difficulty to penetrate an untouched landscape without tracks.

Involvement of Vasanthasena: The Forest Department at PTR has also contacted this group to teach them about other income-generating projects. These individuals patrol the forest

voluntarily and are separated into numerous neighbourhood-based EDCs. They prevent pollution inside the forest by collecting stray plastic throughout their walks.

Two expert tourist eco-development committees comprise forty native adolescents from the Mannan and Paliyan tribal populations in Kumily (EDCs). The combined effort of the Periyar Tiger Reserve (PTR) Forest Department and EDC helped uplift the local community and protect the environment. (Paul V Mathew, Vijay Kuriakose, 2015)

### **4.2.4 Social Impact:**

The effective strategy for successful m is to combine the community-based natural resource management (CBNRM) model, which involves members of local communities in the direction of protected areas, with the neoliberal model of protected area management, which emphasises public-private partnerships in habitat management while often marginalising local communities' participation in governance.

Involvement of Eco-Development Committees: Activities that promote conservation, the preservation of forest resources, and waste management Programs for bamboo rafting were started, and the guides are native trekkers who also offer services like day hikes in the forest, setting up nature camps, horseback riding, and conducting an animal census in reserve.

The project has also laid the foundation for a welfare fund for the 22 trackers with families, and other improvements remain to be made. One significant result of the project so far is that the former poachers have been converted to devoted trackers with a genuine interest in conserving the Sanctuary

Tribal Heritage: Under this programme, tribal life and culture of 50 years ago has been recreated in an exhibition center right in the tribal hamlet. It is a 2-hour program and includes an exhibition and interpretation of the heritage and a nature trail in the hamlet. The guest can get acquainted with their traditional life, such as medicinal herbs, weapons, musical instruments, household articles etc. (Paul V Mathew, Vijay Kuriakose, 2015)

### **4.2.5 Economic Impact:**

Involvement of PTR Forest Department: By offering work possibilities, they helped to pay off these unpaid loans owed by community members who were in debt. Many Mannan and Paliyan youngsters have recently relied heavily on eco-tourism ventures like "Tribal

## Strategies for Ecotourism development – A Case of Wayanad Wls forest & environs

Tracking," "Green Walk," and "Tribal Heritage Tour" as sources of income. For some, being forest guards has also been a source of income.

The neoliberal model of protected area management promotes the self-sufficiency of the protected areas to produce their income and focuses on public-private partnerships in habitat management in a way that frequently marginalises local populations' participation in governance. On the other hand, the community-Based Natural Resource Administration (CBNRM) model integrates local community members in managing protected areas.

Government Initiatives: Implementing various income-generating ventures like vermiculture (composting), handicrafts making, etc., followed by other community development initiatives involving providing educational and infrastructural support to the local community and various outreach events. Homestays are also revenue generation for local people



**Figure 68 Jungle camp**

Source : <http://ihctourism.com/package/jungle-camp-periyar-wildlife-sanctuary-thekkady/>



**Figure 67 Tree Camp**

Source : <https://blog.thomascook.in/15-best-tree-house-resorts/>

**Table 11 Revenue generation**

Name of the CBEPs	Year-Wise Revenue (In Lakh)							Total
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	
Bamboo Rafting	23.60	25.07	36.42	19.00	22.83	20.34	26.98	174.24
Border Hiking	3.88	6.64	10.46	8.26	7.04	6.24	8.48	51
Bamboo Groove	3.51	6.52	12.94	11.20	12.86	11.33	6.45	64.81
Jungle Camp	0	0.16	2.40	2.07	0.62	0.90	0.70	6.85
Windy Walk	0	0	0	0.19	0.13	0.09	0	0.41
Tiger Trail	9.48	11.33	12.53	12.26	15.06	12.67	10.21	83.54
Jungle Scout	8.74	12.59	14.86	12.40	13.47	12.69	7.38	82.13
Jungle Inn	0.64	1.07	1.53	0.59	0.68	0.70	0.72	5.93
Nature Walk	13.44	13.66	16.92	15.38	12.71	14.70	21.70	108.51
Tribal Museum	1.04	1.25	1.43	0.56	0.70	0.60	0.35	5.93
Green Walk	0	0	0	3.97	5.69	8.91	11.68	30.25
Bullock Cart Discoveries	0.16	3.39	4.74	4.75	3.37	4.03	4.61	25.05
Range Scan	0	0	0	0	2.35	33.34	1.06	36.75
Clouds Walk	0	0	0	1.68	5.28	4.08	3.83	14.87
Total	64.49	81.68	114.23	92.31	102.79	130.62	104.15	690.27

