

<b>MASTER PLAN MODULES</b>	<b>REGIONAL MODULE</b>
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## 1. BACKGROUND

### 1.1 Introduction and Relevance

The pilgrimage to Sabarimala is one of the most significant religious phenomena of the contemporary period as it attracts several million pilgrims to its abode, during the peak pilgrim period, which lasts for two and a half months annually. Located in a mountainous tract of South Central Kerala, It is unique in its geographical characteristics as it attracts essentially, the population originating mainly from India's four southern 'Dravidian' states and *the Lord's territory is strongly structured through a hierarchicized network of sacred places where pilgrims pay obeisance during the journey*. Its anthropological distinction is evident right through various ceremonies<sup>1</sup> and practices during the pilgrimage, which transcends gender, domestic, and village territorialities. "On a sociological level, the promotion and diffusion of a message of equality through its openness to all levels of society and all religious affiliations, reinforces the unique character of this pilgrimage"<sup>2</sup>.

In a geographical view point, the implications of the pilgrimage on the region explains, the links nurtured between the multifaceted phenomenon of religious travel (pilgrimage) and the reflexive notions of territoriality and territory. The distance and inaccessibility are geographical criteria, which reinforce the value and experience of the pilgrimage. Such places of veneration are all the more sacred that they are inaccessible, disconnected from the dominant flows, implying long distance travel in conditions which calls for physical strain. Since the fifties, the modernisation of the pilgrimage's infrastructure has led to an increase of attendance, at the holy locale. "...But this place is also the expression of a system of values and beliefs as well as the result of a system of social and political intentions at a given point in time"<sup>3</sup>.

The pilgrimage or *tirtha yatra* ("voyage to the shore") traverses the semantic fields of displacement, of circulation and voyage. Therefore the place of pilgrimage has a function of limit and of threshold to cross over. These limits are as many stages to overcome which delineates the itinerary of the pilgrimage, as clearly exemplified by the rituals and places of worship traversed enroute Sabarimala Pilgrimage. The concept of *tirtha yatra* also offers the basis of a spatialized model of the pilgrimage, that is to say the equation between the network of places and the pilgrim's mobility structured by the choice of the itinerary. The place of pilgrimage (*tirtha sthalam*) has at minimum a regional audience, which draws its pilgrims beyond their daily perimeters of circulation, and therefore participates in creating the identity of a space. Hence, today, the very name of Sabarimala opens on the representation of wider cultural territories largely spilling over the geographical and administrative limits of Kerala. These trans-geographical cross boundaries of the pilgrimage strongly underlines the fact that any Master Plan for Sabarimala without essentially discussing the regional implications of the pilgrimage or the need for providing pilgrim facilities across the region in addition to Sabarimala *per se*, would be rudimentary and invalid.

<sup>1</sup> Such as its ritual initiation ceremony or the 'malapuja', its essentially male dominated-attendance justified by the preservation of the ritual purity of the site, and finally through the period of austerity (vrutam) of 41 days

<sup>2</sup> Delage, Remy (2004), Pilgrimage and Environment in South India: A Research of Compatibility Between Conflicting Ideologies

<sup>3</sup> Ibid

## 1.2 Aims and Objectives

The study is aimed at devising a Regional Planning strategy to support the pilgrimage by providing facilities for the pilgrims in the region, and by mitigating the environmental issues associated with the pilgrimage over the region.

Objectives of the study are:

- To study the impacts of the pilgrimage on the immediate region comprising of the Base Camps and intermediate Transit camps or 'Thavalams'.
- To identify the transition that has occurred due to the activities over space at important halt points / Thavalams.
- To provide essential pilgrim facilities across the region to reduce their dependence / overloading at the final destination.
- To suggest strategies to ensure the protection and upgradation of the environmental components, which have over the years suffered due to unregulated use at the intermediate halt points.

## 1.3 Methodology

The methodology followed for the regional study is as depicted in the figure below:

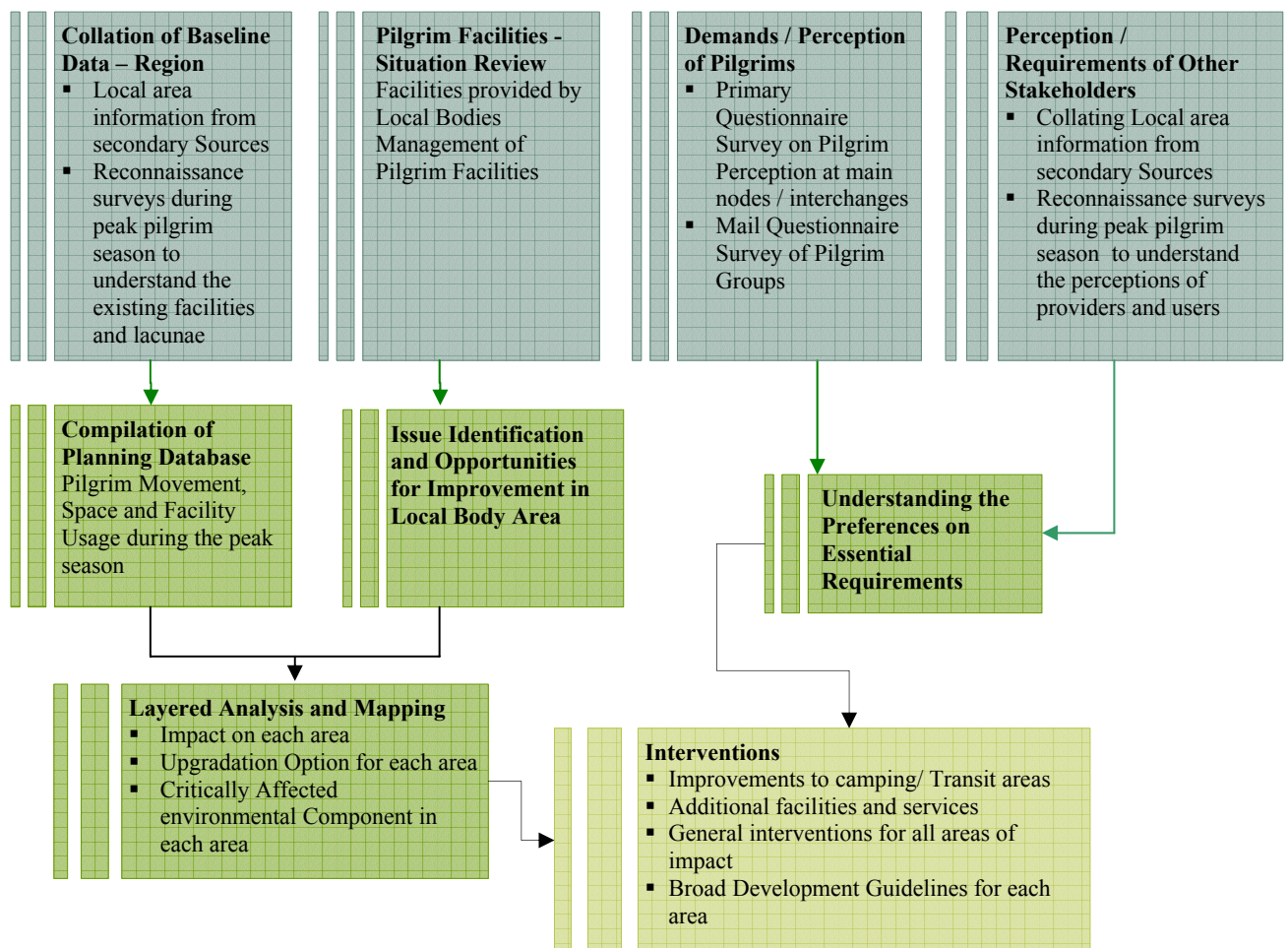


Figure 1: Methodology Adopted for Regional Study

**Annexures 1 and 2** present the details of the Primary Surveys and Terms of Reference(s) (ToRs) based on which these surveys were conducted and the results of a Comprehensive Pilgrim Perception Survey carried out to understand the requirements and views of the pilgrims.

#### **1.4 Scope of the Study**

The study covers the implications of the pilgrimage primarily focusing on the immediate region of influence, mainly in terms of 'destinations'. The 'origins' are essentially the residences / villages of the pilgrims and the ramification of the pilgrimage become important once the pilgrim / pilgrim group starts approaching the destination. Hence this module considers the most important pilgrim circuits followed in association with the pilgrimage. Since a destination based planning is the requirement considering the importance of the stopovers closer to the final destination, it would not discuss the regions of origin of the pilgrimage.

The report discusses the priority areas for development of base / transit facilities, the main issues / concerns in these areas, proposals for development and opinion of the various stakeholder groups regarding such development and suggests the way forward in terms of additional actions and scrutiny required while realising them. It also discusses the broad resource outlay required in terms of capital cost and land requirement for such interventions mainly around Sabarimala as it is required to initiate the procedures to transfer the land for the said use from the forest surrounds. However, detailed design of each intervention suggested does not fall under the purview of the Master Plan. It is also suggested that required discussions with various agencies be carried out by respective implementing agencies to adopt suitable designs and formats as required prior to implementation and additional studies be conducted as warranted and permissions and / or modifications be obtained as per prevailing laws / rules from various Statal and Central agencies during the further stages of development, and such procedures and detailing do not form part of this consultancy service.

#### **1.5 Structure of the Report**

While this chapter namely, Chapter 1 of the report gives a brief overview of the need for a module on Regional Planning, aims and objectives, methodology and scope of the study undertaken to prepare the module on Regional Development. The following chapters throw light on the actual study undertaken, results of the study and the formulated strategies to achieve the set aim and objectives by year 2015 and policies / guidelines for the year 2050.

Chapter 2 discusses the Planning region identified for detailed Regional Plan in terms of time and space horizons and presents and overview of the existing guidelines for development.

Chapter 3 presents the impacts of the pilgrimage in the region and the extent and severity in each area as identified during the study.

Chapter 4 discusses the proposed interventions and strategies to ensure provision of essential services for the pilgrims in the region and to ensure minimisation of impacts on the regional environment due to pilgrimage.



## 2.2 Planning Region

### 2.2.1 Description of Outlined Planning Regions

The pilgrimage can be contained within the region of destinations as explained in the scope of the study. Thus destination based planning could be considered for three broad planning regions in increasing order of importance with respect to Sabarimala pilgrimage.

- Planning Region 3
- Planning Region 2 is a subset of Planning Region 3
- Planning Region 1 is a subset of Planning Region 2

In addition, Planning Region 1 has been further demarcated to form a Planning Sub Region; for detailed Micro Planning.

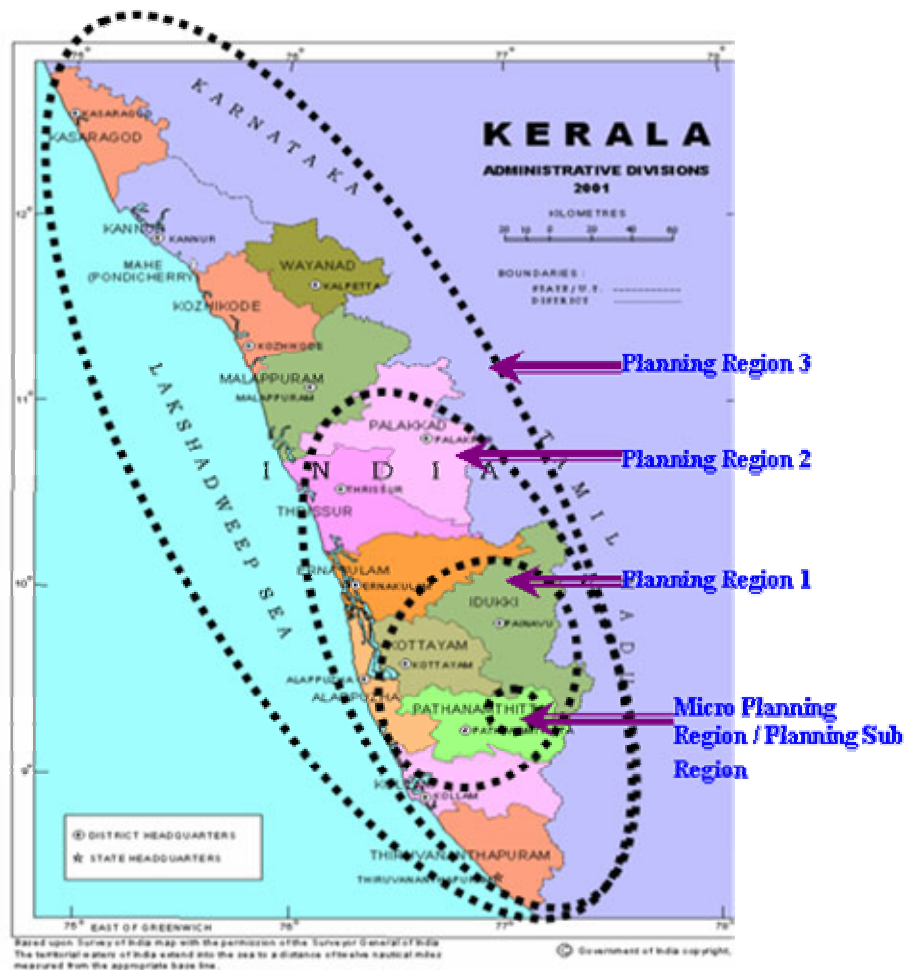
Outline of the Planning Regions considered for study and the scale of study undertaken in each planning region have been provided in the following **Table 1**.

**Table 1: Demarcation of Planning Regions**

<i>Sl No.</i>	<i>Demarcated Region</i>	<i>Rationale for Demarcation</i>	<i>Administrative Boundaries Considered</i>	<i>Scale of Analysis</i>
1	<b>Planning Region 1 (Loop 1)</b>	Immediate Districts which hold the core zone of influence and the Base Camps (Nilakkal, Erumely, Vandiperiyar / Sathram)	<ul style="list-style-type: none"> <li>▪ Administrative boundaries of Kottayam, Pathanamthitta, and Idukki Districts, and spilling over into the Chengannur Taluk of Alappuzha District and Pathanapuram Taluk of Kollam District.</li> <li>▪ Region of Influence for the Micro Plan: Sub region comprising of the Immediate Core (Sabarimala – Pampa and Sannidhanam)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Detailed analysis of each destination</li> <li>▪ Pilgrim visitations and the facilities available</li> <li>▪ Impact on critical environmental components</li> <li>▪ Micro-planning Region: Detailed analysis of facilities required and environmental impacts on Sabarimala – Pampa area</li> </ul>
2	<b>Planning Region 2 (Loop 2)</b>	Districts which feed the Immediate Districts which hold the core zone of influence and / or has important halt points (religious) / transit nodes amidst Sabarimala pilgrimage	<ul style="list-style-type: none"> <li>▪ Administrative boundaries of Ernakulam, Alleppey, Palakkad, Thiruvananthapuram, Kollam, Thrissur in addition to areas considered in Loop 1. Also Districts of Tamilnadu which feed to Punalur / Shengottai side and Vandiperiyar / Kumily side – for broad indicative interventions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Study of feeder arteries and linkages</li> <li>▪ Modal interchange facilities</li> </ul>
3	<b>Planning Region 3 (Loop 3)</b>	Wider Region holding feeder linkages – transport corridors feeding the Loop 2.	<ul style="list-style-type: none"> <li>▪ These pass through all remaining 4 districts to North Kerala (Kozhikode, Malappuram, Wayanad, Kannur, Kasargode, and main connections from Tamilnadu, and Karnataka for system overview and broad indicative interventions on pilgrim integration</li> </ul>	<ul style="list-style-type: none"> <li>▪ Description of facilities at prominent destinations and circuits across the wider region</li> </ul>



The layout of the outlined planning regions in the administrative map of Kerala is presented in the **Figure 3** below:



**Figure 3: Delineation of the Planning Regions**

### 2.2.2 Components of Study in Wider Planning Regions

#### Planning Region 3:

- Study of various modal networks (Traffic and Transportation)
- Study of regional connectivity including new proposals

#### Planning Region 2:

- Study of various regional networks and modal split
- Specific pilgrim circuits and halt points amidst Sabarimala pilgrimage
- Pilgrim Perception Survey at main modal interchange points

#### Planning Region 1:

- Identification of important transit / Base Camps in each Panchayat
- Pilgrim Perception Survey at main modal interchange points
- Detailed study at major areas of pilgrim concentration in each Panchayat with respect to Sabarimala Pilgrimage through lowest tier of Local Administration viz Panchayats, people and their representatives
- Identification of infrastructure usage and demand at each area
- Identification of critically affected environmental component in the area of concern



- Preparation of a database on the importance / areas in each Panchayat where pilgrims concentrate / halt
- Site Reconnaissance of identified 'hot spots'
- Finalising the interventions required at each spot
- Detailed facility review at Sabarimala – Pampa area (Micro Planning region) and planning for 2015 and 2050.

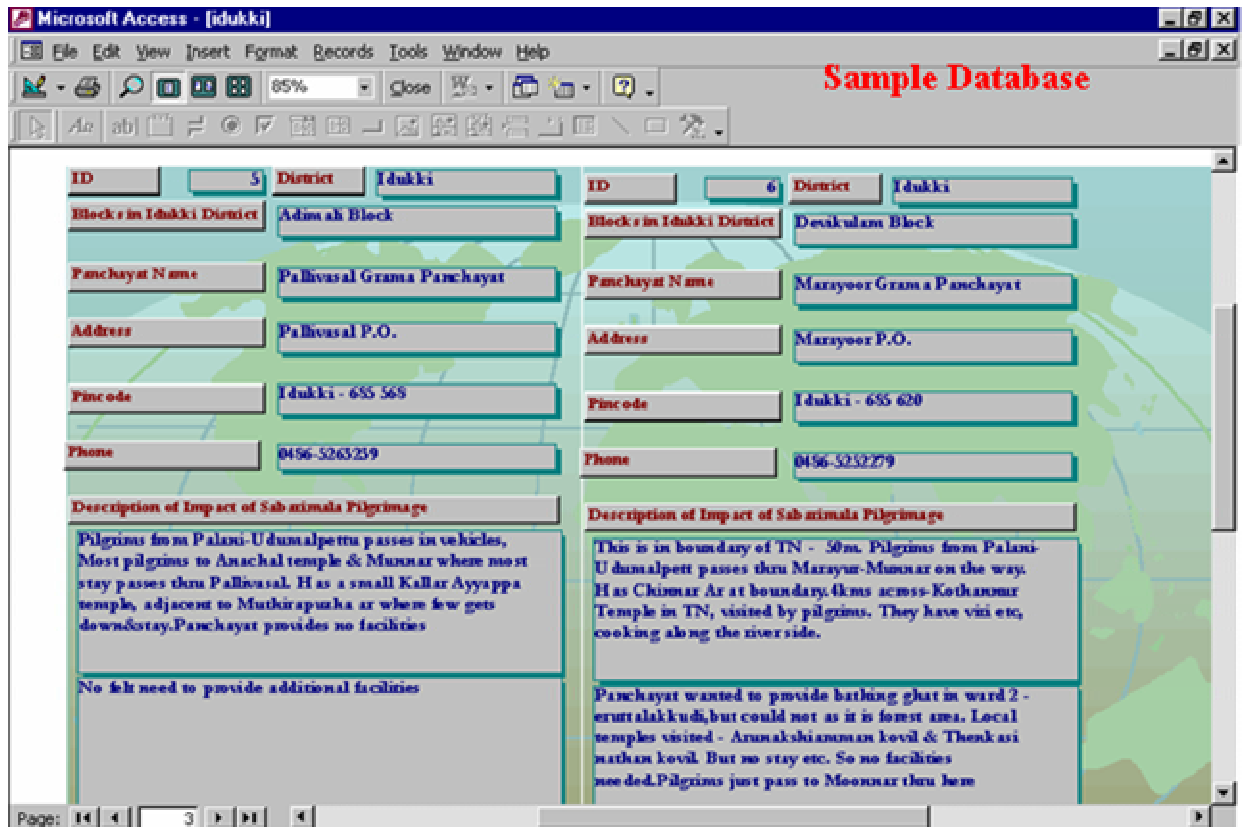


Figure 4: Sample Database on Extent and Impacts of the Pilgrimage in the Region

### 2.3 Planning Time Frames / Horizon

In order to ensure sustained provision of essential pilgrim facilities and protection and enhancement of critical environmental components at each locale, it is essential that the region be planned to initiate:

- Immediate management of wastes and pollution during the following season,
- Short term plans to be implemented over a period of 2-5 years to gradually initiate provision of essential facilities as well as the monitoring, capacity building and awareness generation activities to see through the effective implementation of interventions,
- Medium term plans to be implemented over a period of next 10 – 15 years to upgrade the facilities and services across the region,
- Long term plan / policies to be implemented over a period of next 20 to 50 years to ensure development of camping areas in such a way to ensure amenities and facilities for the pilgrims thereby reducing their dependence on the core precinct – Sabarimala.