Source : Official records, Periyar foundation department of Forest and wildlife, Government of Kerala, Thekkady

- Highest Revenue generated in 2009 – 2010: 130.62 lakhs

- A slight decrease the in 2010 – 2011: 104.15 lakhs
- The lowest is 2004 – 2005: 64.49 lakhs
- Resulting of eco-development activities carried out by user groups, income for the participating community increased by 70%, amounting to a 24% total increase.

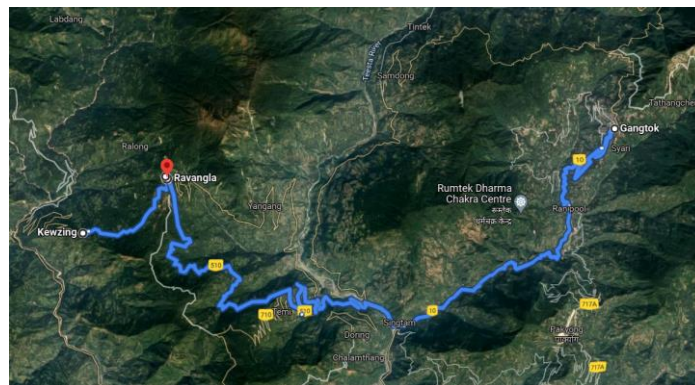
### 4.3 Organic Eco-tourism in Kewzing - Case Study 4

#### 4.3.1 Introduction

Mt. Nalsing and Mt. Kabru surround Kewzing village in Sikkim. Eight kilometres from Labangla and 76 kilometres from Gangtok, 30 households from the Bhutanese community are practising Buddhism.

Located in a wheat field at an altitude of 4600 square feet, it is rich in cardamom and tea fields. The highest point is Menam Hill, which slopes towards the Langit River and faces Tasidin. Surrounded by distant mountains and without the hustle and bustle of the city that attracts tourists, we drove to this quaint village.

The village is also close to several ancient monasteries, such as the Tasidin Monastery in the southwest, the Mumble Monastery in the west, and Pemayanze



**Figure 69 Connectivity map of Kewzing**

Source : <https://www.google.com/maps/place/Kewzing,+Sikkim>



**Figure 70 Red Panda**

Source : <http://sikkimnews.blogspot.com/2011/06/first-survey-reports-on-red-panda-in.html>



**Figure 72 Monastery children**

Source : <https://www.serenesikkim.com/kewzing-a-quaint-village-and-community-tourism/>



**Figure 71 Striated laughing thrush**

Source : <https://wildindiatravels.com/west-sikkim/>



**Figure 73 Scenic View**

Source : <https://www.tripoto.com/sikkim/trips/kewzing-sikkim>

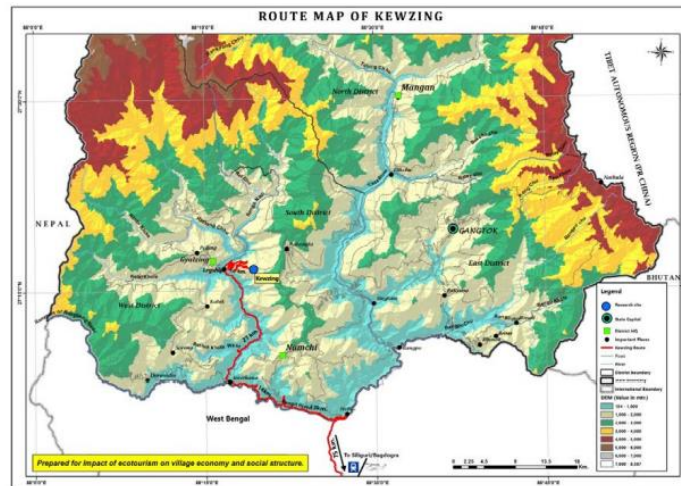
#### **4.3.2 Attractions & Activities :**

Trekking and Bird watching: A hike to the Maenama Wildlife Sanctuary, which covers an area of approximately 35 square kilometres of "treasure of medicine". You can trek through the cardamom fields and along the local monasteries and villages to learn about the history and culture of the town. A bird-watching trail where tourists can see exotic birds and butterflies.

Festival: Special cultural programs, including music and dance, are enthusiastically organized for these guests.

Organic food, local drinks, hot stone bath

Village life: Milk cows at dawn, feed animals, take care of fields, choose fresh vegetables and prepare meals. Villagers know that participating in these activities is new to most visitors. Limbi Falls, Sewaro Rock Garden, Lake Kechopari, Rabdentse Ruins, Kangchenzonga Falls. Laron hot spring and boron hot spring.



**Figure 74 Route Map Of Kewzing**

Source : <http://scstsenvis.nic.in/index2.aspx?slid=3315&sublinkid=1284&langid=1&mid=1>

### 4.3.3 Environmental Impact:

Kewzing Tourism Development Committee [KTDC], NGO Sikkim Development Foundation, and NGO ‘Ecotourism and Conservation Society of Sikkim [ECOSS]’ altogether took the initiative to educate and train the local community. The said committee comprised 15 Bhutia families from Kewzing village. This was one of the critical factors that led to the initiation of this project. They have been protecting the environment and making the project a plastic-free zone. Maenama Wildlife Sanctuary is well maintained.

With close to zero pollution levels, the area boasts vast green forests and is an abode for exotic plants and animals. The local community conserves them. (Kela, 2019)

### 4.3.4 Social Impact:

The locals were offered detailed hospitality and extensive training on handling guests, proper etiquette and preparing suitable traditional delicacies. Help these 15 families to earn a livelihood by facilitating homestays which involved accommodating tourists at their homes for reasonable remuneration. With the changing preferences of tourists who opt for eco-tourism rather than regular tourism, the scenario is set to improve further. Regarding social impact, the local communities were presented with an opportunity to interact with people from national and international cultures, which helped them gain a perspective on the varied cultures in society. The people of this village are incredibly hospitable and openly welcome all tourists - domestic or international. The town is also near several ancient monasteries that preserve and upholds the Buddhist culture.

A community centre and handicraft centre were also established within the village. This community centre is now leased for tourism and various other purposes. ECOSS has been responsible for providing necessary training to the villagers that helped them market Kewzing as an ecotourism destination.

### 4.3.5 Economic Impact:

The option to provide home-cooked food to the tourists. The homestay program is instrumental in helping the local community to generate income and creates an opportunity that facilitates an equitable benefit distribution through ecotourism for the community. It also fosters the local community to build more efficient and skilled ecotourism operators within rural areas to harness the potential of rural tourism. The local population of Kewzing have remarkably benefitted from these initiatives. Households with no income sources could sustain themselves reasonably, while families already generating income from traditional activities could considerably enhance their income. The SDF joined hands with KTDC and offered meagre financial assistance and helped the families without any regular source of income to modify their houses and include some basic facilities. The homestay packages were extensively marketed through the medium of two primary websites and a travel agency based in Gangtok.

The host takes seventy per cent of the income generated through the homestay programme, whereas 10 per cent each is shared by the monastery, KTDC and the local guide. The Bon Farmhouse in the area offers tourists an option to experience nature by residing in a typical village ambience with a Bonpo family. (ENVIS CENTRE ON ECO-TOURISM, 2014)



Figure 75 Map of Kewzing

Source : <http://scstsenvis.nic.in/index2.aspx?slid=3315&sublinkid=1284&langid=1&mid=1>

## Chapter 5. Strategies

This chapter discusses the vision, mission and various strategies for ecotourism development in the study area. It includes long & short-term approaches for ecotourism development.