This planning timeframes / horizons have been considered to ensure such a planned development as outlined above.

### 3. ANALYSIS OF IMPACTS

#### 3.1 Detailed Description of the Region

An analysis of the Planning Region 3 considered, in terms of the socio-economic characteristics and environmental scenario has been undertaken to provide a background of the host region. The details are provided in **Annexure 3**.

#### 3.2 Itinerary of the Pilgrimage

The pilgrimage to Sabarimala transcends many intermediate halt points. Some of these are places of religious importance while some others are just Transit Camps. All these lead to the major bases of Erumely and Pampa, which are religiously important halting points. Most important halting points in the pilgrim circuits on the way to Sabarimala are Guruvayoor Sri Krishna Temple, Manjapra, Alangad, Kaladi Sri Sankara Ashram, Chottanikkara Devi Temple, Vaikom Mahadeva Temple, Kaduthuruthy Mahadeva Temple, Ettumanoor Mahadeva Temple, Malliyoor Ganapathi Temple, Thirunakkara Mahadeva Temple, Erumely (Vavar Mosque, Valiambalam and Kochchambalam), Ayiroor Puthiakaavu Devi Temple, Aranmula Parthasarathy Temple, Kulathupuzha Ayyappa Temple, Aryankavu Ayyappa Temple, Achenkoil Ayyappa Temple, Konni Mahadeva and Ayyappa Temples, Pandalam Palace and Valia Koikkal Temple, Ambalapuzha Sri Krishna Temple, Aattukal Devi Temple, Padmanabhaswamy Temple, Pazhavangady Maha Ganapathy Temple, Sasthamkotta Temple, Ochira Parabrahma Temple and others. Pilgrims visit, any or many of these points during the pilgrimage.

Main regional activities associated with the pilgrimage are Thiruvabharanam<sup>4</sup> and Thanka Angi<sup>5</sup> processions, Erumely Petta Thullal<sup>6</sup> by new pilgrims, Petta Thullal by Ambalapuzha and Alangad Yogams at Erumely on the day prior to Makarajyothi, viewing of Makarajyothi, Pampasadya<sup>7</sup>, Pampavilakku<sup>8</sup> and various observances along the traditional trek route from Erumely to Pampa such as feeding fishes with puffed rice and rice powder at Peruthodu, dipping the coconuts in Peruthodu for 'kerabali'<sup>9</sup> at Kalaketti, Aazhipoojas<sup>10</sup>, collecting stones from Azhutha and depositing at Kallidumkunnu etc.

#### 3.3 Impact of Activates in Planning Region 3 and Planning Region 2

In this section, activities and their impacts on Planning Region 3 and the Planning Region 2 have been mentioned, to set the backdrop for the study.

<sup>4</sup> Ornaments for adorning the God during special pooja (*Deeparadhana*) after Makarajyothi darshan. This is kept in Pandalam Palace and is taken to Sabarimala as a procession headed by the representative of Pandalam Palace. The procession stops at many temples enroute where the ornaments are venerated by the devotees.

<sup>5</sup> Golden Shawl of the God

<sup>6</sup> Ritualistic dance by devotees mainly the first time visitors to the Sabarimala temple. They adorn themselves with leaves, colours and arrows commemorating Lord Ayyappa's fight with the demoness before embarking on his forest trek from Erumely to Sabarimala

<sup>7</sup> Elaborate Luncheon prepared and offered by devotees at Pampa

<sup>8</sup> Decorating viri sheds / stay areas with lit lamps and lighting of hundreds of lamps (using oil and wick) in Pampa River

<sup>9</sup> Paying obeisance to Lord by offering / breaking coconut as a symbol of breaking all possible obstacles

<sup>10</sup> Lighting huge piles of wood / combustibles to create fire to worship God. The left over ash is considered sacred and is collected by devotees.

### 3.3.1 Pilgrim Movement and Modal Split

Most perceptible impact in the areas falling under Planning Region 3, and Planning Region 2 is on regional transport. Pilgrim survey results brings it to the fore that pilgrims from Tamilnadu (around 28 percent of the total) visits the shrine more during the Mandala – Makaravilakku Season. Pilgrims from Kerala (around 26 percent of the total) forms the next dominant group, while those from Andhra Pradesh and Karnataka are almost equally distributed (around 22 percent each) during the peak season. The remaining are from other parts of the country and abroad.



Figure 5: Desire Line Diagram of Regional Inflow to Sabarimala

During the peak pilgrim season, the most widely used public transport means is the railways. Pilgrims travel either by rail or road, while a very few of them travel by air to nearby destinations. At the final destination, around 40 percent of the pilgrims reach by own vehicles/taxis or chartered vehicles. Around 60 percent of the pilgrims arrive the region by public modes and then travel to the ultimate destination by hiring vehicles.

### 3.3.2 Description of Transit Nodes

Survey of the modal split of pilgrim arrivals by public modes indicates that Ernakulam is the Transit Node for 18 percent pilgrims, Kottayam is the Transit Node for 20 percent pilgrims, Chengannur is the Transit Node for 25 percent pilgrims and Kollam-Punalur is the Transit Node for 8 percent pilgrims. Most of these pilgrims arrive by trains and hence these nodes have gathered importance. Those pilgrims who hire dedicated bus / taxi services from their hometowns mainly halt at temples enroute. Many pilgrims also move to Erumely for carrying out the rituals there.

**Ernakulam:** Main transit point in Kochi is the South / Junction Railway Station where many pilgrims from the northern States alight and move to the final destination in taxi cabs or buses. Mainly around 12000 passengers to and from Sabarimala use train services at Ernakulam on an average day, while it rises upto 15000, the day after Makaravilakku. They

mainly visit the pilgrim circuits such as Ernakulam – Thripunithura – Nadakkavu – Vaikom – Kaduthuruthy – Ettumanoor – Thirunakkara or Ernakulam – Chottanikkara – Ettumanoor – Erumely route. Many arrive at Kochi after visiting the Guruvayoor – Mammiyoor – Kodungalloor and the Nalambalam circuit including Triprayar, Koodalmanickam, Payemmal and Moozhikkulam temples or on their return journey visit these temples.

At Ernakulam South Railway Station, three toilet blocks, two restrooms and five retiring rooms are available. However, demand for restrooms and toilets are more, in addition to the need for garbage disposal facilities. Parking facilities are just sufficient for normal days and this year, Ministry of Railways is providing additional parking at eastern entry to the South / Junction railway station. Railways allocate space for NGOs like Ayyappa Seva Sangham and religious and political groups like Vishwa Hindu Parishad (VHP) and Kerala State Road Transport Corporation (KSRTC) for setting up pilgrim facilitation counters. Such facilities provided by various groups include vehicle hire services (pre-fixed) in association with travel agents (around 800 to 1000 pilgrims use these services in a normal day and 2000 during peak days, while other pilgrims hire other taxi services or travel ahead by train or KSRTC buses). Around 50 vehicles are hired from VHP counter in a day, most of which are 15 seater buses and cars. They also provide first aid, medicated water and organize tie-up with local hospitals to provide medical facility. Such organisations are willing to provide temporary resting facilities if land is provided free of cost.

Chengannur, Thiruvalla, Alappuzha and Kottayam: These nodes are the railway stations on the Thiruvananthapuram-Chennai broad gauge line. Chengannur is around 93 kms from Pampa by road. Dedicated KSRTC bus services are provided from Chengannur and Kottayam. Pilgrims hire taxis or dedicated bus services to Pampa or enroute temples before or after Sabarimala visit. Dedicated pilgrim facilities such as information centre, medical centre, dormitory and bath / latrine complex are available at Chengannur railway station. Pilgrim facilities are almost lacking in Alappuzha railway station. Pilgrims from Chengannur mainly follow the Pandalam – Ranni – Sabarimala route, while those from Alappuzha mainly follow Ambalapuzha – Pandalam – Ranni – Sabarimala route or Kottayam - Erumely – Sabarimala route, and those from Kottayam (122 kms from Pampa) mainly follows Kottayam – Erumely – Sabarimala route.

Kollam and Punalur: These are the nodes in the Kollam – Chennai metre gauge line, mainly used by pilgrims who arrive by train from Thenkasi in Tamilnadu. In Kollam facilities at the railway station and few Sabarimala Edathavalams maintained in temples administered by Travancore Devaswom Board (TDB) in and around the town are used by pilgrims. There are few Sabarimala Edathavalams of TDB in certain temples in Punalur which is around 102 kms from Pampa (Siva temple, Sastha temple slightly away from the main town centre). Facilities available here are however meagre as the proportion of pilgrims using these nodes is less. However, the gauge conversion of Thenkasi – Kollam line is expected to necessitate more pilgrim movement to these nodes. (Details regarding these are elaborated in the Sub-module on Traffic and Transportation) Main pilgrim circuits using these nodes are Karunagapally – Sasthamkotta – Pandalam – Sabarimala and Aryankavu – Achenkoil – Konni – Sabarimala circuit. Many pilgrims also move to Erumely for carrying out the rituals there.

Existing facilities at these nodes should be augmented to meet extra demand during peak pilgrim season and dedicated facilities should be made available at all transit stations such as Ernakulam South, Ernakulam Town, Kottayam, Thiruvalla, Alappuzha and Punalur.

### 3.3.3 Description of Other Main Halt points

Detailed description of main halt points (outside the planning region 1) and their importance with respect to Sabarimala Pilgrimage are presented here.

Following table (**Table 2**) consolidates the details regarding certain prominent halt points.

**Table 2: Details of some Important Halt Points enroute Sabarimala in Planning Regions 1 and 2**

<i>Name of the Halt Point</i>	<i>General Description</i>	<i>Sabarimala Pilgrim Visitations</i>	<i>Facilities Available</i>
Pazhavangady Maha Ganapathy Temple	Dedicated to Lord Ganapathy, is located at East Fort in Thiruvananthapuram. Apex Board (Final Authority) (Colonel of the Madras Regiment is Chairman of Apex Board), Thiruvathira Committee (Executive Authority) and Advisory Committee (The Local Committee)	Average per day during peak: 2000 Main Routes: Nagercovil- Thiruvananthapuram, Kollam, Attingal, Thiruvananthapuram (NH 47), Thenkasi-Shengottai-Punalur - Kottarakkara - Thiruvananthapuram ((MC Road) Pilgrims Performs Breaking of Coconut (Main Nivedyam)	No additional Pilgrim facilities. Pilgrims sometimes take rest at Bhajana Mandapam
Padmanabhaswamy Temple	Dedicated to Lord Vishnu. Located at East Fort, Thiruvananthapuram. Management of the temple by the Travancore royal family	Average per day during peak: 3000 Main Routes: Nagercovil- Thiruvananthapuram, Kollam, Attingal, Thiruvananthapuram (NH 47), Thenkasi-Shengottai-Punalur - Kottarakkara – Thiruvananthapuram (MC Road) Sabarimala Pilgrims from Chennai, Madurai, Kayakumari, Nagercovil and few from Andhra Pradesh, Karnataka, Maharashtra and other parts of Kerala visit during the season	No <i>Viri</i> or other facilities provided additionally to Sabarimala Pilgrims Pilgrims mainly use private lodges around the temple, use the temple pond and available toilets and take rest for some time in the temple premises
Aattukal Bhagavathy Temple	“Sabarimala of the Women” Bhagavathy Temple situated at Menaced, Thiruvananthapuram managed by Aattukal Bhagavathy Temple Trust	Average per day during peak: 3000 Pilgrims visiting Padmanabhaswamy temple also visit here. Main Routes: Nagercovil - Thiruvananthapuram, Kollam, Attingal,	Provides Pilgrim Facilities. Can provide additional facilities which can be used during other festivals like Pongala also

<b>Name of the Halt Point</b>	<b>General Description</b>	<b>Sabarimala Pilgrim Visitations</b>	<b>Facilities Available</b>
		Thiruvananthapuram (NH 47), Thenkasi-Shengottai-Punalur - Kottarakkara - Thiruvananthapuram ((MC Road)	
Kottarakkara Siva and Ganapathy Temple	Dedicated to Lord Siva. Maha Ganapathy is also a main deity. Managed by TDB. The prasadam (sanctified food) of this temple – <i>Unniappam</i> is very famous. Vinayaka Chaturthi and annual festival: Meda–Thiruvathira are celebrated with grandeur	Average per day during peak: 3000 Approach from Kollam - Shengottai Road and MC Road. Pilgrims from Shengottai side (especially those visiting the 4 Ayyappa temples in the circuit) and those from Thiruvananthapuram side visit	Provides Viri Facilities and toilets. Facilities are less and temple management has plans to provide more facilities
Aryankavu Sri Dharma Sastha Temple	Dedicated to Lord Dharma Sastha (Ayyappa). Situated (70 kms) to the east of Kollam. Built 35 feet below road level. Annual festivals: Mandala Makaravilakku and Thrikkalyanam (Lords marriage) during December - January	Average per day during peak: 2000 Approach from Kollam - Shengottai Road, Kollam Shengottai Broad Gauge Line (has a station at Aryankavu) Pilgrims from Shengottai, Thanjavoor, Trichi, Karaikudi and other parts of Kerala visit	Two check dams present across the river from Puliya Hills. Sanitation facilities are satisfactory to the pilgrims. Additional toilet blocks for Sabarimala pilgrims are being constructed. River pollution is the main issue
Achenkoil Sastha Temple	Dedicated to Lord Dharma Sastha (Ayyappa) in Grihastha Avatar. Situated 80kms from Punalur in dense forests. Main festivals are Mandala Pooja (December-January) and 'Revathi' Festival (January-February). Notable features of the Revathi festival are the Therottam (Chariot festival) and Pushpabhishekam (offering of flowers).	Average per day during peak: 1000 Main routes: Shengottai – Achenkoil from Tamilnadu Punalur-Alimukku-Karavoor-Mulluvana-Achenkovil	TDB has provided viri and toilet facilities. Pilgrims also indiscriminately use Achenkovil River for the purpose, which has caused severe pollution
Chirakal SreeDharmasastha Temple – Konni	Dedicated to Lord Dharma Sastha (Ayyappa). Managed by Mangaram Muriyil Karayogam	Average per day during peak: 50 to 100 Main Route: Punalur Pathanamthitta route	Not many pilgrims visit the temple though important in the religious circuit. Has the possibility of linking with Konni Elephant Training Centre as part of Konni Ecotourism project
Muringamangalam Siva Temple, Konni	Dedicated to Lord Siva.	Average per day during peak: 500 to 1000 Pilgrims from southern part passes visit this temple	Main Sabarimala Edathavalam managed by TDB. Has stay (viri) and sanitation facilities for Sabarimala pilgrims. Sanitation

<b>Name of the Halt Point</b>	<b>General Description</b>	<b>Sabarimala Pilgrim Visitations</b>	<b>Facilities Available</b>
		enroute. Main route: Punalur- Pathanamthitta road	facilities are not proper. Pilgrim activities cause pollution of Achenkovil river which runs close by
Karunagapally Sree Mahadeva Temple	Dedicated to Lord Siva. Located at Karunagapally in Kollam. Managed by TDB	Average per day during peak: 500 Main routes: Karunagapally – Adoor road (30km), Kollam- Karunagapally route, Ochira- Karunagapally route, Ernakulam- Thiruvananthapuram rail link	An important Edathavalam. TDB provides <i>viris</i> here. No sanitation facilities.
Ochira Parabrahma Temple	There is no temple in the real sense. Around big trees in vast open area are exposed small idols. Some idols are of female forces attributed to Shakti (power) and the others are of Parabrahmam, the omnipresent. There is an Ayyappa swamy kshetram (temple) in the premises. Ochira is also considered an omnipresent Shivakshetra. Ochira <i>Kaala</i> or the decorated Ochira bull symbolize Lord <i>Shiva's</i> vehicle, the <i>Nandi</i> . Ochira <i>kali</i> festival is in June.	Average per day during peak: 1000 to 3000 Main Road Routes: Kollam- Karunagapally route, Haripad - Kayamkulam – Ochira route, Ernakulam- Thiruvananthapuram rail link	Ochira is too important for Sabarimala pilgrims. They camp in <i>viris</i> in the vast temple premises. Annadhanam is provided daily throughout the year for all. Sanitation facilities are not proper. Pilgrims use the pond / water bodies available.
Chottanikkara Devi Temple	Bhagavathy Temple at Chottanikkara in Ernakulam District. Famous for the <i>Makam</i> Festival. Managed by Cochin Devaswom Board	Average per day during peak: 1000 to 5000 Main road connections: Ernakulam – Thripunithura – Chottanikkara Cochin Sea port – Air Port road and link to Chottanikkara, Rail till Mulanthuruthy / Thripunithura	Two parking areas of total area of around 3 acre available (can accommodate 30-40 vehicles at a time). Different parking lots for heavy and light vehicles provided. Accommodation facilities provided by both Devaswom and private toilet facilities are less. Pilgrims cook in the available area in the parking lots, which is limited. Facilities for waste disposal meagre. Roads are narrow and cannot cater to the heavy rush during the peak season. No proper mechanism for SWM (open burning of waste and open dumping into nearby compound) but have some primary collection setup of



<i>Name of the Halt Point</i>	<i>General Description</i>	<i>Sabarimala Pilgrim Visitations</i>	<i>Facilities Available</i>
			Panchayat (through Kudumbasree) operating for keeping the periphery clean. Provides free food – ‘Annadaanam’ on a regular basis
Guruvayoor Srikrishna Temple	Sri Krishna Temple in Thrissur District. Most famous pilgrim destination in Kerala. Guruvayoor Devaswom Board administers the temple	Average per day during peak: 1000 to 10000 Main road connections: NH-17, Rail route	Parking lots provided by authorities. Pilgrims some times cook here. Private lodges and hotels around provide accommodation. Authorities and government pursuing the preparation of a Detailed Master Plan
Chakkulathukavu Temple	In alleppey district near Edathuva. Known as Women’s Sabarimala. Favorite destination of pilgrims.	Average per day during peak: around 3000	Managed by Trust. Provides facilities for stay of pilgrims

### 3.4 Impact of Activities on Planning Region 1

#### 3.4.1 Identification of Activities and their Impacts

As explained earlier, detailed study of Planning Region 1 has been undertaken with the smallest administrative division of Grama Panchayat as the unit of discussion. The Grama Panchayat-wise study sets the platform for interventions which could be implemented easily in the current administrative set up.

Following was the methodology adopted for detailed study of Planning Region 1

- Discussions with lowest tier of Local Administration: Panchayats
- Detailed discussions with people and their representatives at major areas of pilgrim concentration in each Panchayat; important for Sabarimala Pilgrimage
- Identification of important transit / Base Camps in each Panchayat
- Identification of infrastructure requirement at each area
- Identification of critically affected environmental component in the area of concern
- Preparation of a database of the important areas in each Panchayat where pilgrims concentrate / halt
- Site reconnaissance of identified ‘hot spots’
- Finalising the interventions required at each spot

The MS Access database on impact of the pilgrimage on each Panchayat in Planning Region 1 has been presented as **Annexure 4**.

### 3.4.2 Area Categorisation based on Impacts

Based on the type of pilgrim activities hosted by each Panchayat area, the Panchayats are classified into four categories in the order of decreasing importance with respect to the pilgrimage:

**Category One (C1):** Areas with main halt / camping places or points of religious importance

**Category Two (C2):** Areas where increasing number of pilgrims get down enroute for basic facilities and amenities before reaching the main camping areas. These are either transit nodes or areas proximal to water bodies and / or places where facilities and amenities are available.

**Category Three (C3):** Areas through which the pilgrims just pass on their way to their destination.

**Category Four (C4):** Areas which have no profound impact due to the Sabarimala pilgrimage (but local pilgrims may pass or originate in these areas too. However, the impact is least).

Each Panchayat in the each District in Planning Region 1 has been colour-coded based on the specific category which it falls in. (Refer Map 1)

### 3.4.3 Description of Main Areas of Influence

This section describes the existing situation and vision for development of the main areas which are influenced by the pilgrimage. Detailed discussion on each aspect mentioned is undertaken in respective modules.

#### 3.4.3.1 Ranni Perunad Panchayat

##### General Description

The Panchayat is in the Ranni Block of Pathanamthitta District and has a total area of 82 sq km. Nilakkal ward of the Panchayat is the lowest administrative division where Sabarimala temple, Pampa and Nilakkal camp is located. TDB provides and organises services at Pampa, Sabarimala and Nilakkal and provides transit facilities at places including Perunad temple, Laha, Madamon Temple and Pampa Valley.

##### Amenities to Support Sabarimala Pilgrimage

##### *Transit Camps:*

Panchayat provides transit yards (thavalams) at Mundaplakkilpady, Madamon, Poovathummoodu, Madathummoozhi, Perunad market, Koonamkara, Puthukada, Laha, Thulapally, Attathodu and Plapally. All these thavalams are made on private property/road verges; except for at Plapally where it is arranged in the forest land. They provide temporary pit latrines, clean the area, sprays insecticides etc during the peak pilgrim season.

Revenue Department has acquired some 2.4 acres of land, which had been leased to Harisons Malayalam Plantations near Koonamkara. The lease period is over and the department has transferred it for constructing a pilgrim complex here.

At Madathummoozhi, the Panchayat is constructing a transit facility spending Rs 18 lakhs. The facility would have 10 toilets, space for 300 viris and a VIP lounge. At Thulapally, Madathummoozhy and Perunad market, Panchayat is constructing around 42 toilets (around 18 at each point) through Nirmithi Kendra.

*Water Supply and Sanitation:*

Almost all areas in the Panchayat depend on Pampa River for water. However, high degree of pollution of the River Pampa at Pampa renders the water unusable during and after the season. Hence it is imperative that alternate source need to be explored here. Probable source is the water from Maniar dam as envisaged in Chittar – Seethathodu Water Supply Scheme. At Madathummoozhi, KSEB has started the construction of a dam and Panchayat recommends the construction of an additional pump house to draw water.

Panchayat provides temporary pit latrines at transit areas. After use, latrine pits are just covered with sand and closed. The waste disposal facilities are less and the waste ultimately runs back into the river.

*Solid Waste Management:*

At present, SWM services are on the ad-hoc basis. The services provided by the Panchayat include spraying insecticides on main waste accumulation areas except at Nilakkal, Pampa and Sabarimala. Panchayat employs part time sweepers on contract during season. These days as the temple is opened every month, the Panchayat finds it essential to have a permanent SWM system.

*Electricity, Street Lighting and other Infrastructure:*

Panchayat lacks capital to arrange street lights along main roads. Currently Panchayat provides street lighting on contract basis during peak season from Laha to Pampa. It is not advisable to arrange this facility on contract basis as the stretch from Plappally to Pampa passes through Reserve Forests and contractors would not be willing to incur the expense of mounting and dismounting the poles and lights after and before the season. Now as the pilgrims flow during all months, it is recommended that suitable street lighting facilities be arranged permanently in the stretch from Laha to Pampa, usage of which can be controlled and only permitted during seasons considering the forest surrounds.

*Medical Facilities*

Health care facilities at Perunad are meagre. The available public facility is a Community Health Centre in Ward 2 which lacks staff and other facilities. It is imperative that operation theatre, cardiac and trauma care facilities are provided here by upgrading the existing Community Health Centre considering the fact that such facility in the public domain is necessary here and upgrading the existing Community Health Centre would be a feasible option at this location which is proximal to the pilgrim centre. Another available facility, though minimal is the Bethany private hospital also in ward 2. Pathanamthitta is around 22 kms and hence is too far to reach in case of emergencies. Demand for Homeopathic and Ayurveda systems (especially for preventives) is also more among the pilgrims.

*Emergency Services*

Community Health Centre here has a permanent ambulance in addition to the one provided by the District Medical Office during the peak pilgrim season annually. Drowning of pilgrims in the river where it is accessible to pilgrims is the main causality which is repeatedly reported here. Hence it is required to arrange services of life guards at main accesses to the river from the road side and informatory signages and fencing need to be provided in such areas.

*Institutional and financial aspects*

As of date, the involvement of the Panchayat is limited to providing transit facilities at certain parts of the Panchayat, Solid Waste Management in the areas of high pilgrim concentration except Sabarimala, Pampa and Nilakkal, and shop licensing at Sabarimala during the season. The main role of Panchayat is issuing death certificates for pilgrims, arranging to dispose off dead bodies in an event of death here etc, which is difficult as the pilgrims are from various States.

Panchayat is provided a grant of around Rs. 5 lakhs every year from government for providing basic pilgrim facilities. Panchayat spends the amount for cleaning and sanitation purposes. Fund provided is not adequate for arranging necessary facilities and services. They mostly arrange the facilities through the voluntary agency, Ayyappa Seva Sangham. Panchayat has, following a law suite during 1993-94 numbered (some of the) buildings at Sannidhanam and have computed the tax due to them on these properties. It has not been possible for the Panchayat till date to recover this tax revenue (around Rs. 15 lakhs), which could be a possible source of funds for arranging facilities. Panchayat collects license fee from the shops and professional fees. This revenue amounts to Rs 2.25 lakhs per annum.

There are few tribal 'oorukoottams' in the Panchayat who had been traditionally depending on the pilgrimage during the season, but are now a days mostly evaded off by authorities from providing services at Sabarimala. The Panchayat started an initiative using Kudumbasree to manufacture paper cups which is struggling to find market.

Though the involvement of Panchayat in arranging facilities for pilgrims is restricted due to lack of co-operation of the main stakeholder; they have demanded and arranged some space at Pampa for posting an official for monitoring during the peak pilgrim season. Main concern of the Panchayat is that after each season, due to excessive river contamination and pollution, residents at Attathodu and almost all places down stream get affected by contagious diseases. As per rules, it is the responsibility of the local administration to ensure waste management but, here Panchayat is given least importance and role to play in arranging the facility.

Suggestions on Future Development

- Ensure involvement of local body in all arrangements related to the pilgrimage and support the local body in providing the facilities it is ready to arrange well. Allocate a space for the administrative requirements of the Panchayat at Sabarimala, Pampa and Nilakkal.
- Constructing a Pilgrim complex to accommodate the increasing number of pilgrims during the peak season

- Need to provide retaining wall along roadside near Attathodu – Padinjarekkara to support Jyothi viewing.
- Tapping small water sources near transit areas may be an option for water supply to households and pilgrims. Such schemes may be developed with local participation.
- Alternate source of water supply need to be explored at Vandiperiyar. Probable source is the water from Maniar dam as envisaged in Chittar – Seethathodu Water Supply Scheme. At Madathummoozhi, KSEB has started the construction of a dam and Panchayat recommends the construction of an additional pump house to draw water.
- Need to arrange suitable street lighting facilities in the stretch from Laha to Pampa, usage of which can be controlled and permitted only during the seasons considering the forest surrounds. Electric lines should be provided in suitable underground ducts to prevent casualties to wildlife and for ease of maintenance.
- Need to arrange services of life guards at main accesses to the River from the road side and signages and fencing need to be provided in such areas.
- Permanent toilet facilities and waste disposal facilities required at Madathummoozhi, Plappally and Perunad. It is to be ensured that no toilet, whether temporary or permanent, is allowed to let the waste out into the River Pampa.
- Tribals and indigenous people are to be given equal opportunity in commerce, for serving as life guards and for other services.
- Community Health Centre at Ranni Perunad to be upgraded with all required facilities and staff. Essentially, cardiac care and trauma care facilities to be developed.

#### 3.4.3.2 Erumely Panchayat

##### General Description

Erumely is a Panchayat in the Taluk of Kanjirappally in Kottayam District. Erumely is a major transit point of religious importance along the Sabarimala pilgrimage. “Petta Thullal”, the famous ritualistic ceremony associated with Sabarimala pilgrimage takes place at Erumely. It is compulsory and customary that the devotees on their first pilgrimage (called Kanniyappan-mar) should visit Erumely and perform Petta Thullal. The pilgrims pray at Kochambalam, the small Sastha temple in the centre of Erumely market area / town area. From here, pilgrims dance their way to the accompaniment of drumbeats to the vaavar’s mosque located across the road, just opposite to Kochambalam. From there, they proceed to the Valiambalam, the bigger shrine of Dharma Sastha at a distance of around 300m. This religious congregation of pilgrims at Erumely for a short duration of two months brings forth enormous changes in the social, economic and environmental scenario here.

##### Amenities to support Sabarimala Pilgrimage

##### *Transit Camps*

The focal point of activities during the pilgrim season is the Erumely Town (ward 19). Pilgrim trek route which starts from town and runs through forests is the main pilgrim corridor. Town consists of market, the two main temples, mosque and KSRTC bus stand. Main land use in the town is commercial. During the season, pilgrim activities mainly the ‘Petta Thullal’ dominate the streets. The town is crowded and dense. Most of the land in the town is owned by TDB and the Jama-ath. TDB has around 16 acres of land in

Erumely. This includes the land in front of the school (around 5 acres), temple precincts and the land leased out for KSRTC operation.

District Tourism Promotion Council (DTPC) has established tourist facilities near Koratti paalam (bridge), where dormitories, parking area and toilets are available. In addition, opposite to the DTPC facility near Manimala River, (in ward 5), around 15 acres of privately owned land is found available for development. Large halls (which can be used as dormitory), toilets, wash facilities, medical facilities and parking can be developed here, which can be used for civic purposes during off peaks.

#### *Transportation*

KSRTC is the main transport service provider. TDB had allotted around an acre in the town to KSRTC for operations. But around 40 cents<sup>11</sup> earlier leased out was taken back recently. Now KSRTC has only around 56 cents on lease from TDB, which is not enough for operations. They need around 3 acres of land for a sub depot. Panchayat is planning to buy around 5 acres for KSRTC bus stand where KSRTC can establish a depot (facilities for staff, repair etc necessary) and they can run operations from the space (TDB's) in the town.

The main issue is the congestion at the Town centre as the roads are used for 'Petta Thullal'. Need is felt for grade separation between moving pilgrims and vehicles. The trek to Pampa actually starts from Erumely town and pilgrims move through the road till Peruthodu where the forest area starts. The trek route passes through Irimpoonnikkara and Kalaketti where transit facilities (food, viri, water) are available. From here they reach Azhutha river where during rains as the water rises it becomes difficult for pilgrims to cross the river to continue the trek.

Need for an overall traffic management and transportation improvisations at Erumely are required including bypasses, better trekking facilities and movement possibilities in the ritually important areas and grade separation at Erumely junction for pettathullal from Kochambalam to mosque.

#### *Water and Sanitation*

Erumely town is deficient in water supply. Existing water supply is through the scheme developed in 1964, which has not undergone improvement / upgradation over the years. KWA supply through Erumely rural water supply scheme is not enough for serving the general population. Pipelines of GI are old and dilapidated and the water tank requires maintenance. There is a proposal for drawing Pampa water for use at Erumely by installing a tank at Koduthottam, which is estimated at Rs. 10 cr.

After 'Pettathullal', pilgrims bathe in the temple pond and river; but due to non-availability of sufficient water level, waste water with dissolved coloured powders sprayed on the body for thullal gets accumulated there. It is essential to ensure sufficient water flow here by creating check dams upstream.

<sup>11</sup> 1cent =40 sq. m.

Sanitation facilities are not enough to cater for pilgrims during the seasons. Around 200 toilets are put up by TDB, around 200 by private sector and few by voluntary agencies (total < 500).

Septic tanks of almost all the toilets leak and overflow, and sewage reaches the rivulet, contaminating it. Open defecation is a prominent issue at Azhutha River. Bath, toilet facilities and food are priced very high during season due to the lack of monitoring by concerned authorities and lack of enforcement of common pricing system.

Fly menace and communicable diseases after the season exposes the lack of sanitation services and facilities.

#### *Solid Waste Management*

Erumely Panchayat has a SWM system in place. They have 3 permanent sweepers who sweep the streets and carry the waste in a tractor to the incineration plant. Currently the treatment occurs in a 5-cent plot, which is not found sufficient. All waste is fed into the 3 Ton incinerator (heat produced by burning coconut shells) and burned to ash. There is no landfill facility for disposing off the ash.

During pilgrim season, they use around 50 workers of NGOs / CBOs like Kudumbasree to collect waste. Lack of training or experience of the staff is notable. Panchayat has a tractor for waste transportation. Multiple handling of waste and lack of suitable safety gears are easily observable. Panchayat has plans to install one more incinerator. They expect that more land can be found near the town for the purpose. Need for more facilities are felt also at Peruthodu (where pilgrims perform the traditional of sprinkling puffed rice to fishes), at entry to forest area along traditional trek route.

#### *Electricity and other Infrastructure*

Power (electricity) failure and lack of enough voltage during the season are issues in this sector. Locals feel that solar power or other means are to be harnessed to provide lighting at Thavalams along the traditional route which is currently dependent on generators.

#### *Medical Facilities*

Erumely has a private clinic and a Community Health Centre which is upgraded during the peak pilgrim season, but is seldom sufficient to cater to the demands of the pilgrims especially the cardiac care and accident care functionalities. Ambulance facility is available here. Lack of infrastructure and deficiency of medical personnel is noteworthy. The private hospital in the town has causality care facilities. The diseased are usually taken to Kanjirappally Taluk hospital.

#### *Institutional and Financial Aspects*

Panchayat, TDB and DTPC arrange some pilgrim facilities. Private sector including households along the main routes also provide facilities. There is no control over quality, quantity of services though a control room functions at Erumely. In the control room, where representatives from all departments are put for duty to oversee and arrange pilgrim facilities, duty period is short for each set of officials and hence there is no continuous and noteworthy monitoring.



Mostly the duty period for each doctor and representative of various departments who are put in duty at Erumely is very short. This duration is not sufficient for them to adjust to the situation, learn the issues and render efficient services. For the new officer who comes for duty for the next few weeks learning and adjustment to the local situations again becomes difficult and the process continues. This results in poor rendering of services by the officials during season. Work force from nearby areas with sufficient exposure and training is required to ensure better services. Hence it is required to post a single set of officials for the entire season for sake of continuity of operations. For this, it is most essential that officials from nearby areas are posted on duty or sufficient stay and conveyance facilities are allowed for the officials to effectively carry out their duty during the entire season.

Panchayat receives Government grant of Rs 5 lakhs through District Collector of Kottayam for preparations and arrangements during the season, which is grossly inadequate.

The Local body feels that lack of proper long-term planning is the reason for insufficient pilgrim amenities. For example, preparations for pilgrim season starts just in October every year, if this happens immediately after season, (i.e. by February) local bodies can allocate requisite funds based on their financial standing in the following year's budget. So, such planning should ideally start before March every year, and it is required to plan the arrangements with the involvement of the local body, traders and citizens.

#### Suggestions on Future Development

- Need to start arrangements well ahead of the start of the season, rather than relying on urgent meetings just two months before the season. Local body involvement is key to arranging and managing the facilities well.
- Need effective control and monitoring of the facilities and services, uniform pricing of goods and more outlets of government owned stalls and facilities. Citizen task forces may be set up to aid the local body and others in the process.
- Existing DTPC facility to be put to full use. Efficient shuttle services need to be provided between town and this facility. Dormitory facilities may be provided on the top floor of KSRTC stand.
- Need effective and planned transportation and traffic management with bypasses, grade separations and parking facilities.
- Need comprehensive SWM services, water supply and sanitation facilities.
- Need an Electricity sub station at Erumely
- The road till Peruthodu to be eased of traffic and facilities to aid pilgrim movement need to be provided. Need to have streetlights and some pilgrim facilities at Peruthodu.
- A footbridge is to be constructed across Azhutha along the trek route for the pilgrims to cross during the rains.
- Need to prevent open defecation at Azhutha and other rivulets along.

#### *3.4.3.3 Vandiperiyar and Kumily Panchayats*

##### General Description

Pilgrims from Tamilnadu mostly pass through Vandiperiyar and Kumily. They either reach Kumily or Vandiperiyar town in private vehicles or public transport and hire private

jeeps or alight KSRTC buses to travel to Uppupara through Vallakkadavu. These towns have all amenities including a full-fledged market area. The major nodes in Vandiperiyar, where the pilgrims congregate are:

- Panchayat Mini Stadium which is used as parking area
- Kakki Kadavu where pilgrims bathe and cook
- Temple of “Sree Dharma Sastha” owned and managed by Sri. Poonjar Thampuran, which lies within the Ayyappan Kovil Estate. (Around 30-35 percent of pilgrims coming to Vandiperiyar visit this temple).
- Vallakkadavu is enroute Vandiperiyar-Kakki Kavala-Uppupara route. It is almost at the forest fringe (forest check post). The forest koop road through Vallakkadavu and 6th mile to Uppupara was opened for pilgrims as an alternate arrangement (only during the peak pilgrim season) to the unmotorable route to Sathram through plantations. Pilgrims do not usually stop here, but just pass through Vallakkadavu on their way to or from Uppupara.
- Sathram is a small settlement near Vandiperiyar, approached through unused tea plantations. From here pilgrims trek to Uppupara / Sannidhanam. The place was important during earlier days as this was the only approach to Sannidhanam from this side and has derived its name from the erstwhile Government Guest House or Sathram here. The place has been revived after the construction of Subramaniya Swami Temple here few years back by TDB. Forest office, School and Primary Health Centre is located adjacent to Temple. There are two trek routes from Sathram to Sannidhanam: One that passes through Uppupara and the other along the rivulet which leads to Urukuzhi near Sannidhanam (without touching Uppupara), which is not steep as the Uppupara route. A maximum of 200-300 pilgrim resort to the Sathram route during the season on a daily basis. Nearly 5000 pilgrims pass through Sathram on Makaravilaku day alone.
- Uppupara grassland is where pilgrims alight for their trek down to Sannidhanam. Currently during peak pilgrim season, forest route to Uppupara is opened and hence is approachable by jeeps. During *Makaravilakku* day, around 1,00,000 pilgrims congregate to watch the *jyothi*.

#### Amenities to support Sabarimala Pilgrimage

##### *Transit Camps*

Vandiperiyar Town has few lodges while few pilgrims spread viri in the available area at the Stadium. Accommodation and support facilities are poor. There exist no stay facilities even for support staff or Police on duty, who are mostly accommodated in tents.

Many food stalls and other temporary shops come up along the road to cater to the needs of pilgrims but there exist no check on their activities or service quality. A community hall is being constructed near the stadium for an estimated outlay of Rs. 1.25 crores. In addition, around Rs. 10 lakh has been sanctioned (under MP fund) for construction of pavilion around the mini stadium ground.

At Vallakkadavu, there are few shops and houses along the road. Panchayat used to provide Rs 5000 during peak season to Ayyappa Seva Sangham for arranging pilgrim facilities at Uppupara in the forest land. At Uppupara, viri and shops are arranged currently through EDCs. At Sathram TDB owns a temple and around 50 acres of land

around it. A small settlement is found in and around the temple area. A tea shop and some space for viri are provided here by locals / private sector.

#### *Transportation*

Pilgrims park their vehicles usually at the Mini Stadium ground (Town ward) where Panchayat provides parking space without charging parking fee. Total area available here is 60,000 sq. m. From here they move to Sathram or to Uppupara in jeeps during peak pilgrim season. The road from Vandiperiyar (Spencer junction) to Sathram is in extremely poor alignment and surface condition. It runs through the tea plantations and has an average width of 3 m, with 0.5 to 0.7 m shoulders abutting either a steep valley or steps of laterite/RR masonry retaining wall edges. Ram Bahadur Thakur (RBT) plantation, through which the road initially runs, is currently non-functional and remains unutilised commercially. Employees themselves pluck the tea leaves and sell them in the market in the absence of regular activities. Panchayat expects that land for widening would be available here. The AV Thomas (AVT) plantations, through which the later half of the route runs, had expressed their consent to the Panchayat to make the land available for road widening. Panchayat has given a proposal to Percent for improving this road for which the Percent has accorded a financial support of Rs. 5 lakhs. Earlier, there used to be bus service through this road till Mount (just before Sathram, 6kms from Spencer jn) at a frequency of one in every two hours. The bus service remains suspended due to poor road condition and closure of the RBT estate. Curves are extremely sharp and uneasy to manoeuvre the vehicles, pavement is surfaced till around 4 kms from Spencer Junction while the following stretches are potholed and / or unsurfaced owing to the lack of maintenance. Only jeeps can ply through this road currently. Pilgrims park their vehicles here and trek towards Uppupara / Sannidhanam.

Most of the pilgrims prefer using the Sannidhanam – Pampa route after darshan as the climb back to Uppupara / Sathram is tedious and / or as they prefer taking a dip in Pampa which is a part of the pilgrimage. After viewing Makarajyothi, many pilgrims climb to Sathram from Sannidhanam or Uppupara and, around 15 jeeps from Vandiperiyar gets parked at Sathram near the temple on the day to ferry these returning pilgrims.