### 5.1 Vision

Conservation and protection of eco-sensitive areas of Wayanad WLS through promoting ecotourism also focuses on the upliftment of the local community.

### 5.2 Mission

Form strategies under sustainable indicators of tourism which are social, economic and environmental, results in sustainable eco-tourism.

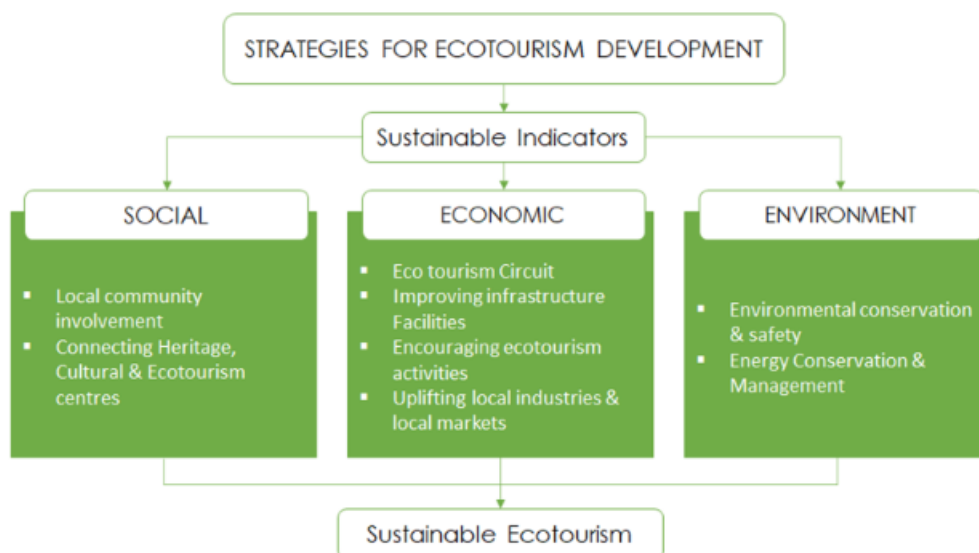


Figure 76 Strategies for ecotourism development

Source : Author Generated

### 5.3 Social Indicator

#### 5.3.1 Local community involvement

The local community's involvement in Wayanad WLS eco-tourism helps create jobs, a stakeholder in small-scale business, etc., supporting their upliftment. Initiatives from Govt. Authorities for better job opportunities involve various ecotourism activities like guides, guards, accommodation staff, Waste collection & Management staff etc. Involvement of self-help groups like Kudumbasree units and NGOs like EDC and VSS and initiating small-

scale business and revenue generated are shared. A per cent of the profit is used for conservation and promoting eco-tourism.

Eco Shops - More Eco shops by Eco development committee through stakeholder collaboration, selling local products in arts, crafts, forest produce and agriculture products. Loans and funds should be provided to the local community to start the shops. In return, a percentage of profit is shared within the period.

Accommodation & Restaurants - Through Public-Private Partnerships, help the local community to start up accommodation facilities and restaurants. Initiatives should be taken to upgrade the existing residence or construct a new home which could accommodate the tourist with food that could improve the standard of living of local people.

### **5.3.2 Uplifting Household industries**

The industries are fewer, especially household industries. Various MSME projects can be introduced, like basket weaving, pottery, natural fertilizers, honey collection and processing units etc. and direct sale of products in local markets. Could provide skill development classes to the local community on various activities, mainly focusing on unemployed women in the household. Provide capital for the MSME start-up, and revenue generated can be shared among the stakeholders to invest in promoting and conserving the Ecotourism spot of Wayanad WLS.

### **5.3.3 Connecting Tourism spots of Wayanad**

A Tourism circuit connects all the tourism, including eco-tourism, heritage, cultural, adventure, and leisure tourism spots of Wayanad. The main tourist centre is Kalpetta Municipality which is connected to the other tourist hubs at Mananthavady and Sulthabathery.