A road from Sathram meets Vallakkadavu near the main junction before entering the bridge near the check post. This starts after around 7 km from Spencer junction along the Sathram route. This runs for 5kms through the tea plantations before reaching Vallakkadavu junction. This is similar in condition as the Vandiperiyar Sathram route, with an average of 3m width, running between tea plantations.

Access from Vandiperiyar to Vallakkadavu is in good standards with 7m right of way and black-topped pavement. Usually pilgrims hire jeeps from Vandiperiyar / Kumily or take KSRTC bus to Uppupara as the road is only *jeepable* after Kozhikanam. Pilgrims do not usually stop at Vallakkadavu. Uppupara is at around 16 km from Vallakkadavu (22 kms from Vandiperiyar) approachable through the Kochu Pampa – Angamoozhy road till 6<sup>th</sup> Mile from where it takes a diversion through 10 km of Forest “*Koop*” Road) which is unsurfaced and rough, running through the forest.

*Water Supply and Sanitation*

Vandiperiyar Panchayat has good water source, in the form of a rivulet. A check dam has been constructed with the support of Life Insurance Corporation of India (LIC water supply scheme) and water is drawn to an Over Head Tank to meet the needs of the town / main settlement area. No water treatment facility exists here and the water is directly pumped from the river and supplied.

There is possibility of constructing additional check dam near ‘Muppathu Palam (bridge)’ to ensure additional quantity required. Sathram area has a check dam constructed across the rivulet which ensures sufficient water for the temple and toilets here.

At Vandiperiyar town, there are around 12 toilets constructed by the Panchayat, in addition to temporary ones, which are provided during the peak season by the private sector. Pilgrims bathe in the river Periyar or its tributaries. Due to the lack of toilet facilities, rampant open defecation is observable at Vandiperiyar, Sathram and Uppupara.

Major source of water are the river and the wells which usually get polluted during the season. Panchayat also provides some toilet facilities at Sathram during the main pilgrim season. At Sathram, there are 5 toilets constructed by TDB near the temple, which clearly shows lack of maintenance.

*Solid Waste Management*

Existing infrastructure for solid waste management includes an incinerator bought by the Panchayat, land and shed where the incinerator has been housed, lorry for waste collection and transportation, and eight regular sweepers. Around 2 lorry trips of waste are collected on a regular day, which increases to 5 or 6 trips during the pilgrim season. During the season, the Panchayat engages two numbers of additional part-time (daily wage) sweepers. Panchayat also arranges to sprinkle bleaching powder wherever found necessary. The Panchayat has submitted a proposal to Clean Kerala Mission of the Government of Kerala for SWM, and has agreed to acquire land required for the project.

*Electricity, street lights and other infrastructure*

Vandiperiyar town area and Sathram has sufficient power supply though Uppupara has no power supply.

*Health Facilities*

Panchayat has a primary health centre (2 doctors / 20 bedded facility) in addition to small private clinics and private hospitals with limited facilities. For availing facilities such as X-ray, scanning, lab testing and others, people are directed to Theni Medical College or Medical College Kottayam. Very limited facilities are available in private hospitals. The primary health centre at Sathram does not function regularly.

Panchayat organizes health support activities during the Sabarimala season with assistance from District Medical Office, Idukki.

Suggestions on Future Development

- Vandiperiyar Town is heavily built and lacks necessary area near the core as most of it is under disputed/’patta’ lands held by plantations. Cost of land is high near the

town. At Vallakkadavu area, which is at the fringe of the forest, a small strip-development of few shops and houses is visible, beyond which the remaining land is mostly under plantations. In addition to its location along the forest edge, the landholding right of most areas is disputed and hence may be difficult to expand this area.

- The new route from Vallakkadavu (6<sup>th</sup> Mile) to Uppupara runs amidst the forests and hence cannot be opened for continuous pilgrim movement as it affects the tranquillity of the area. Instead, the traditional route through Sathram needs to be promoted by providing required infrastructure and amenities.
- People would continue using the transit facilities at Vandiperiyar till around 10 years from now, when the road to Sathram could be developed into motorable standard for all types of vehicles. Hence parking and modal interchange facilities; accommodation and support facilities need to be provided at Vandiperiyar.
- Better viri facilities, health infrastructure, mobile medical facilities, toilets, bathing ghats at Kakki *kadavu*, water treatment system, control of pollution of rivers etc are essential to upgrade Vandiperiyar into a transit station. Additional check dam at Vandiperiyar near ‘Muppathu Palam (bridge)’ may be provided to ensure required water quantity.
- Uppupara being eco-sensitive grassland within the Periyar Tiger Reserve, need to be conserved. Motorable access to Uppupara can be closed. However, as the area is a main jyothi viewing point, it is proposed that the route be opened for services and for those returning after jyothi viewing and for services till 2015, during which areas of lesser impact may be identified and developed for jyothi viewing. However, transit facilities need to be provided here.
- The facilities developed may be used for organized eco-tourism / village tourism utilising the scenic beauty after consultation with the locals.
- Further development of the route to Uppupara is tedious owing its eco-fragility, sanction requirements and existing conditions. It is hence more appropriate to develop the traditional route to Sathram.

#### 3.4.4 Critically Affected Environmental Components

In addition to mapping the category of impacts and the suggested interventions, critically affected environmental components due to the pilgrimage in each Panchayat area, has been identified and mapped. However, the affected components could be categorised as forests and water bodies including rivers, rivulets and ponds. Most important cause of degradation of forests is the concentration of pilgrims along its edges and movement of pilgrims through the forests. Important cause of degradation of rivers in the region is disposal of waste (solid waste as well as sewage), washing of vehicles and bathing in the absence of disposal facilities or amenities.

Main rivers which are affected include Manimala River, Muvattupuzha River, Pampa River and Achenkovil River and their tributaries.

Extensive sand mining is rampant in most of these rivers which have developed increased depth at critical points, posing safety hazard to pilgrims who promptly alight and bathe at points where rivers are accessible from the road.

Critically affected environmental components in each area are presented in **Table 3**. Impact of Pilgrim movement and issues which affects safe pilgrimage, are presented in **Table 4**.

**Table 3: Critically Affected Environmental Components in Planning Region 1**

<i>District</i>	<i>Panchayat Name</i>	<i>Specifically affected Critical Environmental Components</i>	<i>Cause</i>
Idukki	Marayoor Grama Panchayat	Chinnar River	Cooking, stay and other usages by pilgrims along the river side
Idukki	Moonnar Grama Panchayat	Forests and water bodies	Cooking and other usages by pilgrims in the forests
Idukki	Santhanpara Grama Panchayat	forests due to general movement	Cooking and other usages by pilgrims in the forests
Idukki	Chinnakkanal Grama Panchayat	Forests/land general movement	Cooking and other usages by pilgrims in the forests
Idukki	Pampadumpara Grama Panchayat	Forests - due to general movement	Cooking and other usages by pilgrims in the forests
Idukki	Nedumkandam Grama Panchayat	Forests - due to general movement	Cooking and other usages by pilgrims in the forests
Idukki	Udumbanchola Grama Panchayat	Forests	Cooking and other usages by pilgrims in the forests
Idukki	Vandanmedu Grama Panchayat	Forests - due to general movement	Cooking and other usages by pilgrims in the forests
Idukki	Chakkupallam Grama Panchayat	Forests - general movement	Cooking and other usages by pilgrims in the forests
Idukki	Peruvanthanam Grama Panchayat	Panchalimedu area	Concentration of pilgrims for Jyothi Viewing
Idukki	Peerumedu Grama Panchayat	Pampanar, Valanjangaanam. Waste accumulation along road side, rivers	Intermediate halt of pilgrims for basic facilities
Idukki	Elappara Grama Panchayat	Elappara River	Cooking and other usages by pilgrims along the river side
Idukki	Vandiperiyar Grama Panchayat	Uppupara hillock and Species along path from Vallakkadavu. Periyar River	Concentration of pilgrims for Jyothi Viewing, movement through the forests and indiscriminate use of the river and rivulets in the absence of facilities
Kottayam	Vechoor Grama Panchayat	Vembanad Lake to be safeguarded from wastes	Being the point of convergence of rivers which emanates from various pilgrim movement areas, the Lake acts as the final destination for all wastes
Kottayam	Thalayolaparambu Grama Panchayat	Muvattupuzha River	Pilgrim activities take place. In addition, excessive sand mining poses danger for pilgrims who plunges in for using the river
Kottayam	Kidangoor Grama Panchayat	Meenachil River	Cooking and other usages by pilgrims along the river side
Kottayam	Ramapuram Grama Panchayat	Amanakara Ar	Cooking and other usages by pilgrims along the river side
Kottayam	Bharananganam Grama Panchayat	Meenachil River	Cooking and other usages by pilgrims along the river side

<b>District</b>	<b>Panchayat Name</b>	<b>Specifically affected Critical Environmental Components</b>	<b>Cause</b>
Kottayam	Mutholi Grama Panchayat	Meenachil River	Cooking and other usages by pilgrims along the river side
Kottayam	Erattupetta Grama Panchayat	Meenachil River	Cooking and other usages by pilgrims along the river side
Kottayam	Thalappalam Grama Panchayat	Meenachil River	Cooking and other usages by pilgrims along the river side
Kottayam	Chirakkadavu Grama Panchayat	Mannanplavu ar	Cooking and other usages by pilgrims along the river side
Kottayam	Nedumkunnam Grama Panchayat	Koveli thodu need to be protected in the long run	Cooking and other usages by pilgrims along the river side
Kottayam	Vellavoor Grama Panchayat	Manimala river	Cooking and other usages by pilgrims along the river side
Kottayam	Erumely Grama Panchayat	Erumely Thodu, Peroorthodu, Manimala River, Azhutha River along trek path to Pampa, trek path through forest via Kalaketti, Azhutha, Kallidumkunnu, Valiyanavattom to Pampa and all water bodies, forest along	Coloured powder / <i>kumkum</i> disposed/washed off into temple side rivulet due to pilgrims taking bath after Religious observance of Petta Thullal, Disposal of puffed rice (and its paper covers) into the rivulet as part of ritual, Cooking and Other Usages by Pilgrims along the river side
Kottayam	Kanjirappally Grama Panchayat	Manimala river	Cooking and other usages by pilgrims along the river side
Kottayam	Koottickal Grama Panchayat	Pullaka ar - Manimala River	Cooking and other usages by pilgrims along the river side
Kottayam	Manimala Grama Panchayat	Pondanpuzha forest area and Valiathodu	Cooking and other usages by pilgrims along the river side
Kottayam	Mundakkayam Grama Panchayat	Manimala river	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Kaviyoor Grama Panchayat	Polachira Pond	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Mallappally Grama Panchayat	Manimala river	Lack of side protection, Cooking and other usages by pilgrims along the river side
Pathanamthitta	Nedumpram Grama Panchayat	Manimala river and Pampa River	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Ayiroor Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Cherukol Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Kozhenchery Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side, Solid waste disposal from other landuses sewage disposal from habitations etc
Pathanamthitta	Mallappuzhassery Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Ranni-Pazhavangadi Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side, Solid waste disposal from other landuses sewage disposal from



<i>District</i>	<i>Panchayat Name</i>	<i>Specifically affected Critical Environmental Components</i>	<i>Cause</i>
			habitations etc
Pathanamthitta	Ranni Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side, Solid waste disposal from other landuses sewage disposal from habitations etc
Pathanamthitta	Ranni-Angadi Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side, Solid waste disposal from other landuses sewage disposal from habitations etc
Pathanamthitta	Ranni Perunad Grama Panchayat	Pampa River, Kallar River, Pampa Manappuram, Plapally - Pampa and Sannidhanam forest area	Cooking and other usages by pilgrims along the river side, activities at Sabarimala and Pampa
Pathanamthitta	Vadasserikkara Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Chittar Grama Panchayat	Forests and water bodies	Cooking and other usages by pilgrims along the river side, movement of pilgrims
Pathanamthitta	Seethathodu Grama Panchayat	Kakkad Ar	Cooking and other usages by pilgrims along the river side, waste disposal from plying and parked vehicles
Pathanamthitta	Naranamoozhy Grama Panchayat	Pampa River	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Vechoochira Grama Panchayat	Forests and water bodies	Cooking and other usages by pilgrims, movement of pilgrims
Pathanamthitta	Konni Grama Panchayat	Achenkovil River	Cooking and other usages by pilgrims, movement of pilgrims, waste disposal from other land uses
Pathanamthitta	Aruvappulam Grama Panchayat	Achenkovil River	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Pramadom Grama Panchayat	Achenkovil River	Cooking and other usages by pilgrims
Pathanamthitta	Mylapra Grama Panchayat	Achenkovil River	Cooking and other usages by pilgrims
Pathanamthitta	Vallikkodu Grama Panchayat	Achenkovil River	Cooking and other usages by pilgrims
Pathanamthitta	Thannithodu Grama Panchayat	Kallar River	Cooking and other usages by pilgrims along the river side
Pathanamthitta	Pandalam-Thekkekara Grama Panchayat	Chandanapally Pond	Cooking and other usages by pilgrims
Pathanamthitta	Pandalam Grama Panchayat	Achenkovil River	Cooking and other usages by pilgrims, waste from other landuses
Pathanamthitta	Ezhamkulam Grama Panchayat	Achenkovil River	Cooking and other usages by pilgrims
Pathanamthitta	Kalanjoor Grama Panchayat	Achenkovil River	Cooking and other usages by pilgrims along the rivulet joining Achenkovil River
Pathanamthitta	Kulanada Grama Panchayat	Achenkovil River	Cooking and Other Usages by Pilgrims other usages by pilgrims, waste from other landuses

<i>District</i>	<i>Panchayat Name</i>	<i>Specifically affected Critical Environmental Components</i>	<i>Cause</i>
Pathanamthitta	Aranmula Grama Panchayat	Pampa River	Cooking and other usages by pilgrims, waste from other landuses, indiscriminate sand mining
Kottayam	Kottayam Municipality	Meenachil River, Kodur Ar	Waste from the Town including solid waste and sewage
Kottayam	Vaikom Municipality	Vaikom temple Pond and Aarattukulam	Pilgrim activities
Idukki	Thodupuzha Municipality	Kodur River	Cooking and other usages by pilgrims, waste from other landuses

**Table 4 : Impact of Pilgrim Movement and Issues Affecting Safe Pilgrimage**

<i>Issues</i>	<i>Reasons</i>
Destruction of flora, Fauna	Movement of pilgrims Increase in commercial activities along forest edges
Pollution and unhygienic environment due to sewage and solid waste	Unhygienic use by pilgrims in the absence of facilities Indiscriminate dumping from the main settlements / landuses in the absence of facilities
Safety hazard	Due to unregulated and clandestine sand mining, deep non-negotiable trenches are formed in the rivers which cause accidents during use
Road side parking and congestion	Absence of adequate parking facilities

A map showing the regional spread of critically affected environmental components has been produced as **Map 1**.

## 4. PRIORITISATION OF REQUIREMENTS AND PROPOSED INTERVENTIONS

### 4.1 Development Vision

The pilgrimage supported and contained by the immediate host region without overburdening the final holy and fragile destination.

### 4.2 Issue Prioritisation

- Lack of accessible facilities across the region
- Lack of effective base / Transit Camps and streamlined movement of pilgrims
  - ◆ Insufficient road widths, traffic management, parking, emergency services
  - ◆ Lack of toilet facilities, water supply, solid waste and sewerage treatment
  - ◆ Lack of provision and maintenance of services and utilities
- Impacts on critical environmental components due to indiscriminate and uncontrolled use of resources, especially indiscriminate river side activities polluting the rivers
- Lack of access to information and awareness to effect a guided pilgrimage suitable for the host region and meeting the aspirations of the pilgrims

### 4.3 Suggested Interventions in the Planning Regions

Interventions proposed in planning regions 2 and 3 are described in detail in the traffic and transport module of the Draft Master Plan.

After detailed discussions at local level, broad interventions required at each area have been identified and mapped. Interventions are categorised into three:

- Areas which require specific interventions as they are the main regional nodes
- Areas which require specific interventions as they are the main transit nodes
- Areas suggested for general interventions

Specific Interventions include provision of pilgrim amenity centres with toilets, bath area, solid waste management, bathing ghats, parking etc as identified specifically for each area.

General interventions include:

- Routine Road Maintenance and Traffic Control at main junctions
- Street Lighting, Road Signages and Info boards during Main Pilgrim Seasons
- Regular Checkups of Food and Water Quality in way side eateries
- Database on Casualty Facilities and Road Accident Care centres at all Police Stations
- Medical Aid / First Aid centres and ambulance on call facilities
- Pilgrim Information Kiosks at Main Roads

The interventions required at each area have been finalized based on the relative importance of each area, frequency and intensity of usage by pilgrims which in turn depend on access to main religious locales, facilities and amenities.

Interventions are developed for two phases: period from 2006 to 2015 and period from 2015 to 2050.

Phase 1: 2006 to 2015

The interventions during this phase focus on immediate requirements to improve the facilities. It is proposed that these interventions be developed in two stages till 2015. Each phase would have the following time span:

- Stage 1: 2006 to 2010
- Stage 2: 2010 to 2015

Phase 2: 2015 to 2050

Further during 2015 to 2050 period, augmentation of facilities at the Base Camps and Transit Camps have been recommended after interim analysis of the pilgrim growth and depending on the pilgrim management system in place.

**4.3.1 Phase 1 (2006 – 2010) Interventions**

During this period, upgradation of existing facilities would be the concern. Areas for specific interventions have been classified into Base Camps, Main Transit Camps, Transit Camps, and that requiring facility augmentation in addition to providing general interventions along all identified routes.

Type of interventions suggested in areas of impact and their phasing till 2015 is presented in the table below.

**Table 5: Types of Interventions suggested in Each Panchayat in Planning Region 1 (2006 - 2015)**

<i>District</i>	<i>Panchayat Name</i>	<i>Specific Location if any</i>	<i>Development Option</i>	<i>Phasing (till 2015)</i>
<b>Base Camps</b>				
Idukki	Vandiperiyar Grama Panchayat	Sathram, Vandiperiyar Town, Uppupara	Base Camp and General Interventions	Stage 1
Kottayam	Erumely Grama Panchayat	Erumely Town and Trek Route	Base Camp and General Interventions	Stage 1
Pathanamthitta	Ranni Perunad Grama Panchayat	Sabarimala, Nilakkal, Koonankara	Base Camp and General Interventions	Stage 1
<b>Main Transit Camps</b>				
Idukki	Peruvanthanam Grama Panchayat	Panchalimedu	Main Transit Camp and General Interventions	Stage 1
Idukki	Kumily Grama Panchayat	Town	Main Transit Camp and General Interventions	Stage 1
Kottayam	Kaduthuruthy Grama Panchayat	Kaduthuruthy Junction and Mahadeva Temple	Main Transit Camp and General Interventions	Stage 1
Kottayam	Manjoor Grama Panchayat	Malliyoor Temple	Main Transit Camp and General Interventions	Stage 1
Kottayam	Ettumanoor Grama Panchayat	Ettumanoor Temple and Junction area	Main Transit Camp and General Interventions	Stage 1
Kottayam	Mutholi Grama Panchayat	Pala Kadapattor temple	Main Transit Camp and General Interventions	Stage 1
Kottayam	Manimala Grama Panchayat	Manimala Kavu temple in ward 14 and Pondanpuzha (ward 8)	Main Transit Camp and General Interventions	Stage 2
Pathanamthitta	Ranni-Pazhavangadi Grama Panchayat	Ranni bridge kadavu (ward14), Aithara kadavu	Main Transit Camp and General Interventions	Stage 1

<i>District</i>	<i>Panchayat Name</i>	<i>Specific Location if any</i>	<i>Development Option</i>	<i>Phasing (till 2015)</i>
		(ward12), town, Ittiyapara bus stand		
Pathanamthitta	Ranni Grama Panchayat	Ramapuram Temple	Main Transit Camp and General Interventions	Stage 1
Pathanamthitta	Ranni-Angadi Grama Panchayat	Ward 7(town ward and Manappuram of Pampa river)	Main Transit Camp and General Interventions	Stage 1
Pathanamthitta	Pandalam Grama Panchayat	Near Pandalam Palace and Temple	Main Transit Camp and General Interventions	Stage 1
Pathanamthitta	Aranmula Grama Panchayat	Aranmula Temple	Main Transit Camp and General Interventions	Stage 1
Pathanamthitta	Thiruvalla Municipality	Thiruvalla Temple or Municipal ground	Main Transit Camp and General Interventions	Stage 2
Pathanamthitta	Pathanamthitta Municipality	Thazhevettipuram	Main Transit Camp and General Interventions	Stage 2
Kottayam	Pala Municipality	Town and Kadapattoor Temple	Main Transit Camp and General Interventions	Stage 1
Kottayam	Kottayam Municipality	Thirunakkara and railway Station	Main Transit Camp and General Interventions	Stage 1
Kottayam	Vaikom Municipality	Vaikom Temple and Town	Main Transit Camp and General Interventions	Stage 1
Idukki	Thodupuzha Municipality	Town, Sree Krishna Temple	Main Transit Camp and General Interventions	Stage 1
<b>Transit Camps</b>				
Idukki	Vellathuval Grama Panchayat	Anachaal Temple (Ward 6)	Transit Camp and General Interventions	Stage 1
Idukki	Marayoor Grama Panchayat	Kothannur Temple and Eruthalakkudi (ward 2)	Transit Camp and General Interventions	Stage 2
Idukki	Udumbanchola Grama Panchayat		Transit Camp and General Interventions	Stage 2
Idukki	Muttom Grama Panchayat	Near Malankara Dam	Transit Camp and General Interventions	Stage 2
Idukki	Elappara Grama Panchayat	Srikrishna Temple (Town)	Transit Camp and General Interventions	Stage 2
Kottayam	Kidangoor Grama Panchayat	Near Kummannoor Padasekharam near Meenachil ar or at Thavalipuzha (ward 4)	Transit Camp and General Interventions	Stage 2
Kottayam	Ramapuram Grama Panchayat	Amanakkara ar (ward 17)	Transit Camp and General Interventions	Stage 1
Kottayam	Bharananganam Grama Panchayat	Srikrishna Swamy temple and Anandashanmugha Temple, Chalikkadavu/Vattolikadavu (ward 7)	Transit Camp and General Interventions	Stage 2
Kottayam	Karoor Grama Panchayat	(Ward 6and7-Ponand, Karror wards)	Transit Camp and General Interventions	Stage 2
Kottayam	Nattakom Grama Panchayat	Kodimatha near bus stand or SivaParvathi Temple	Transit Camp and General Interventions	Stage 2
Kottayam	Panachikkad Grama Panchayat	Panachikkad Temple	Transit Camp and General Interventions	Stage 1
Kottayam	Vellavoor Grama Panchayat	Moongani Ayyappa Temple in ward 7	Transit Camp and General Interventions	Stage 2

<i>District</i>	<i>Panchayat Name</i>	<i>Specific Location if any</i>	<i>Development Option</i>	<i>Phasing (till 2015)</i>
Kottayam	Mundakkayam Grama Panchayat	Puthenchanda (ward 3)	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Nedumpram Grama Panchayat	Manipuzha devi temple (ward 7:podiyadi) and Kodyadi Sastha Temple (ward 11:Pulikeezh)	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Ayiroor Grama Panchayat	Ayiroor Puthiakaavu Temple and ward 7 (Kaithakodi), ward 7(Edathavoor) and ward 13 (Cherukolpuzha)	Transit Camp and General Interventions	Stage 1
Pathanamthitta	Ezhumattoor Grama Panchayat	Thelliyoor kavu temple	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Omalloor Grama Panchayat	Sree Rakhakanda Swamy temple (ward 7)	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Kozhenchery Grama Panchayat	Near Temple	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Vadasserikkara Grama Panchayat	Cherukavu temple	Transit Camp and General Interventions	Stage 1
Pathanamthitta	Chittar Grama Panchayat		Transit Camp and General Interventions	Stage 2
Pathanamthitta	Seethathodu Grama Panchayat	Angamoozhy	Transit Camp and General Interventions	Stage 1
Pathanamthitta	Aruvappulam Grama Panchayat	Kallelil Siva Temple or Amman Koil	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Pramadom Grama Panchayat	Vettoor Temple	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Mylapra Grama Panchayat	Pallipadi	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Vallikkodu Grama Panchayat	Kaipattor Jn	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Malayalapuzha Grama Panchayat	Malayalapuzha temple	Transit Camp and General Interventions	Stage 2
Pathanamthitta	Kalanjoor Grama Panchayat	Kalanjoor Sree Mahadeva Temple	Transit Camp and General Interventions	Stage 2
<b>Facility Augmentation</b>				
Idukki	Moonnar Grama Panchayat	Munnar	Facility Augmentation and General Interventions	Stage 1
Idukki	Idukki-Kanjikkuzhi Grama Panchayat	Vannapuram - Chelachuvadu road	Facility Augmentation and General Interventions	Stage 2
Idukki	Peerumedu Grama Panchayat	56 Mile, Pampanaar, Valanjangaanam	Facility Augmentation and General Interventions	Stage 1
Kottayam	Vechoor Grama Panchayat	Near Thanneermukkom Bund	Facility Augmentation and General Interventions	Stage 1
Kottayam	Thalayolaparambu Grama Panchayat	Near Elamkavu temple, near Muvattupuzha River	Facility Augmentation and General Interventions	Stage 2

<b>District</b>	<b>Panchayat Name</b>	<b>Specific Location if any</b>	<b>Development Option</b>	<b>Phasing (till 2015)</b>
Kottayam	Veliyanoor Grama Panchayat	Veliyanoor	Facility Augmentation and General Interventions	Stage 2
Kottayam	Erattupetta Grama Panchayat	boundary of Thalappalam panchayat (6th mile - ward 1)	Facility Augmentation and General Interventions	Stage 1
Kottayam	Thalappalam Grama Panchayat	Ward 4-Kalathukadavu, 5-Elappunkal, 7-Injolikkavu, 8-Panakkapalam, 11-Melampara, 10-Ambara	Facility Augmentation and General Interventions	Stage 1
Kottayam	Manarkadu Grama Panchayat	Manarkad Devi Temple	Facility Augmentation and General Interventions	Stage 2
Kottayam	Chirakkadavu Grama Panchayat	Ponkunnam Town, Chirakkadavu Temple, Mannanplavu	Facility Augmentation and General Interventions	Stage 2
Kottayam	Nedumkunnam Grama Panchayat		Facility Augmentation and General Interventions	Stage 2
Kottayam	Vazhoor Grama Panchayat	Kodungoor Temple (ward 7)	Facility Augmentation and General Interventions	Stage 2
Kottayam	Kanjirappally Grama Panchayat	Koratti bridge area (manimala ar) in ward 15 Kuruvamoozhi and Vizhikkathodu	Facility Augmentation and General Interventions	Stage 2
Kottayam	Koottickal Grama Panchayat	Elamkadu (ward 6, Kodunga) bank of Pullaka ar	Facility Augmentation and General Interventions	Stage 2
Kottayam	Parathode Grama Panchayat	26th mile	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Kaviyoor Grama Panchayat	Kaviyoor temple (ward 11)	Facility Augmentation and General Interventions	Stage 1
Pathanamthitta	Kunnamthanam Grama Panchayat	Changanassery - Mallappally - Kozhenchery Road.	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Mallappally Grama Panchayat	Thirumanchira Temple	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Cherukol Grama Panchayat	Cheruvallikavu temple	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Mallappuzhassery Grama Panchayat	Aranmula temple side	Facility Augmentation and General Interventions	Stage 1
Pathanamthitta	Naranamoozhy Grama Panchayat	Arakkamon (ward 7and8)	Facility Augmentation and General Interventions	Stage 1
Pathanamthitta	Konni Grama Panchayat	Achankovil - Konny - Angamoozhy route and	Facility augmentation and General	Stage 2



<i>District</i>	<i>Panchayat Name</i>	<i>Specific Location if any</i>	<i>Development Option</i>	<i>Phasing (till 2015)</i>
		Muringamangalam Siva Temple	Interventions	
Pathanamthitta	Thannithodu Grama Panchayat	Moozhy	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Pandalam-Thekkekara Grama Panchayat	Near Chandanapally pond	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Kulanada Grama Panchayat	Near Achenkovil river at ward 2: Kaipuzha	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Thottappuzhassery Grama Panchayat	Along Pampa - Maramon	Facility Augmentation and General Interventions	Stage 1
Pathanamthitta	Puramattom Grama Panchayat	Thiruvalla - Ranni, Thiruvalla - Pathanamthitta route. Vennikulam Jn	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Ezhamkulam Grama Panchayat	Enathu Kadavu and Ezhamkulam Devi Temple	Facility Augmentation and General Interventions	Stage 2
Pathanamthitta	Adoor Municipality	Parthasarathy temple, Town	Facility Augmentation and General Interventions	Stage 1
Kottayam	Changanassery Municipality	Town and Perunna Subramania Swamy Temple	Facility Augmentation and General Interventions	Stage 1
Kottayam	Kumaranalloor Grama Panchayat	Near Nagampadom and / or Kumaranalloor devi temple	Facility Augmentation and General Interventions	Stage 2
Kottayam	Pallickathode Grama Panchayat	Anicadu temple and Mahadeva Temple	Facility Augmentation and General Interventions	Stage 2
<b>General Interventions</b>				
Idukki	Santhanpara Grama Panchayat	Main Route: Santhanpara - Pooppara	General Interventions	Stage 1
Idukki	Chinnakkanal Grama Panchayat	Main Route: NH 49	General Interventions	Stage 1
Idukki	Konnathadi Grama Panchayat	Idukki – Neriya Mangalam Route nearby	General Interventions	Stage 1
Idukki	Pallivasal Grama Panchayat	Main Route: NH 49	General Interventions	Stage 1
Idukki	Mankulam Grama Panchayat	Main Route: NH 49	General Interventions	Stage 2
Idukki	Pampadumpara Grama Panchayat	Pooppara – Kumily route	General Interventions	Stage 2
Idukki	Karunapuram Grama Panchayat	Karunapuram-Kattappana-Erumely Route	General Interventions	Stage 2
Idukki	Nedumkandam Grama Panchayat	From Bodimettu - Munnar to Nedumkandam – Kumily (Pooppara Kumily Route)	General Interventions	Stage 2
Idukki	Vathikkudi Grama	Idukki – Neriya Mangalam	General Interventions	Stage 2

<i>District</i>	<i>Panchayat Name</i>	<i>Specific Location if any</i>	<i>Development Option</i>	<i>Phasing (till 2015)</i>
	Panchayat	Route nearby		
Idukki	Arakulam Grama Panchayat	Ayyappa Temple	General Interventions	Stage 1
Idukki	Kattappana Grama Panchayat	Town: intersecting main routes	General Interventions	Stage 1
Idukki	Upputhara Grama Panchayat	Main route from Kattappana	General Interventions	Stage 2
Idukki	Vandanmedu Grama Panchayat	Pooppara – Kumily Route	General Interventions	Stage 2
Idukki	Kanchiyar Grama Panchayat	Main route from Kattappana	General Interventions	Stage 2
Idukki	Erattayar Grama Panchayat	Kattappana Idukki Route	General Interventions	Stage 2
Idukki	Ayyappankoil Grama Panchayat	Kumily route (from Kuttikanam) to Kattappana and Pullumedu in TN border	General Interventions	Stage 1
Idukki	Chakkupallam Grama Panchayat	Pooppara – Kumily Route	General Interventions	Stage 2
Idukki	Kumaramangalam Grama Panchayat	Main route – Thodupuzha to Muvattupuzha	General Interventions	Stage 1
Idukki	Karimkunnam Grama Panchayat	Main Route: Thodupuzha - Pala	General Interventions	Stage 2
Idukki	Kokkayar Grama Panchayat	Urimbikkara Devi temple and main route – KK road	General Interventions	Stage 2
Kottayam	Chempu Grama Panchayat	Ernakulam – Vaikom route	General Interventions	Stage 1
Kottayam	Maravanthuruthu Grama Panchayat	Ernakulam – Vaikom route	General Interventions	Stage 2
Kottayam	Udayanapuram Grama Panchayat	Ernakulam – Vaikom route	General Interventions	Stage 2
Kottayam	Aymanam Grama Panchayat	Kottayam Route	General Interventions	Stage 2
Kottayam	Arpookara Grama Panchayat	Kottayam – Medical College Route	General Interventions	Stage 1
Kottayam	Kuravilangadu Grama Panchayat	MC Road – Kozha – Pala Route	General Interventions	Stage 1
Kottayam	Uzhavoor Grama Panchayat	Muvattupuzha –Kuruvilangad route	General Interventions	Stage 2
Kottayam	Kadanadu Grama Panchayat	Kollappally to Pezhaku route used alternate to Thodupuzha Pala route	General Interventions	Stage 2
Kottayam	Melukavu Grama Panchayat	Erattupetta Thodupuzha Route	General Interventions	Stage 1
Kottayam	Thidanadu Grama Panchayat	Erattupetta – Kanjirappally – Erumely Route	General Interventions	Stage 1
Kottayam	Elikulam Grama Panchayat	Pala to KK Road Alternate Route	General Interventions	Stage 2
Kottayam	Pampady Grama Panchayat	KK Road	General Interventions	Stage 1
Kottayam	Kumarakom Grama Panchayat	Alleppey - Kumarakom – Kottayam Route	General Interventions	Stage 1

<i>District</i>	<i>Panchayat Name</i>	<i>Specific Location if any</i>	<i>Development Option</i>	<i>Phasing (till 2015)</i>
Kottayam	Thiruvappu Grama Panchayat	Alleppey - Kumarakom – Kottayam Route	General Interventions	Stage 2
Kottayam	Vijayapuram Grama Panchayat	KK Road	General Interventions	Stage 2
Kottayam	Karukachal Grama Panchayat	Thodupuzha Pala route	General Interventions	Stage 1
Kottayam	Kurichi Grama Panchayat	MC Road	General Interventions	Stage 2
Kottayam	Vazhappally Grama Panchayat	MC Road	General Interventions	Stage 2
Kottayam	Kangazha Grama Panchayat	Karakachal - Manimala route	General Interventions	Stage 2
Pathanamthitta	Kottanadu Grama Panchayat	Mallappalli Ranni Route	General Interventions	Stage 2
Pathanamthitta	Kottangal Grama Panchayat	Mallappalli Erumely Route	General Interventions	Stage 1
Pathanamthitta	Kuttoor Grama Panchayat	Chengannoor Thiruvalla Route	General Interventions	Stage 1
Pathanamthitta	Niranam Grama Panchayat	Thiruvalla – Pathanamthitta Route	General Interventions	Stage 2
Pathanamthitta	Peringara Grama Panchayat	MC Road	General Interventions	Stage 1
Pathanamthitta	Eraviperoor Grama Panchayat	Thiruvalla – Pathanamthitta Route	General Interventions	Stage 1
Pathanamthitta	Koyipram Grama Panchayat	Thiruvalla-Kozhenchery route	General Interventions	Stage 2
Pathanamthitta	Puramattom Grama Panchayat	Thiruvalla - Ranni, Thiruvalla - Pathanamthitta route. Vennikulam Jn	General Interventions	Stage 1
Pathanamthitta	Elanthur Grama Panchayat	Pathanamthitta – Kozhencheri Route	General Interventions	Stage 2
Pathanamthitta	Naranganam Grama Panchayat	Kozhenchery-Kadamanitta-Mannarkulanji shortcut	General Interventions	Stage 2
Pathanamthitta	Vechoochira Grama Panchayat	Vechoochira - Athikkayam route	General Interventions	Stage 1
Pathanamthitta	Thumpamon Grama Panchayat	Adoor Pandalam Route. Near Malayirikunnu Temple	General Interventions	Stage 1
Pathanamthitta	Enadimangalam Grama Panchayat	Kayamkulam – Punalur Route. Mahadeva Temple area	General Interventions	Stage 2
Pathanamthitta	Erathu Grama Panchayat	Kottarakkara - Adoor MC Road. Maharshikavu Siva Temple	General Interventions	Stage 2
Pathanamthitta	Kadampnanadu Grama Panchayat	Sasthamkotta - Adoor, Kadampnanad - Enathu-Adoor, Kadampnanad-Manjali-Adoor route	General Interventions	Stage 1
Pathanamthitta	Kodumon Grama Panchayat	Pathanamthitta Ezhamkulam Route	General Interventions	Stage 2
Pathanamthitta	Pallickal Grama Panchayat	Kayamkulam – Punalur Road	General Interventions	Stage 1

<i>District</i>	<i>Panchayat Name</i>	<i>Specific Location if any</i>	<i>Development Option</i>	<i>Phasing (till 2015)</i>
Pathanamthitta	Mezhuveli Grama Panchayat	Chengannur – Pathanamthitta Route	General Interventions	Stage 2
Idukki TS	Idukki Township		General Interventions	Stage 2

Detailed list of interventions required (other than general interventions) in each Panchayat area (at each location) has been presented in the table below.

**Table 6: Detailed Interventions Proposed for Panchayats in Planning Region 1 (2006-2015)**

<i>Panchayat Name</i>	<i>Specific Location, if any</i>	<i>Specific Interventions / Transit / Base camp facilities</i>
Vellathuval Grama Panchayat	Anachaal Temple (Ward 6)	Parking Facilities near Anachal Temple (ward 6, Etticity) along Anachal - Vellathuval Road. Has private land nearby. Solid Waste Management facilities required during Pilgrim Season. This include local SHGs initiating waste collection and bin composting
Marayoor Grama Panchayat	Kothannur Temple and Eruthalakkudi (ward 2)	Water Supply and Waste Management facilities at Kothannur temple during peak season. Bathing Ghat in ward 2, Eruthalakkudi (forest area). These facilities may be arranged through local EDCs / SHGs
Moonnar Grama Panchayat	Munnar	Transit facility (stay, toilets) at Munnar as it abuts the national highway and many transboundary pilgrims halt here
Santhanpara Grama Panchayat		Better lighting and roads. May provide street lighting through Micro Hydel Projects
Chinnakkanal Grama Panchayat		Better lighting and roads. May provide street lighting through Micro Hydel Projects
Udumbanchola Grama Panchayat		Facilities (water, food, toilets) for trekking pilgrims (from Thevaram) (6kms trek). This can be arranged through EDCs / SHGs or Ecofriendly cottages on cheap rate by DTPC
Idukki-Kanjikkuzhi Grama Panchayat	Vannapuram - Chelachuvadu road	Develop Vannapuram - Chelachuvadu Road so as to reduce distance to Thodupuzha by 30 kms (Has proposal for NABARD funding)
Muttom Grama Panchayat	near Malankara Dam	More visitations from Coimbatore expected on completion of KSTP road which reduces distance by 30 kms. Panchayat to develop viri, toilets using own fund near Malankara dam. SWM facilities to be arranged through SHGs during peak season
Peruvanthanam Grama Panchayat	Panchalimedu	Panchalimedu (ward 6) to be provided with viri, toilets, cooking / food, water (has ponds, pipeline near 0.5 kms) SWM, street light facilities for two days before and one day after Makaravilakku as it is a main Makarajyothi viewing point. Panchayat to be provided funding assistance
Kumily Grama Panchayat	Town	Subsidized stay facilities, toilets, here (by DTPC), which can be used for general tourism during other seasons. Has land for SWM disposal. Comprehensive SWM system to be arranged with funding support from Percent. Parking lots and traffic control required in town as many pilgrims halt near town / leave their vehicle here and take public transport.
Peerumedu Grama Panchayat	56 Mile, Pampanaar, Valanjangaanam	Toilets, water supply, comprehensive SWM along road side points like 56mile Pampanar and Valanjangaanam. Panchayat to be provided funding assistance. EDCs to arrange facilities in or