Figure 77 Tourism Circuit for Wayanad

Source : Author Generated

## 5.4 Economic Indicator

### 5.4.1 Ecotourism Circuit (Connecting Heritage, Cultural & Ecotourism spots)

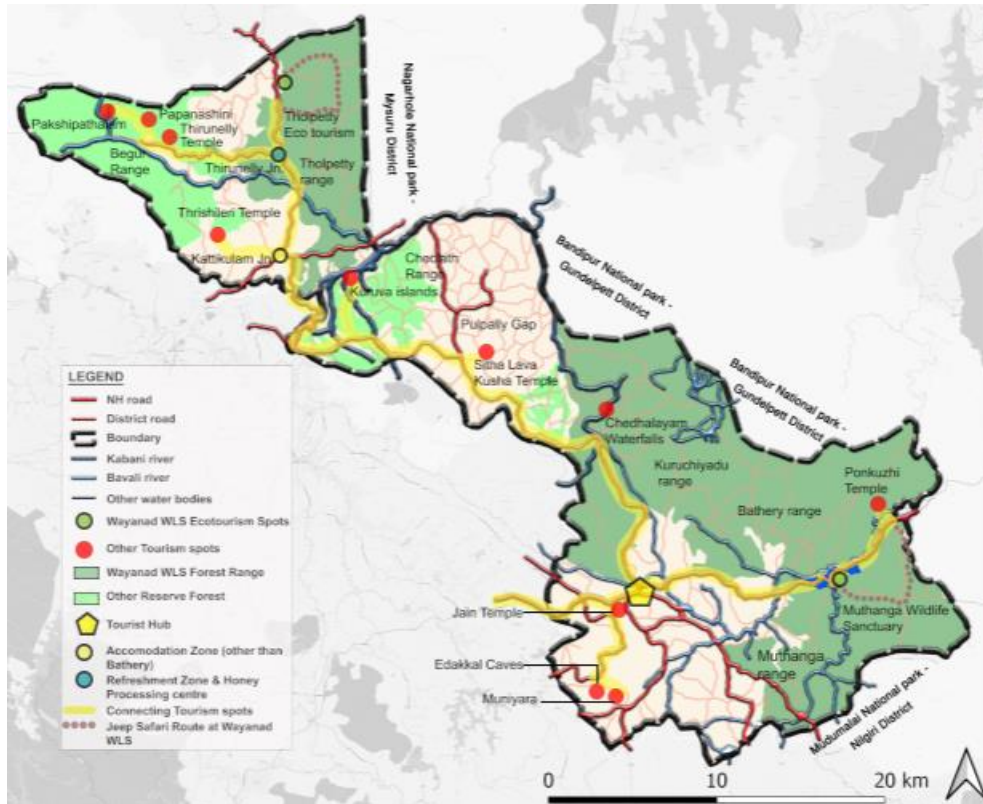


Figure 78 Tourism circuit for the study area

Source : Author Generated

The diverse heritage, cultural & eco-tourism spots don't have connectivity, so from the tourist hub, each spot is connected with a visitor's centre at all the sites, with various activities like festivals and interpretation centres which focus on the history of multiple spots.

Ecotourism spots: Muthanga, Tholpetty (Wayanad WLS), Kuruva Island, Chethalayam falls & Pakshipathalam.

Cultural sites: Thirunelli, Papanashini, Thrishilleri, Sita Lava Kusaha & Ponkuzhi Temple.

Heritage spots: Edakkal Caves, Jain Temple & Muniyara

#### Day 1 trip:

Route 1: Sulthan Bathery - Edakkal Caves (12Km\*2, 2 - 3hrs Visit)

Place of Visit: Jain Temple, Edakkal Caves & Muniyara

Route 2: Sulthan Bathery - Muthanga WLS Ecotourism (17Km\*2, 4 - 5hrs Visit)

Place of Visit: Muthanga WLS (Trekking, Interpretation Centre & Elephant Camps etc.) & Ponkuzhi Temple