<i>Panchayat Name</i>	<i>Specific Location, if any</i>	<i>Specific Interventions / Transit / Base camp facilities</i>
		around the forest land. Waste accumulation (esp plastic waste) along road, river is the main issue
Elappara Grama Panchayat	Srikrishna Temple (Town)	Cooking, SWM, toilet facilities near Srikrishna Swamy temple in Town. Bathing facilities at Elappara Ar and control of waste disposal into the river.
Vandiperiyar Grama Panchayat	Sathram, Vandiperiyar Town, Uppupara	Suggested Base camp / Transit facilities at Sathram, Vandiperiyar town. Parking facilities required to be upgraded in Town as pilgrims leave their vehicles here and take jeep to Sathram / Uppupara. Toilets, water, near town required in addition to suggested Base Camp at Sathram. Road to Sathram through plantations to be improved
Vechoor Grama Panchayat	Near Thanneermukkom Bund	Street lighting on Thanneermukkom Bund required. Food, water, toilets and SWM facilities on the approach to T. bund (right bank entry from Kottayam side) and all unregulated commercial activities to be brought under vigil and control.
Kaduthuruthy Grama Panchayat	Kaduthuruthy Junction and Mahadeva Temple	Parking facilities, stay facilities, toilets for pilgrims near temple. Panchayat is preparing a plan for this. Comprehensive SWM based on treatment of organic waste (large amount of organic waste accumulates), recycling, disposal of inorganics and rejects to be arranged.
Manjoor Grama Panchayat	Malliyoor Temple	Develop all main roads to Malliyoor Temple, Traffic signboards, support to the temple administration (private) for setting up required facilities. Waste management facilities to be arranged at main temples and main junctions in the panchayat.
Thalayolaparambu Grama Panchayat	Near Elamkavu temple, near Muvattupuzha River	Toilets, water supply, good food for pilgrims near Elamkavu temple. Bathing ghats at Muvattupuzha Ar near temple. As sand mining is more leading to more water depth, local squads / warning boards need to prevent pilgrims from risking a bathe at the river along roadside at 1 km from Temple.
Ettumanoor Grama Panchayat	Ettumanoor Temple and Junction area	More toilets on subsidised rates at Ettumanoor temple. Urgently require comprehensive SWM and sewage disposal facilities for the Panchayat. Panchayat to be provided funding assistance. Food supply to pilgrims at subsidised rate near temple through sponsorships/TDB. Else, a new facility to be developed along roadside, very close to temple from where organised pilgrim tours can be provided at subsidised rate to all temples around Kottayam. Regular food quality checks at hotels/restaurants required during season
Arpookara Grama Panchayat		Emergency / causality route planning and special facilities to cater to pilgrims.
Kumaranalloor Grama Panchayat	Near Nagampadom end (temple) and / or Kumaranalloor devi temple	Pilgrim facility centre here as it is just outside the Kottayam Town. Panchayat to be provided funding assistance for comprehensive SWM
Veliyannoor Grama Panchayat	Veliyannoor	Essential facilities (stay, food, toilets, water, medical aid, information, SWM) for transit pilgrims at Veliyannoor

<b>Panchayat Name</b>	<b>Specific Location, if any</b>	<b>Specific Interventions / Transit / Base camp facilities</b>
Kidangoor Grama Panchayat	Near Kummannoor Padasekharam near Meenachil ar or at Thavalipuzha (Ward 4)	Essential facilities for transit pilgrims (stay, food, toilets, water, medical aid, information, SWM)
Ramapuram Grama Panchayat	Amanakkara ar (ward 17)	Transit facilities (stay, food, toilets, water, medical aid, information, SWM) and bathing ghats at Amanakkara ar (ward 17). Has puramboke and Private land
Bharananganam Grama Panchayat	Srikrishna Swamy temple and Anandashanmugha Temple, Chalikkadavu/Vattolikadavu (ward 7)	More toilets, SWM arrangements at Srikrishna Swamy temple and Anandashanmugha Temple. Toilets, food, cooking, SWM, lighting, parking, bathing facilities by the side of Meenachil river at Chalikkadavu/Vattolikadavu (ward 7). Has private/puramboke land
Karoor Grama Panchayat	(ward 6and7-Ponand, Karror wards)	Facilities like toilets, viri, food, water, medical aid, information on SWM etc in the maidan front of Panchayat where pilgrims halt
Kadanadu Grama Panchayat		Roads, street lighting as this is used as an alternate route in case of main route blockages
Mutholi Grama Panchayat	Pala Kadapattor temple	Pilgrim amenity centre near Pala Kadapattor temple. Stay, cooking, hotels, toilets, street lighting, SWM, water supply arrangements. Panchayat to be provided funding assistance
Erattupetta Grama Panchayat	boundary of Thalappalam panchayat (6th mile - ward 1)	SWM and toilet facilities are required in the boundary of Thalappalam panchayat (6th mile - ward 1) where pilgrims disembark at the side of Meenachil. At Angalamman Kovil viri and toilet facilities required
Thalappalam Grama Panchayat	Ward 4-Kalathukadavu, 5-Elappunkal, 7-Injolikkavu, 8-Panakkapalam, 11-Melampara, 10-Ambara	Pilgrims disembark and bathe at Ward 4-Kalathukadavu, 5-Elappunkal, 7-Injolikkavu, 8-Panakkapalam, 11-Melampara, and 10-Ambara where road and river parallel. Need to develop three among these with local consultation for selection and develop bathing ghats, pilgrim amenities and engage SWM arrangements. Discourage multiple accesses to all possible rivers entries with local squads.
Pallickathode Grama Panchayat	Anicadu temple and Mahadeva Temple	Pilgrim transit facilities (stay, food, toilets, water, medical aid, information, SWM)
Nattakom Grama Panchayat	Kodimatha near bus stand or SivaParvathi Temple	Develop an Edathavalam here before entry to town, from where organised tours can be arranged to temples around. Can set up a Pilgrim Amenity Centre in Nattakom near Kodimatha or in Kottayam Municipal area at Kodimatha near bus stand
Panachikkad Grama Panchayat	Panachikkad Temple	Pilgrim Amenity Centre near Panachikkad Temple. Comfort stations to be provided at ward 1and2. Comprehensive SWM for Panchayat. Panchayat to be provided funding assistance.
Manarkadu Grama Panchayat	Manarkad Devi Temple	Amenities at Manarkad Devi Temple. Comprehensive SWM for main points in Panchayat. Panchayat to be provided funding assistance
Chirakkadavu Grama Panchayat	Ponkunnam Town, Chirakkadavu Temple, Mannanplavu	Toilets in Ponkunnam Town. Cooking, toilet facilities at Chirakkadavu Temple, Mannanplavu ar side. Comprehensive SWM for town and nearby areas. Has 1 acre land in ward 4, but locals oppose an SWM plant here

<i>Panchayat Name</i>	<i>Specific Location, if any</i>	<i>Specific Interventions / Transit / Base camp facilities</i>
Nedumkunnam Grama Panchayat	Sasthamkavu (near maidan and Kovelithodu)	Pilgrim transit facilities (stay, food, toilets, water, medical aid, information, SWM)
Vellavoor Grama Panchayat	Moongani Ayyappa Temple in ward 7	Pilgrim amenity Centre near Moongani Ayyappa Temple in ward 7 in front of Panchayat office, where land is available. Manimala Ar here forms Aarattu kadavu of 3 temples. Check-dam, bathing ghat, SWM facilities required. Panchayat has plans to develop a composting plant at Chillakunnu using Purusha Sahaya Sanghams. Panchayat to be provided funding assistance.
Vazhoor Grama Panchayat	Kodungoor Temple (ward 7)	Pilgrim transit facilities (stay, food, toilets, water, medical aid, information, SWM)
Erumely Grama Panchayat	Erumely Town and Trek Route	Main Base Camp for trekking pilgrims and those who perform 'Pettathullal'. Check dams, pollution control at rivulet in front of temple. Bypass to town, traffic control, comprehensive SWM with composting and upgrading the incinerator to treat inerts/rejects. Regulation of food / water quality required. Public transport facilities to be upgraded. (More detailed interventions in each module).
Kanjirappally Grama Panchayat	Koratti bridge area (manimala ar) in ward 15 Kuruvamoozhi and Vizhikkathodu	Toilets, food, water, SWM at Koratti bridge area (Manimala Ar) in ward 15 Kuruvamoozhi where bathing ghat is already provided and at Vizhikkathodu (ward 16) (also river side). Support to get land and funding SWM facility.
Koottickal Grama Panchayat	Elamkadu (ward 6, Kodunga) bank of Pullaka ar	Toilets, viri, bathing ghats, SWM at Elamkadu (ward 6, Kodunga) bank of Pullaka Ar (draining into Manimala River). Panchayat / puramboke land available
Manimala Grama Panchayat	Manimala Kavu temple in ward 14 and Pondanpuzha (ward 8)	Facilities at Manimala Kavu temple in ward 14 (Manimala Ar runs along) as it is important for Ambalapuzha petta and Aazhipooja, which occurs here. Facilities may be provided at Pondanpuzha (ward 8), which is equidistant from Erumely and Ranni and has valiathodu and ground water sources. At the land earlier proposed for park - social forestry area- EDCs may provide facilities to pilgrims.
Mundakkayam Grama Panchayat	Puthenchanda (ward 3)	Toilets, cooking, viri, bathing ghats and SWM at Puthenchanda (ward 3) where land is available (Manimala Ar side)
Parathode Grama Panchayat	26th mile	Amenities at 26th mile where pilgrims get down and take bus to Erumely. SWM, bathing facilities required. Need support and funding to get required land near NH side
Kaviyoor Grama Panchayat	Kaviyoor temple (ward 11)	Pilgrim amenity centre in Kaviyoor temple (Ward 11). Protection and routine maintenance of Polachira pond required. Toilets, viri, SWM required.
Kunnamthanam Grama Panchayat	Changanassery - Mallappally - Kozhenchery Road.	Improve Changanassery - Mallappally - Kozhenchery Road.
Mallappally Grama Panchayat	Thirumanchira Temple	Pilgrim Amenity centre near Thirumanchira Temple. Bathing ghats and river / side protection to Manimala Ar. (Ward 3). Improved SWM facilities in addition to existing incinerator.

<i>Panchayat Name</i>	<i>Specific Location, if any</i>	<i>Specific Interventions / Transit / Base camp facilities</i>
Nedumpram Grama Panchayat	Manipuzha devi temple(ward 7:podiyadi) and Kodiyadi Sastha Temple (ward 11:Pulikeezh)	Transit facilities at Manipuzha devi temple along Manimala ar (ward 7:podiyadi) and Kodiyadi Sastha Temple (ward 11:Pulikeezh) along Pampa. Funding support to be provided to the Panchayat
Ayiroor Grama Panchayat	Ayiroor Puthiakaavu Temple and ward 7 (Kaithakodi), ward 7(Edathavoor) and ward 13 (Cherukolpuzha)	Pilgrim amenities to be provided at Ayiroor Puthiakaavu Temple as it is Thiruvabharanam main halt point and pilgrim resting area. Facilities to be provided at ward 7 (Kaithakodi), ward 7(Edathavoor) and ward 13 (Cherukolpuzha). Bathing ghats, toilets, viri etc required
Ezhumattoor Grama Panchayat	Thelliyoor kavu temple	Amenities at Thelliyoor kavu temple, especially SWM, toilets. This would become shortest route to Ranni when the bridge construction gets completed.
Omalloor Grama Panchayat	Sree Rakthakanda Swamy temple (ward 7) and / or Panniyali Ganapathy temple	Facilities like toilets at Sree Rakthakanda Swamy temple (ward 7).
Elanthur Grama Panchayat		Improved roads and traffic regulation during 'Thanka Angi' Procession
Cherukol Grama Panchayat	Cheruvallikavu temple	Require bathing ghats for Cheruvallikavu temple, and a pedestrian approach to the river. All along the road need toilets, bathing ghats at Pampa, SWM. Panchayat has built toilets at PHC premises 100m from temple. But no water though source exists. Need support to improve facilities. Panchayat has no fund/land.
Kozhenchery Grama Panchayat		Require toilets, bathing ghats, drains, viri facilities / PAC and SWM at private bus stand. SWM system needs improvement. River protection is essential
Mallappuzhassery Grama Panchayat	Aranmula temple side	Aranmula temple steps are in this panchayat. Toilets, drainage, SWM, support to get land for SWM plant (high land cost). Main route for Thiruvabharanam, Thanka Angi etc, hence important. Prevention of open defecation in Pampa river.
Ranni-Pazhavangadi Grama Panchayat	Ranni bridge kadavu (ward14), Aithara kadavu(ward12), town, Ittiyapara bus stand	Bathing ghats, toilets, drainage, SWM, street lighting at Ranni bridge kadavu (ward14), Aithara kadavu (ward12), town, Ittiyapara bus stand etc. Need funding support annually. Prevent pollution of Pampa
Ranni Grama Panchayat	Ramapuram Temple	Edathavalam at Ramapuram along (Pampa ar). Has puramboke land nearby. Comprehensive SWM system to be provided along with annual funding support. Sewage treatment, bathing ghats, drains, toilets (around 200 in the town) and water supply augmentation required.(PAP)
Ranni-Angadi Grama Panchayat	ward 7(town ward and Manappuram of Pampa river)	Pilgrim amenity centre at ward 7 (town ward and Manappuram of Pampa river), where land could be made available. Need funding support annually. Sewage treatment, check dam, drains, bathing ghats and water supply augmentation required.
Ranni Perunad Grama Panchayat	Sabarimala, Nilakkal, Koonankara	Most important as it holds the Sabarimala temple and Base Camp at Nilakkal. Pilgrim amenity centre of DTPC being developed at Koonankara. Comprehensive SWM system, water



<i>Panchayat Name</i>	<i>Specific Location, if any</i>	<i>Specific Interventions / Transit / Base camp facilities</i>
		supply augmentation, vented cross bar (PAP), drainage and parking bays along the main road, toilets at various places (approx 50 nos) and annual funding support. To be provided active role in carrying out the mandatory functions of local bodies in Sabarimala. Need a cell for the Panchayat in Sabarimala, where death certificates etc for pilgrims can be arranged as required. Funding support to be provided annually. (get 5 lakhs govt grant annually)
Vadasserikkara Grama Panchayat	Cherukavu temple	More parking facilities near Cherukavu temple and DTTC facility and better SWM facility required. (Gets Rs 5 lakhs as Percent grant). Require Water Supply and sewage Treatment System, bathing ghats (Pampa Action Plan) and river protection
Chittar Grama Panchayat		Has a parking ground. Street lighting and SWM required as pilgrims use this route in case of rush. (Gets Rs 5 lakhs as Percent grant)
Seethathodu Grama Panchayat	Angamoozhy	Panchayat constructing Edathavalam at Angamoozhy. Comprehensive SWM and prevention of fly menace. Water from Kakkad ar at Seethathodu to be pumped to Kottapara hill and distributed. Moozhiyar dam to be opened after season. (Gets Rs 5 lakhs as Percent grant)
Naranamoozhy Grama Panchayat	Arakkamon (ward 7and8)	Funding support for buying private land for bathing ghats, comfort station (25 to 50 numbers) at ward 7 and 8 (Arakkamon) near market. Transit facilities, bathing ghats and comprehensive SWM required. (Pampa Action Plan)
Konni Grama Panchayat	Achonkovil - Konny - Angamoozhy route and Muringamangalam Siva Temple	Can use Achenkovil Konny Angamoozhy route (now being developed) as alternate route. Need toilets, SWM at main halt point Muringamangalam Siva Temple. Water available from Achenkoil river.
Aruvappulam Grama Panchayat	Kallelil Siva Temple or Amman Koil	Edathavalam facilities to be arranged at any of the temples: Kallelil Siva Temple or Amman Koil. Road improvement (all routes) is a priority. Panchayat need funds to support.
Pramadom Grama Panchayat	Vettoor Temple	Edathavalam facilities to be arranged at Vettoor Temple. Bathing ghats (being constructed) at Achenkoil ar. Panchayat to be provided funding support
Mylapra Grama Panchayat	Pallipadi	Edathavalam at Pallipadi (Mylapra - Njonnungalpadi thodu to Achenkoil river). Need check dams. Land available. SWM facility required along with funding to buy land. (Land rate high).
Vallikkodu Grama Panchayat	Kaipattor Jn	Has proposal to develop edathavalam at Panchayat land of 40 cents at Kaipattor Jn. Panchayat had informed DTTC and Percent, need fund and permission. Enath - Pathanamthitta road to be made improved to Highway standards
Thannithodu Grama Panchayat	Moozhy	Pilgrim amenities and funding support required as Land is available.
Malayalapuzha Grama Panchayat	Malayalapuzha temple	Main Edathavalam as many pilgrims' visits and this falls in Thanka Angi route. Panchayat spends around Rs 10,000 per annum for street lighting, water, and sanitation. Pilgrim amenity centre construction started. Require comprehensive SWM.

<i>Panchayat Name</i>	<i>Specific Location, if any</i>	<i>Specific Interventions / Transit / Base camp facilities</i>
Pandalam-Thekkekara Grama Panchayat	near Chandanapally pond	Need facilities: Pilgrim amenity centre with toilets etc near Chandanapally pond (Land available). Cleaning and side protection of the pond, SWM and funding support required
Pandalam Grama Panchayat	near Pandalam Palace and Temple	Edathavalam required. Has DTTC amenity centre and toilets, which could be improved. SWM system required
Kalanjoor Grama Panchayat	Kalanjoor Sree Mahadeva Temple	Edathavalams at Kalanjoor Sree Mahadeva Temple. Toilets, bathing ghats along Achenkoil river. Has bus service (KSRTC) from Kalanjoor Temple to Sabarimala. Water supply system to be enhanced - Koodal Water Supply Scheme and better SWM at Edathavalams
Kulanada Grama Panchayat	near Achenkoil river at ward 2: Kaipuzha	Pilgrim amenity centre near Achenkoil river at (ward 2) Kaipuzha exists. Require SWM system and control on sewage disposal to save river from getting polluted.
Aranmula Grama Panchayat	Aranmula Temple	Pampa ar is highly polluted here. Complete facility provision esp. latrines and Monitoring of river at Aranmula Temple. River management required as well as prevention of sand mining and comprehensive SWM. Govt land may be used during season.
Adoor Municipality	Town	Street lighting and Traffic management
Thiruvalla Municipality	Thiruvalla Temple or Municipal ground	Permanent Pilgrim Facilities at Temple land or in the municipal ground. SWM system underway through support of Clean Kerala Mission.
Pathanamthitta Municipality	Thazhevettipuram	Plans a BOT project for providing amenities at 4.5 acre land bought by Municipality at Thazhevettipuram, instead of setting up temporary facilities as is happening every year. Plans a full fledged SWM project and has a biogas plant and dumping yard already. Support for improving facilities and saving the water bodies
Pala Municipality	Town and Kadapattoor Temple	Meenachil river protection and prevention of pollution, management of traffic during season required
Kottayam Municipality	Thirunakkara and railway Station	Edathavalams outside the town, where parking can be provided from where pilgrim tours can be arranged to temples all around Kottayam. Has good SWM system. Parking and transit facilities to be provided near railway station
Changanassery Municipality	Town and Perunna Subramania Swamy Temple	Edathavalam facilities and SWM near Perunna Subramania Swamy Temple.
Vaikom Municipality	Vaikom Temple and Town	Pilgrim Centre being constructed through IDSMT scheme. Drainage system, cleaning/treatment system for water in Vaikom temple pond essential as well as renovation of Aarattu kulam used by pilgrims for bathing. Need to provide toilets near here. Need to implement the Master plan prepared by TP department, which has detailed schemes for traffic mgmt
Thodupuzha Municipality	Town, Sree Krishna Temple	Kodur ar to be monitored for pollution prevention. Require facilities including comprehensive SWM at Sreekrishna Swamy temple in Town.

The maps of Pathanamthitta, Kottayam and Idukki Districts with each colour coded Panchayat based on type of interventions has been produced as **Map 2**, **Map 3** and **Map 4**,

respectively. Color-coded Regional Map showing the spread of recommended interventions has been presented as **Map 5**.

Suggested Interventions in Planning Region 2 and 3 is presented in the table below:

**Table 7 : Suggested Interventions for Planning Region 2 and 3 (2006 - 2015)**

<i>Location</i>	<i>Proposal</i>
Pazhavangady Maha Ganapathy Temple	Information Centre
Padmanabhaswamy Temple	Toilets, Food Check around the Temple A transit camp near Thampanoor for Sabarimala Pilgrims
Aattukal Bhagavathy Temple	Transit Camp for 3000 pilgrims
Kottarakkara Siva and Ganapathy Temple	Transit Camp for 3000 pilgrims
Aryankavu Sri Dharma Sastha Temple	Transit Camp for 2000 pilgrims. Protection of River
Achenkovil Sastha Temple	Transit facilities for 1000 pilgrims Protection of Achenkoil river
Chirakal SreeDharmasastha Temple – Konni	Transit facility in Konni Town or near Elephant Training Centre Linking with other temples in the circuit
Muringamangalam Siva Temple, Konni	Transit camp for 500 pilgrims Better sanitation facilities (Toilets, sewage disposal, SWM) Prevention of River Pollution (Achenkoil)
Karunagapally Sree Mahadeva Temple	Transit camp for 500 pilgrims Better sanitation facilities (Toilets, sewage disposal, SWM)
Ochira Parabrahma Temple	Transit camp for 1000 pilgrims Better sanitation facilities (Toilets, sewage disposal, SWM) Upgrading toilet facilities Protection of water bodies
Chottanikkara	Transit camp for 2000 pilgrims Better sanitation facilities (Toilets, sewage disposal, SWM) Upgrading toilet facilities, Comprehensive SWM system
Guruvayoor Srikrishna Temple	Transit camp for 5000 pilgrims (as per proposed Master Plan) Better SWM system
Chengannur Town	Pilgrim facilities exist. Need more toilets at main junctions: Hospital, KSRTC etc. SWM is essential. Require Sewage Treatment system proposed under PAP
Ambalapuzha	Transit facilities for 1000 pilgrims
Chakkulathu kavu temple	Transit facilities for 3000 pilgrims
Ernakulam Junction	Parking, toilets, other facilities near Railway Station. New approach platform / entry - Vyttila end

#### **4.3.2 Phase 2 (2015– 2050) Interventions**

During the period 2015 to 2050, it is expected that pilgrim management and systematic movement of pilgrims would be in effect based on darshan capacity, as the ultimate aim of any pilgrim management is to provide satisfactory darshan for devotees while conserving the environment which is so closely identified with the Sabarimala pilgrimage. It is expected that the Base Base Camps and Transit Camps would serve the purpose of holding the pilgrims. As the darshan capacity would not undergo a change, total number of pilgrims to be

accommodated in the Base Camps would remain more or less same, except that the Base Camps may need to consider the natural growth of host population. However, the policy decisions and resultant provision of infrastructure and economic activities of successive governments may have an impact on the regional development scenario. This may result in changes in pilgrim movement across the region. For example, in case of realisation of gauge conversion of Thenkasi – Kollam rail route, realisation of Erumely rail route, realisation of certain highways / expressways etc in the region, it would have an impact on the percentage of pilgrims arriving at the Base Camps. In such a case, as the carrying capacity of each place cannot be exploited more, it is proposed to decentralise the facilities in such a way that nearby areas catering to pilgrims be accrued and merged functionally with the proposed Base Camps.

In this scenario, proposed Base Camps would be upgraded by forming Conglomerates with neighbouring areas of pilgrim activity. Interventions suggested for the period 2015 to 2050 has been listed in the following table.

**Table 8 : Suggested Interventions for 2015 - 2050**

**Base Camp Conglomerates:**

<i>Unit</i>	<i>District</i>	<i>Areas included</i>
Primary Base Camp Conglomerate	Pathanamthitta	Ranni Perunad, Ranni, Ranni Angadi, Ranni Pazhavangadi, Naranamuzhi, Seethathodu and Vadasserikkara
Secondary Base Camp Conglomerate	Kottayam	Erumely, Manimala, Chirakkadavu, Kanjirappally, Mundakkayam
Tertiary Base Camp Conglomerate	Idukki	Vandiperiyar, Kumily, Peerumedu, Peruvanthanam

**Transit Conglomerates include:**

<i>Circuit</i>	<i>District</i>	<i>Main Areas included</i>
North Circuit	Thrissur, Ernakulam	Guruvayoor, Mammiyoor, Nalambalam circuit, Kodungalloor Temple and associated temples, Manjapra, Kaladi, Chottanikkara and associated temples / areas
Central Circuit 1	Ernakulam, Kottayam	Vaikom, Kaduthuruthy, Malliyoor, Ettumanoor, Thirunakkara, Panachikkad and associated temples
Central Circuit 2	Kottayam, Idukki, Pathanamthitta	Kadapattoor, Ambara, Anachaal, Thodupuzha, Elappara, Manimalakavu, Malayalapuzha and other areas of importance
Central Circuit 3	Pathanamthitta, Alleppey	Chakkulathukavu, Ambalapuzha, Kozhencheri, Aranmula, Pandalam, Thiruvalla, Ayiroor Puthiakaavu, Perunad and others in the Thanka angi / Thiruvabharanam Route
South Circuit 2	Kollam, Pathanamthitta	Kulathupuzha, Achenkoil, Aryankavu, Konni and others
South Circuit 1	Thiruvananthapuram, Kollam	Padmanabhaswamy Temple, Pazhavangaadi, Aattukal, Sasthamkotta, Ochira and related sites

After 2015, a review of the growth and movement patterns are to be undertaken based on which Development Plans for each conglomerate need to be prepared so as to ensure integrated infrastructure and environmental conservation. In case of Base Camp conglomerates, emphasis would be on water supply, sewage treatment, solid waste management, development of alternate transport routes, concentrated parking and transport in

dedicated services/modes, health infrastructure, emergency access ways and information gateways for pilgrims.

For Transit conglomerates, connectivity, parking and other basic infrastructure, need to be developed. Each of these conglomerates would converge on any of the proposed Base Camp conglomerate.

Development Plan to be made for Transit nodes and main Pilgrim Circuits with detailed

- Transportation plans: Including route planning, bus and train integration and parking
- Amenity Planning: Accommodation, parking, hospitals and emergency arrangements
- Services: Solid Waste Management, sewage, drainage, water supply arrangements

#### 4.4 Guidelines for Facility Provision

##### 4.4.1 Development Guidelines for Proposed Base Camps

These would have well-developed townships based on the requirements and would be linked with nearby other main base/transit areas.

**Table 9 : Development Guidelines for Proposed Base Camps**

<i>S No:</i>	<i>Base Camps</i>	<i>Population Considered</i>	<i>Type of Facilities required</i>
1	Nilakkal in Ranni Perunad Panchayat along with Pampa as Transit area	Nilakkal: 1,00,000 Pampa (including Cherianavattom, Valianavattom): 5,000 (2000 staff and 3000 pilgrims trekking from Erumely)	<u>Nilakkal</u> : Parking, accommodation (pilgrims and support staff including drivers), toilets and bathing, sewage and solid waste treatment, water supply, shuttle services between Nilakkal and Pampa <u>Pampa</u> : Accommodation and support facilities for staff and Pilgrims trekking from Erumely, Parking for service vehicles, transit facilities for 5000 pilgrims
2	Erumely Panchayat with Town and Peruthodu	Erumely Town and Peruthodu : 35,000	<u>Erumely</u> : Accommodation and support facilities, parking, traffic regulations, transport services to Nilakkal, replanning the town to accommodate religious activities, environmental improvement, water supply, ensuring river flows and cleansing capacity Peruthodu: Parking, hotels, shops, water, toilets, viri Kalaketti – Transit Camp for 5000 pilgrims
3	Sathram in Vandiperiyar Panchayat with Vandiperiyar town and Uppupara as Transit area	Sathram: 10000 Vandiperiyar: 5000 Uppupara: 2000	Sathram: Parking, accommodation (pilgrims and Staff), toilets and bathing, sewage and solid waste treatment, water supply, shuttle services between Sathram and Vandiperiyar Vandiperiyar: Parking, facilities for support staff including drivers Uppupara: Transit facilities such as toilets, bathe area, viri, hotel, shops for pilgrims; additional facilities: drinking water, toilets for 1,00,000 pilgrims on Makaravilakku day

##### 4.4.2 Development Guidelines for Other Areas

Following table presents the guidelines and scheme layouts for development of transit camps and other areas

Table 10 : Development Guidelines for Other Areas

<i>Type of Intervention</i>	<i>Population Considered</i>	<i>Type of Facilities required</i>
Main Transit Camps – Transit Nodes	Transit: 20,000 a day	<p><i>(Sabari Yatra Scheme)</i></p> <p>Amenity Module would comprise of an info kiosk with computer connectivity of area 5sqm, first aid centre (9sqm), shops of size 6 sqm selling essential commodities, cooking platform of 6 sqm and a hotel / restaurant of size 15 sqm (with a pantry / kitchen of 9sqm), viri area of 2500 sqm, toilets (20 no: s of area 2 sqm for each), water supply, a well maintained and planted open to sky / partly covered assembly area (for bhajans, annadanams etc), Water, Sewage, Solid Waste Treatment facilities and parking</p> <p>Total: 0.3 Ha minimum plot area (structure-multi-storeyed) plus parking space</p>
Main Transit Camps: Religious Nodes	Transit: 5,000 a day	<p><i>(Sabari Thavalam Scheme)</i></p> <p>Amenity module as above:</p> <p>Total: 0.3 Ha area (one to two storied) and around 1 ha to be arranged for parking</p>
Transit Camps	100 to 500 a day	<p><i>(Sarana Theeram Scheme)</i></p> <p>Amenity Module would comprise of an info kiosk with computer connectivity of area 5sqm, first aid centre (9sqm), a shops of size 6 sqm selling essential commodities, cooking platform of 6 sqm and a hotel / restaurant of size 15 sqm (with a pantry / kitchen of 9sqm), viri area of 150 to 800 sqm (double bunks), toilets (5 no:s of area 2 sqm for each), water supply (micro schemes), Solid waste Managements, sewage disposal</p> <p>Total area: 0.1 ha (single storied) and around 0.1 ha to be arranged in the vicinity for parking</p>
Facility Augmentation	To fill the gaps in infrastructure / facility supply as per specific requirement at Panchayat level	<p><i>(Sabaripatham Scheme)</i></p> <p>Road Improvements, Water Supply, Sanitation, Solid waste Management, First Aid</p>
General Interventions	Locations / main routes identified in each Panchayat	<p><i>(Pradakshinam Scheme)</i></p> <ul style="list-style-type: none"> <li>▪ Routine Road Maintenance and Traffic Control at main junctions</li> <li>▪ Street Lighting, Road Signages and Info boards during Main Pilgrim Seasons</li> <li>▪ Regular Checkup of Food and Water Quality in way side eateries</li> <li>▪ Database on Casualty Facilities and Road Accident Care centers at all Police Stations</li> <li>▪ Alternate road map to skip each Panchayat area in case of emergencies</li> <li>▪ Pilgrim Information Kiosks (<i>Darshana Sahayi</i>) along Main Roads at distance of 10kms from each other</li> </ul>

#### 4.4.3 Environmental Protection and Enhancement

##### *Protection of Rivers:*

- Implementation of interventions mentioned in Pampa Action Plan for local bodies abutting the river
- Inclusion of projects on water supply, sanitation and pollution prevention in Erumely Panchayat also in the Pampa Action plan
- Preparation of detailed action plans for Muvattupuzha, Manimala, Meenachil, Pampa, Achenkovil Rivers

- Implementation of proposed interventions as per the detailed action plans for respective rivers with priority to those location/areas mentioned in Table 3.
- Control on sand mining.

*Protection of Forests:*

- Closing vehicular movement corridors through forests and discouraging any such corridor
- Ensuring facilities and amenities along the routes
- Pilgrim activities in forest areas to be supported by Eco-development committees (EDCs). This includes facility provision, monitoring and awareness generation using local EDCs.

**4.4.4 General Guidelines for all Base / Transit Camps**

- No building should be constructed within 50m of water bodies ( with exception for requirement related to religious customs and water supply i.e. pump house)
- Rows of shading tree are to be planted on both side in the shoulders of the pathways/ roads all along the Main Street and secondary streets. Trees should be planted at a minimum interval of 10 meters.
- The minimum width of the footpath should be 3 meters. Additional width of 2m should be provided in shopping areas to allow for activity spillovers.
- The minimum ROW for all main roads in Base Camp should be 12 meters and 9 m for secondary roads
- Minimum parking space for service vehicles should be provided. The minimum parking requirement for each car and truck is as follows (as per Standards)
  - Car : 3 x 6 m (when individual parking space is required) and 2.5 x 5 m when community/group parking space is required)
  - Truck : 4 x 10 m
  - Tractor: 3.5 x 7.5 m
  - Ambulance: 3.5 x 7 m
  - Fire Fighting Service Vehicle: 4 x 10 m
- All the utilities should be placed underground in suitable horizontal ducts with manholes at suitable intervals so as to facilitate easy repair and maintenance without much disturbance and resurfacing works.
- All other areas such as main activity areas in the local body purview should conform to norms and standards prescribed by Kerala Municipal Building Rules (KMBR) for any construction to be undertaken and should respect any existing Master Plans drawn by competent authority designated for the purpose (Town Planning Department / Development Authority etc).

**4.4.5 General suggestions on the Typology of development and Institutional Structure**

- Focus on conserving natural features and trees
- Minimal constructions in upgradable modules
- Precast construction techniques to be employed so as to effect easy construction during season, dismantling and storage for next season after use
- Minimise cutting of trees
- Build around the trees and features
- Rain water conservation and utilisation of alternate energy sources

- Minimal pavements or surfacing. Use natural materials and systems which would allow water percolation
- Trek paths to retain ambience
- Efforts to recreate ambience
- Environmental upgradation measures after peak pilgrim season
- Ban on use of eco-unfriendly materials in all routes and areas recommended for development and promote the use of organic / ecofriendly materials
- Awareness campaigns using EDCs or local Self Help Groups
- Provision of facilities along forest edges by Eco-Development Committees
- Local Committees to be formed under the Development Standing Committee of each local area to monitor the facility provision, its use and environmental protection and upgradation attempts
- Local committees to ensure restricting multiple access to rivers and forest areas
- Adequate warning boards and direction signages to warn the pilgrims of the danger in using certain areas/ rivers and to guide them to the nearest amenity centre
- Waste management through local Self Help Groups such as 'Kudumbasree' or specific 'Purusha Sahaya Sangams' (Men's Self Help Groups)

Compiled list of interventions with phasing (perspective 2015 and 2050) is presented as Table 11.



## **ANNEXURES**

### **Annexure 1: Terms of Reference and Questionnaire for Pilgrim Perception Survey**

#### **1. Terms of Reference**

##### **Background and Purpose**

Sabarimala is situated on the mountain ranges of the Western Ghats, at an altitude of 914 m above sea level. The shrine dedicated to Lord Ayyappa attracts thousands of pilgrims of varied castes and creed, from all over India especially from parts of Southern India. Mandalapooja and Makaravilakku are the two main events during the main pilgrim season, which is from mid November to mid January. The Temple remains closed during the rest of the year, except for the first five days of every Malayalam month and during 'Vishu' in April. Men of all ages are allowed inside the temple but women only below 10 years and above 50 years of age are permitted inside.

Planning for all present and future developmental requirements at Sabarimala necessitates an accurate assessment of the need and demand of pilgrims visiting the Sabarimala shrine during the peak pilgrim season in the month of November, December and January. This data is the most critical input based on which conspicuous approach could be derived for Master Plan preparation which will ultimately address all issues and problems in its righteous way.

In this perspective Ecosmart intent to entrust the assignment for carrying out the primary survey to ascertain the Pilgrim's perception and expectations with respect to development related to Sabarimala, to an experienced agency/institution/survey consultant who would not only conduct the surveys but also would bring out a professional and technically sound report which could be directly used and relied upon as a critical input for the preparation of Master Plan.

##### **Objective**

The objectives of the study are:

1. To ascertain the Pilgrim Characteristics
2. To understand Movement pattern, Transit requirements of the pilgrims during the peak season
3. To ascertain the needs and demands of the pilgrims / people with respect to developments related to Sabarimala
4. To bring out detail checklist of development requirements related to Sabarimala and to priorities it.
5. To apprehend peoples expectations
6. To bring out structure, effectiveness, and needs of development related to Sabarimala

##### **Proposed Outline Methodology**

1. Survey of Pilgrims at various Modal Interchange points
2. Stakeholder Consultations with Various Departments / Agencies working at Sabarimala (Focus Group Discussions)
3. Stakeholder Consultations with Various Departments in charge of providing facilities to Sabarimala pilgrims off the core area (ie. area outside Pampa, Sannidhanam, Nilakkal)

Main Modal interchange points include:

1. Railway Stations: Ernakulam, Kottayam, Alapuzha, Chengannur, Thiruvalla
2. Towns and Cities / Places: Ernakulam, Kottayam, Erumely, Vandiperiyar, Alapuzha, Trivandrum, Kollam, Pathanamthitta, Kumily, Thrissur, Palakkad
3. Other Places / Areas : Nilakkal, Sathram, Uppupara, Vadasserikkara, Pandalam, Kaladi, Guruvayur, Chottanikkara, Vaikom

However, consultant – with their knowhow about the area and the intensity of the problem may suggest alternate methodologies / survey locations. Further, location and modalities may be changed in case of any perceptible requirement after the preliminary week evaluation of the survey results.

## **OUTPUTS**

- 1) A comprehensive survey report, in English, shall contain, but not be limited to:
  - 3 Introduction: Including the purpose of the survey and summary of the contents of the report.
  - 4 Summary and analysis of survey results: Overview and assessment, both quantitative and qualitative, of survey data; e.g.,
    - Data Reporting and Results of perception survey in general.
    - Overview and assessment of the experience and perceptions of officials, clients, and the public/pilgrims of the effectiveness of, and demand for, development related to Sabarimala.
    - Assessment and prioritizing development requirement with respect to sabarimala and the region of influence.
  - b. Conclusions and Recommendations: How to improve the effectiveness of, and satisfy the demand for, development related to Sabarimala.
  - c. Annexes: Including survey questions, detailed sampling and survey methodology, tables of survey data, etc.
- 2) A summary report, in English, which shall be in addition to the main report and should contain the key findings and key recommendations of that report.

## **Other Modalities**

The Survey teams shall, in close consultation with the survey methodology expert designated by the Ecosmart:

- a) Collect and review all related survey reports associated with Sabarimala development in order to better define the contents of the surveys.
- b) Prepare representative surveys on the nature, effectiveness, and demand for developments related to Sabarimala, based upon scientific sampling principles and taking appropriate measures to offset against any bias in the responses, of a combination of sizable natural persons in a representative cross-section of region.
- c) The survey sample may be drawn from:
- d) All section of Pilgrims, a cross-section of all religious and linguistic sections related to Sabarimala.

- e) Staff across various departments associated with Sabarimala pilgrimage, local citizens and people's representatives.
- f) Such other classes of person as may be recommended by the survey methodologist / or after discussions between the Client ("Ecosmart") and the Consultant ("Survey Agency")
- g) In determining the relative numbers of each class of persons to be surveyed, the consultant team should focus on such respondents as are likely to yield specific and detailed information about the nature, effectiveness, and demand/need for development related to Sabarimala.
- h) The surveys prepared may combine in-depth one-on-one interviews with respondents with simpler survey forms that may be completed by the respondents themselves. The surveys should include questions that elicit such details about the respondents themselves as is necessary to enable meaningful analysis of the data.
- i) In order to facilitate collection of survey data, some regional workshops may be organised to collect information from state or organisation officials.
- j) The consultant team shall analyse the survey data to ascertain any trends, as well as isolate error, and relate such trends to current mandate, capacity or resources in order to make recommendations as to how these might be changed to bring about improve effectively, if this is deemed appropriate, as well as identifying any other issues (e.g., public information) that might usefully be addressed in order to improve the effectiveness of, and satisfy the demand for, required facilities/services/developments at various levels for facilitating the Sabarimala pilgrimage.
- k) Draft the survey report in English, based upon results of the surveys, as well as based upon any directions and guidance provided by the Ecosmart and other Stakeholders.
- l) Revise and improve the draft survey report in light of comments from the Ecosmart and Stakeholders.
- m) Prepare the final edited version of the survey report in standard, plain English in electronic format using MS Word. British English spellings are to be employed in the English version.

## QUALIFICATIONS

The Survey team shall collectively include the following qualifications:

- University degrees in social sciences
- Strong knowledge of the relevant institutions and organisations
- Demonstrated experience in carrying out social surveys and knowledge of survey methodology
- Extensive experience analysing data and preparing analytical reports
- Experience in conducting workshops
- Demonstrated experience in organisational assessment and management
- Ability to work with a broad range of individuals from diverse institutions and different levels
- Good interpersonal skills and team spirit
- Fluency in spoken and written Malayalam and English
- Fluency in spoken/good understanding of Tamil, Kannada, Telugu and Hindi
- Familiarity with developmental projects and political setup in Kerala.

## Logistics And Responsibilities

1. The consultant team shall have the primary responsibility for organising and conducting the survey. The consultant team will work independently, but in close consultation with Ecosmart and providing full access to - the survey methodology expert designated by the Ecosmart. The consultant team shall be accountable to Ecosmart for performance of all tasks and the quality of the outputs and shall provide sufficient and competent staffing to ensure the timely completion of the surveys and report.
2. The Ecosmart shall support the consulting team in carrying out the survey. Representatives of the Ecosmart shall refer and introduce the consultant team to such agencies or organisations as is necessary for the purposes of the survey. The Ecosmart shall provide the consultant team with such additional logistical support as may be required for the purposes of the survey.
3. The Ecosmart shall provide the consultant team with any relevant background documents and reports in order to assist with the preparation of the surveys and finalisation of the survey report; e.g., relating to the developmental aspect with respect to Sabarimala. Such documents and reports shall be used for the purposes of review only and not for other purposes without the permission of the Ecosmart.
4. The Ecosmart shall provide logistical support for any workshops held to facilitate the collection of survey data.
5. The consultant team shall prepare the final edited versions of the reports in standard, plain English in electronic format using MS Word. Where changes are made to the draft survey report, such changes shall be tracked in the text of the final survey report. Standard statistical softwares (preferably softwares such as **SPSS**) may be used for analysis of survey data.
6. The consultant team shall prepare and provide the Ecosmart with drafts of the work plan and schedule, survey forms, and draft survey report for approval.
7. The consultant team shall forward the Ecosmart a copy of their draft survey report in electronic format.
8. The Ecosmart shall provide their comments, if any, in written or verbal form to the consultant team and the consultant team shall revise the draft survey report based upon those comments.