**Figure 79 Trip - Day 1**

Source : Author generated

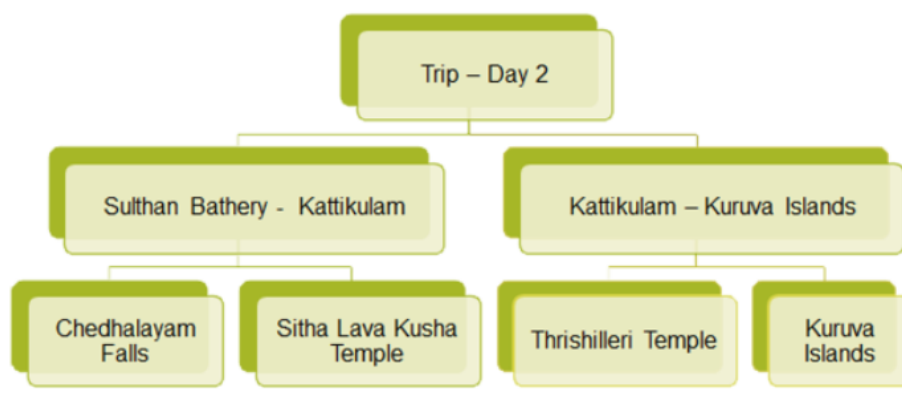
**Day 2 trip:**

Route 1: Sulthan Bathery - Kattikulam (38Km, 1 - 2hrs Visit)

Place of Visit: Chethalayam falls & Sita Lava Kusha Temple

Route 2: Kattikulam - Kuruva islands (17Km, 3 - 4hrs Visit)

Place of Visit: Thrishilleri Temple & Kuruva Islands



**Figure 80 Trip - Day 2**

Source : Author generated

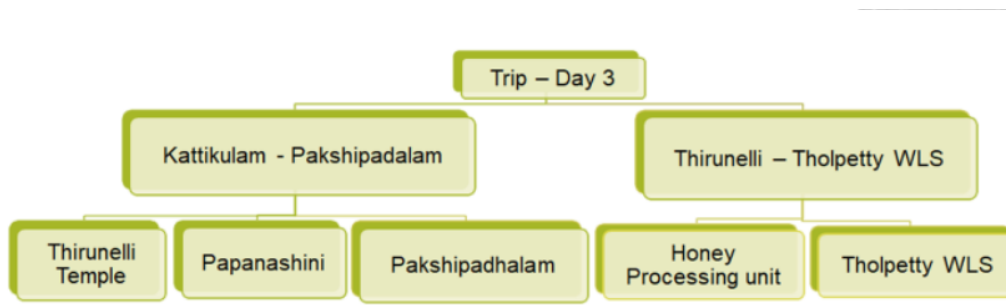
**Day 3 trip:**

Route 1: Kattikulam - Pakshipathalam (38 Km, 3 - 4hrs Visit)

Place of Visit: Thirunelli Temple, Papanashini, Pakshipathalam

Route 2: Thirunelli - Tholpetty WLS (20 Km, 3 - 4hrs Visit)

Place of Visit: Honey processing unit & Tholpetty WLS Ecotourism (Trekking, Interpretation Centre, Broad Walkways etc.)



**Figure 81 Trip – Day 3**

Source : *Author generated*

#### 5.4.2 Multiplier effect

The revenues of the local markets and benefits of the ecotourism activities, direct income from various job opportunities' are internally circulated, and additional incomes from traditional cuisines and accommodation facilities. This always helps the local economy. A per cent of the revenue generated can be used for the conservation environment and promoting ecotourism.

#### 5.4.3 Encouraging ecotourism activities in Wayanad Wls

- Revival of Elephant Camps
- Soft and Hard trekking
- Kutta Vanchi Safari and Bamboo boat Safari at Kuruva islands
- Eco huts and tree houses
- Canopy Towers for visitors
- Aerial Walkway & Broad walkways.

#### 5.4.4 Improving infrastructure facilities in Ecotourism spots (Wayanad Wls)

Reopening Govt accommodation facilities, adding more products Govt. Eco shops and supporting local markets helps in promoting ecotourism and attracting tourist, especially foreign tourists. This develops the micro economy and increases foreign exchange helps the macroeconomy.

Other Infrastructure:

- Interpretation & Visitors Centre with parking area
- Adventure and Leisure zone
- Recreational zone
- Trekking Area
- View Points

## 5.5 Environment Indicator

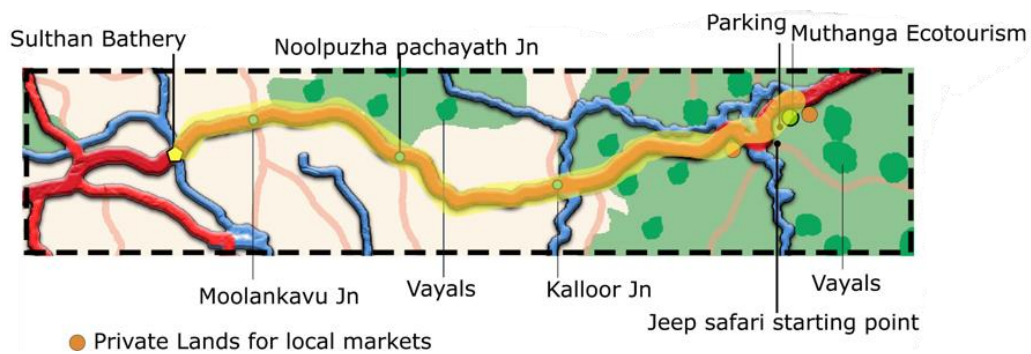
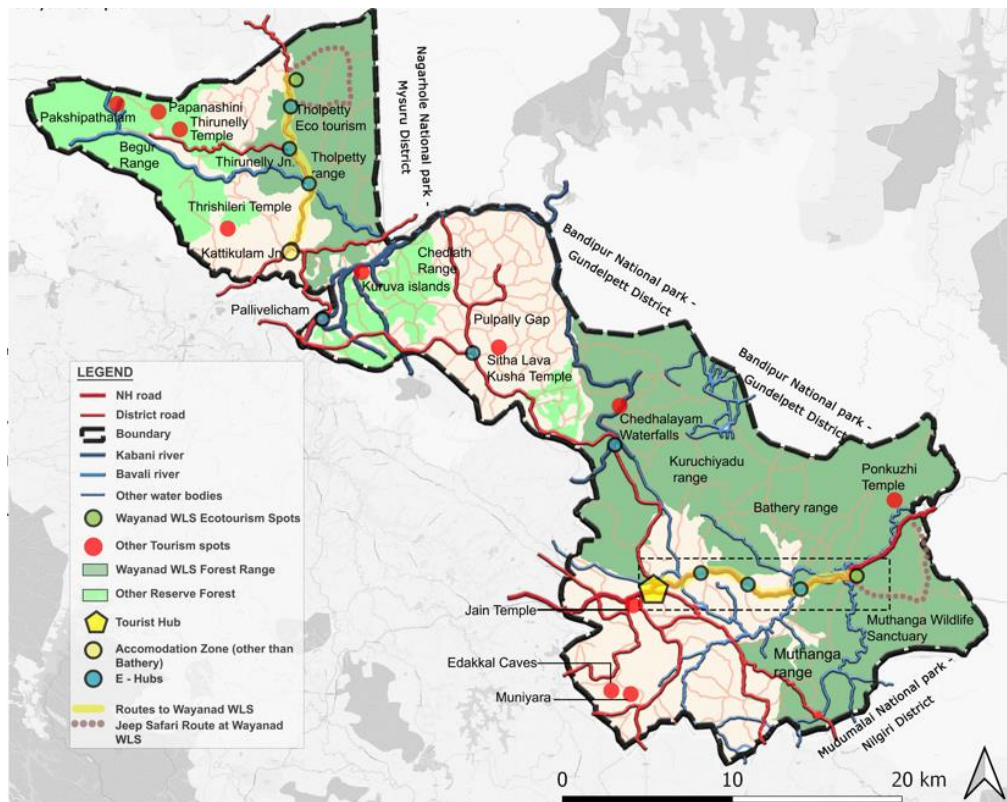


Figure 82 Tourism circuit map & Muthanga eco-route detailing

Source : Author generated

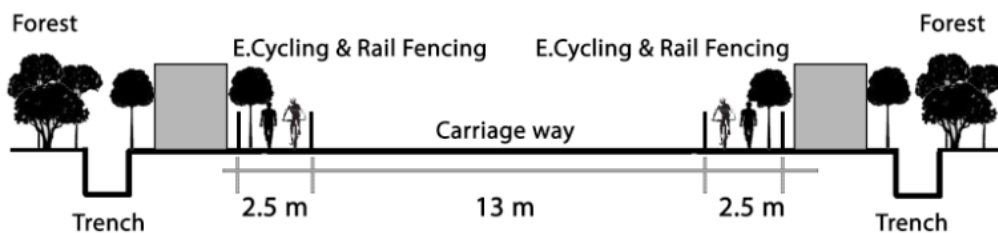
### 5.5.2 Conservation & Safety - Waste Collection and Management

Recruiting local people from self-help groups like Kudumbasree and forming Vasantha Sena for collecting of wastes and segregating and joining hands with Haritha Karma Sena (Green Kerala) and giving non-biodegradable wastes for recycling, also vermin composting biodegradable scraps to natural fertilisers. Also, E-waste bins at tourist spots like Muthanga, Tholpetty & Kuruva Islands, Bathery town, Thirunelli Jn., Kattikulam Jn. Noolpuzha Panchayath complex.

Man Animal Conflict: Proper Vayal management; Trenches; Fencing: Rail, Solar & Hanging; Creating awareness among local people & tourists; Proper protection of wildlife habitat; Proper forest management & proper monitoring by Vanasamrakshasamithy. More installation of watch towers in every Trekking zones and Natural trails/Boardwalks; Relocating local settlements from core areas to buffer zones; Periodical inspection of forest land encroachments for agriculture usage.

Fire Prone Area: Restricting tourist or local community entry to the identified fire-prone areas, relocating local settlements, and more focus on restricting land encroachments.

### 5.5.3 Electric Cycling Tourism



**Figure 83 Electric Cycling Tourism**

Source : *Author generated*

Electric cycling tourism is proposed on the routes of Muthanga (13m Carriageway). E-Hubs locations Bathery - Moolankavu (3km); Moolankavu - Noolpuzha Panchayath office (4km); Noolpuzha Panchayath office - Kallor Jn (3km); E – Hubs: The electric charging stations for EVs with refreshments & other amenities

### 5.5.4 Energy Management

Govt. should take action in providing sufficient transport facilities to the routes of Kuruva islands, Muthanga & Tholpetty ecotourism spots. Electric vehicular transport facilities are preferred as part of sustainable ecotourism.

- Solar-powered infrastructures like interpretation centres, visitors centres, and other accommodation facilities
- Biogas preferred in households of the local community and accommodation facilities for tourists
- Electric Vehicles for safaris
- 2 Buses of the forest department are ready for the safari under Vana yathra to reduce the number of vehicles to the forest core area in Muthanga.

## **Chapter 6. Conclusion**

- The role of ecotourism is to preserve and promote the natural environment.
- It involves environmental protection, education, community participation, cultural exchange, and economic growth.
- Utilizing the tourism potential ensures minimal impact on the area's ecological balance.
- Those working in ecotourism need to work together to identify valuable indicators, other than visitor numbers, that help in planning, managing, and moulding a case for promoting and including ecotourism.
- The Study area is the Wayanad Wls forest area & environs with two wildlife sanctuaries, one at Tholpetty other at Muthanga. Having potential for eco-tourism development.
- The study is carried out to know about the scope and opportunities for eco-tourism development by finding the socio-economic and environmental conditions of the study area eco-tourism spots and including heritage & cultural tourism spots in its environs with tourism potential.
- Strategies are made to make proper ecotourism and surrounding tourism spots in its environs. These strategies evolved from general studies and case studies.



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