## Schedule

1. Within a week of signing the contract, the consultant team shall develop a preliminary work plan and schedule in close consultation the survey methodology expert designated by the Ecosmart, and these shall be presented to and approved by Ecosmart.
2. In two days from approval of the work plan and schedule, the consultant team shall prepare the survey forms in close consultation with the survey methodology expert designated by the Ecosmart, and these shall be presented to and approved by Ecosmart Alternately, sample form

would be circulated by Ecosmart and could be reviewed and modified and used by the consultant after intimation.

3. The survey methodology expert designated by the Ecosmart shall monitor the progress of the survey throughout. Survey is ideally expected to be conducted during the period December (after award of work and finalizing the modalities, methodology and survey forms) to February 25 (after temple closure).
4. Two weeks after completing the survey, the consultant team shall deliver the draft survey report to the Ecosmart
5. Within one week of receiving the draft survey report, Ecosmart shall provide their comments to the consultant team.
6. Within one week of receiving the comments, the consultant shall revise the draft report and resubmit the finalized report to the Ecosmart in book format (hard copy) as well as in electronic format (soft copy).
7. The schedule may be changed with the agreement of the Ecosmart including an extension of the survey upon the recommendation of the survey methodology expert and with the agreement of the consultants.

#### NOTE

All materials produced pursuant to these activities shall be the property of the Ecosmart and shall not be reproduced without the prior permission of this agency.

## II: Questionnaire for Pilgrim Perception Survey

### Sabarimala Master Plan

#### Client:

Govt. of Kerala

#### PERCEPTION SURVEY

(RESPONSE OF PILGRIMS FROM PROJECT AREA)

Name of Interviewee:	_____
Address of Interviewee:	_____
Phone:	_____
Name of Interviewer	_____ Day _____
Date	_____ Time _____

*Sabarimala Ayyappa temple is one of the most famous pilgrim centre in the state of Kerala. The pilgrim arrivals to Sabarimala are ever increasing year after year which have stressed the infrastructure to its limits. Due to the unique location of the temple in the environmentally fragile area and considering the extreme pilgrim flow during the peak season (usually from mid November to January), it is necessary to prepare an all-encompassing master plan for Sabarimala to streamline the development and pilgrim activities in the region. Hence, strategic efforts and interventions may be necessary to address the sustainable development of this sacred site.*

#### General instructions

No column should be left blank (fill it with zeros)

If information is larger than box size, then write exact information along with the box and enter 9 in the box.

**PART I: GENERAL INFORMATION**

1. Form No. <table border="1" style="display: inline-table; width: 100px; height: 20px; vertical-align: middle;"><tr><td style="width: 25px; height: 20px;"></td><td style="width: 25px; height: 20px;"></td><td style="width: 25px; height: 20px;"></td><td style="width: 25px; height: 20px;"></td></tr></table>					2. Zone No. <table border="1" style="display: inline-table; width: 100px; height: 20px; vertical-align: middle;"><tr><td style="width: 25px; height: 20px;"></td><td style="width: 25px; height: 20px;"></td><td style="width: 25px; height: 20px;"></td><td style="width: 25px; height: 20px;"></td></tr></table>				

**3. Details about Pilgrim/group.**

	Male	Female	Total						
No. of group Members	<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>			<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>			<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
No. of children's	<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>			<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>			<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		
No. of Senior person (above 60's)	<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>			<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>			<table border="1" style="width: 40px; height: 20px;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>		

1. Where are you coming from?  
Place: \_\_\_\_\_ State: \_\_\_\_\_
2. Since how long have you been visiting Sabarimala?  
(a) First Time (b) Second time (c) Every year since \_\_\_\_\_ (d) Specify: \_\_\_\_\_
3. Which is the usual period during the season you visit Sabarimala?  
(a) Mandalakalam (b) Mandalapuja (c) Week ends during peak season (d) beginning of Malayalam month (e) Specify: \_\_\_\_\_
4. Do you come in a group or all alone?  
(a) Group (b) Alone
5. Route followed for onward journey?
6. Route followed for return journey?
7. Temporary halting stations during onward journey?
8. Temporary halting stations during return journey?
9. Which transportation means did you take?  
(a) Bus (Chartered service/Public service) (b) Train and Bus  
(c) Car, Jeep, tempo etc (d) Others: \_\_\_\_\_
10. How long do you stay at Sabarimala?  
(a) Return same day after Darshan (b) One day (c) Two days (d) Specify: \_\_\_\_\_
11. Where do you stay at Sabarimala?  
(a) Sannidhanam (b) Pampa (c) Nilakkal (d) other Locations: \_\_\_\_\_
12. Which are the other places you visit usually while travelling to Sabarimala and back? (please tick the places where they go and add the places which is not in the list given below)  
Places: Erumely, Vandiperiyar, Uppupara, Sathram, Chottanikkara, Guruvayoor, Chakulathakkavu,  
Others: \_\_\_\_\_
13. Which are the routes you take to reach Sabarimala? (specify the major places along the route)
14. How long it takes from your place of stay to reach Sabarimala?  
(a) < 6 hours (b) >6 hours but < 12 Hours (c) > 12 hours but < 24 hours (d) >24 hours

PART II- ASSESSMENT OF DEVELOPMENT

15. What do you think are the most important aspects at Sannidhanam and Pampa to be improved upon?
- Safety
  - Health
  - Transportation
  - Sanitation
  - Accommodation and related facilities
  - Pilgrim traffic Management at Pampa- Sannidhanam
  - All of the above
  - Other : (Specify) \_\_\_\_\_
- A. Why do you think so? (State the reason in brief)
- B. Which one aspect do you think if taken upon and implemented on priority basis will bring upon considerable improvement in the situation? (Select from Q-11)
- Safety
  - Health Facilities
  - Transportation facilities
  - Sanitation
  - Accommodation and related facilities
  - Pilgrim traffic Management at Pampa- Sannidhanam
  - All of the above
  - Other : (Specify) \_\_\_\_\_
- C. Why do you think so? (State the reason in brief)
16. Do you feel any change in the situation this year from the past year? If so what are those?
- More facilities at Nilakkal- Pampa - Sannidhanam,
  - Others: (specify) \_\_\_\_\_

PART III- ASSESSMENT OF INFRASTRUCTURE FACILITIES

17. What are the basic amenities/facilities you would look for in Sabarimala?
- Toilets
  - water Kiosk
  - Oxygen Parlours
  - Information Kiosk
  - cloak room
  - communication facilities
  - health
  - parking
  - others
  - resting place/ accommodation
18. What are the other facilities you would like to see at
- Nilakkal
  - Pampa
  - Sannidhanam
19. How do you think access to the Sannidhanam to be improved (list choices / facilities to be provided)
20. Would you like to have rope ways for pilgrim transportation or only for goods transportation? Why do you think so? (specify the reason in brief)
21. What are the improvement (present facilities) you would like to see in
- Sannidhanam
  - Pampa
  - Nilakkal
  - Other location

22. What are the problems you face with quality of / in accessing any of the following facilities:

S.No	Infrastructure Facility	Type of problem
1	Sewerage	
2	Drainage	
3	Solid Waste Disposal	
4	Electricity/Lighting	
5	Transport	
6	Accommodation Facilities	
7	Medical facilities	
8	Food	
9	Convenience shopping	
10	Parking spaces	
11	Any other (Please specify)	

23. What is your preferred source of drinking water? Please (✓)

Source	Individual	Group
Bore well/ hand pumps		
Drinking Water Kiosk/Tap		
Medicated Water		
Bottled water		
Surface water/others		

24. Do you face any problem in receiving water for consumption? Yes/No

i) If yes, what are the problems? (Quantity / Quality)

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25. Why do you think people go in for open defecation even though toilets are provided? What do you think is the effective method to counter such practices? (specify the reason in brief)

a) inadequate no: of toilets b) lack of cleanliness c) personal habit d) lack of awareness e) specify:

26. How do you dispose your solid waste?

(a) Dispose of in Bins if there (b) Forest area (c) Dump in along the side of road  
(d) Dispose it of in the nearest bin available (e) others (specify)

27. What forms the bulk of your solid waste?

(a) food waste (b) Plastic waste (c) Paper/thrash waste (d) others (specify)

28. What is the average per day per person expense of yours in Sabarimala? (travel, food, etc other than religious rituals related)

(a) < Rs 100 (b) >100 but < 200 (c) >200 but < 300 (d) >300 but <500 (e) > 500

29. How much do you spend on the following infrastructure facilities?

S.No	Infrastructure Facility	Amount spent/year
1	Water	
2	Food	
3	Accommodation	



4	Health
5	Travel
6	Any other (Please specify)

30. Could circulation at Sannidhanam be improved? If yes, how?  
 (a) Rearranging the queue (b) Queue Complex with toilet facilities (c) Rearranging activities at Sannidhanam (like shifting of Appam Aravana complex from near the temple)

31. Do you think that only essential facilities be provided at Sannidhanam and Pampa? ( food, shelter, toilets health and the like)

(a) Yes (b) No

32. i) Do you think that some landuses need not be permitted at Sabarimala / trek route / Pampa? Yes/No

ii) If "Yes" – which ones are those

- (a) Shops with consumer items  
 (b) Essential items  
 (c) Accommodation  
 (d) Parking  
 (e) Specify: \_\_\_\_\_

33. Opinion about facilities and amenities at Sannidhanam

(a) Very good (b) Good (c) Fair (d) Bad (e) Very bad

34. How do you rate the transportation facilities provided?

A. From Railway stations / Towns to Pampa / Sabarimala

(a) Very good (b) Good (c) Fair (d) Bad (e) Very bad

B. In and around Sabarimala

(a) Very good (b) Good (c) Fair (d) Bad (e) Very bad

C. Nilakkal to Pampa

(a) Very good (b) Good (c) Fair (d) Bad (e) Very bad

35. From where do you have food?

a. Hotel/restaurant b. Bring it along c. self cooking d. others

36. I) Where do you cook?

(a) Pampa (b) Sannidhanam (c) Nilakkal (d) Specify : \_\_\_\_\_

ii) If -self cooking– Why?

(a) Cost (b) Hygiene (c) Non availability of food of their choice d) religious reasons  
 (e) specify: \_\_\_\_\_

37. Where do you take the water for cooking?

Source	Individual	Group
Bore well/ hand pumps		
Drinking Water Kiosk/Tap		
Bottled water		
Surface water/others		

38. Type and source of fuel for cooking?

(a) Kerosene (b) Gas (c) wood (d) others (Specify)

39. Is there any suggestion for facilitating cooking?

- (a) Place for renting out utensils, and all items required for self cooking  
 (b) Places for purchasing fuel for cooking  
 (c) Others: \_\_\_\_\_

40. i) Any suggestion regarding accommodation facility to be provided?

- (a) Type  
 (b) Character  
 (c) Others: \_\_\_\_\_

ii) What all are your suggestions for its improvement?

41. Do you read / follow instructions / signages? Yes/No

If not, why

PART IV- PERCEPTION ON NEED FOR VARIOUS FACILITIES AT SABARIMALA

42. Nature of existing facilities in Pampa and Sannidhanam

Type of facility	Frequency of Visit*	Given a choice, rank them in order of preference	Percent Amount Spent, in each of these activities.
<b>Amenities</b>			
Toilets			
Water Kiosk			
Information Kiosk			
Service counters			
security			
<b>Commercial</b>			
Hotel/restaurants			
Book shop			
General store			
Leisure Shopping			
Music article vendors			
Fair and Exhibition			
Health			
Communication			
Others			
<b>Outside (Pampa and Sannidhanam)</b>			
Shops			
Comfort stations			
Information Kiosk			
Others (specify)			
Health / communications / disaster management			

\*Frequency: once daily, twice daily, frequently, Occasionally-7: N.A-8

43. How many people normally accompany you? Adults \_\_\_\_\_ Children \_\_\_\_\_

PART V- PERCEPTION ON DEVELOPMENT OF SABARIMALA

44. What in your opinion should be the activities which should come up in Sannidhanam: *(The activities suggested below should only form a guideline and not restrict the answers)*

Suggested Activities	Whether wanted	Priority
<b>Shop</b>		
Hotels		
Restaurants		
Tea shops		
Utensil shop		
Medical shop		
Shops catering to religious		
<b>Other Facilities</b>		
Health center		
Oxygen Kiosk		
Nadapanthal		
Information kiosk		
Prasadam Counter		
Communication facilities		

45. What in your opinion should be the activities which should come up in Pampa: (*The activities suggested below should only form a guideline and not restrict the answers*)

Suggested Activities	Whether wanted
<b>Shop</b>	
Hotels	
Restaurants	
Tea shops	
Utensil shop	
Medical shop	
Shops catering to religious	
<b>Other Facilities</b>	
Health centre	
Oxygen Kiosk	
Nadapantal	
Information kiosk	
Prasadam Counter	

#### **PART VI- PILGRIM MANAGEMENT**

46. Would you prefer a Pilgrim Management System in Sabarimala?
47. What type of system do you prefer?
48. Do you think that such a system can improve your pilgrimage experience?
49. Any example/case example of a sample system which you would prefer. (No system / regulated flow from Base Camps/regulated flow only from Trek route to Sannidhanam)
50. How do you think *darshan* facility can be improved?
- Reorganizing Sannidhanam Activities
  - Reorganizing Queuing system at Sannidhanam
  - Any other (specify)
51. Any perceived changes in temple ambience over the years and suggestions on most suited development.
52. Do you have any specific other suggestion/recommendation for Sabarimala development?

**III: Details of FGDs conducted post season***General Checklist Questions: for FGDs*

## One to one Interview queries:

1. Setup of the agency / organisation at Sabarimala throughout the year
2. Special office arrangements during the pilgrim seasons at Pampa, Sannidhanam, Erumely, Vandiperiyar, Nilakkal / other relevant areas
3. Activities overseen / Service Provided by the Agency / Organisation (During Off season, lean and peak seasons)
4. Other agencies who are in close association with the agency / organisation in concern
5. Approximate Area occupied by the Agency / Organisation for its activities (including office space, stay facilities, temporary sheds, parking etc and for providing services)
6. No: of staff employed (classification during peak / lean / off seasons)
7. Proposed Future activities/ schemes to serve the areas better / proposals to improve the scope of services of the agency / organisation

*FGD queries:*

1. Proposed optimal area requirements and the proposed / projected future use while replanning respective areas (areas suggested for improving most essential staff / support staff and facilities managed by the agency)
2. Main issues related to the agency's operations at respective places
3. Main environmental issues faced by / created by the agencies services
4. Suggestions to improvise the services by the agency / organisation
5. Suggestions on improving the pilgrim facilities and ambience of Sabarimala
6. General perception on issues of critical concern at Sabarimala and other places of maximum pilgrim concentration
7. General perception on improved facilities to be developed at Sabarimala: Type of facility, time span
8. General perception on type of monitoring and support required for ensuring better services, while protecting the environment

*Agencies / Organisations to be interviewed / discussed with (Field offices)*

1. Public Works Department
2. Forest Department
3. Kerala Water Authority
4. Kerala State Electricity Board
5. Travancore Devaswom Board
6. Kerala State Pollution Control Board
7. Irrigation / Water Resources Department
8. Post and telegraph Department
9. Local Self Government (Panchayat)
10. Police Department
11. Fire and Rescue Department
12. Health Services
13. Telecom Service Providers
14. Hospitals
15. Food Providers
16. Hotels / Restaurants etc
17. Small Shops
18. NGOs and religious organisations who are involved in service provision: such as Ayyappa Seva Sangham, Mata Amritanandamayi Madom, Sathya Sai Seva Sangh, NSS, and others, other private organisations who are involved in maintaining and operating services

## **Annexure 2: Results of the Comprehensive Perception Survey and Assessment of the Structure, Effectiveness and Needs of Development Related to Sabarimala.**

### **BACKGROUND**

The objective of the Master Plan for Sabarimala is to provide basic pilgrim facilities while conserving the pristine environment at Sabarimala. The Swami Ayyappa temple and its immediate precinct is considered to be the spine of the project influence area, which is spread over about 25 hectares.

The Sabarimala Master plan has been initiated to address some of the larger concerns that the State Government and the MoEF has always been striving for viz. better quality facilities for millions of pilgrims visiting the shrine annually by providing quality infrastructure; development of missing major functional nodes and thus creating healthy religious practices; development of pilgrim comfort and service facilities along with changing needs, expectations and affordability/socio-economic spectrum of pilgrims and local communities. These are conceived to be integral aspects of the Master Plan, with focus on environmental holding capacity and resource generative potentials pointing towards sustainable long-term development of the Sabarimala region. Scientific studies coupled with consultative approach have been considered to be the *corner-stone* towards visioning the new development paradigm for Sabarimala.

### **PURPOSE OF THIS REPORT**

The survey has been designed to capture the perception / views of the pilgrims visiting the holy shrine regarding all aspects of Sabarimala pilgrimage. It is based on the concept that any plan should be dovetailed to aim towards fulfilling the needs the demands of the primary stakeholders, in this context; namely the pilgrims. Opportunities for development in Sabarimala are proposed to be based on the strong rationale viz. potentials and preferences leading to realistic perspective of the demand and fashioning the developmental process on a priority basis. This report presents all this with specific focus on Demand Assessment.

### **SURVEY COVERAGE**

Specifically designed survey questionnaire was used to survey the pilgrims so as to capture their demands and views on Sabarimala development. Pilgrims Demand/Preference Assessment Surveys in the main project influence area –(Sannidhanam, Pampa, Nilakkal, Erumely) and transit areas (mainly covering the four districts of Ernakulam, Kottayam, Alappuzha and Kottayam) have been conducted on a sample basis during December 2005 – January 2006 and during the lean season February – March 2006. Efforts were also made to collect related secondary data as available from various published sources of the Percent, Devaswom etc., and other existing relevant study reports. In addition, sample questionnaires were dispatched over post to prominent guruswamy's / periyaswamy's who had been visiting the shrine since decades and also to service agencies outside Kerala who provide facilities to the pilgrims. Opinion surveys of peoples representatives, local people, shop owners, those who render various services / or are associated with the pilgrimage in any manner and the staff and officials of various agencies engaged in services at Sabarimala and other project influence areas were also carried out.

The type of primary demand/preference assessment surveys conducted and the sample sizes adopted are given under:

S.No.	Type of Survey	Sample sizes
1	Pilgrim Survey in Project area	856
2	Pilgrim Survey in Transit points	263
3	Local population Opinion survey	26
4	Staff opinion survey	76
5	Opinion survey from various social cultural organizations	9
6	Opinion of various other stakeholders	7
7	Opinion survey of service providers	10
8	Opinion survey of commercial establishments and Market Associations	43
9	Religious Institutions	10
10	People's Representatives/Visionaries/Govt. Officials	12

Further to above data base on pilgrims, population, work force, transport system and network, mobility and trip patterns, etc are also collected. Other primary surveys conducted include traffic volume survey, speed and delay surveys, parking studies, reconnaissance and facility assessment at transit areas, pedestrian activity surveys, imaginability study, origin-destination surveys on major corridors connecting the project area. In addition, the road network inventory survey of these corridors was also conducted to appreciate the potentials for upgradation. These are covered in respective modules.

The questionnaires used for primary surveys are given at Annexure 1 of this module.

The focus of surveys has been to elicit the characteristics, the opinion, and the preferences and thus assess potentials towards fixation of priorities. The responses received could be rated good and give fairly appropriate insight on the demand of the pilgrims as required for finalization of Master Plan proposals.

## APPROACH AND FRAMEWORK

### Domain

The framework conceived to address the vital issue of demand assessment deals with macro and micro levels, with analysis being made both at aggregate and disaggregate levels. It may be noted that the project is conceived to be developed with time and the area under consideration. Given this, it is pertinent and important that larger issues of concern are comprehended to define the role and function of each area of importance to Sabarimala pilgrimage, be considered appropriately.

Planned endeavours with realistic inbuilt components of built-up systems and sub-systems leads to sustainable settlement development. Present effort on preparation of a Master Plan for Sabarimala for guiding its development in its rightist manner is one such major effort. The dimensions of project of this nature could be many. Endeavour of this scale and size will have to be necessarily understood and analysed to assess the vast opportunities it is going present in the form of latent and generated demands. Further, key element is accessibility of Sabarimala, in relation to the present trip making behaviour of the pilgrims.

### Potential

The macro aspects like population of the Sabarimala region, Pilgrim population and the extent the activities here affect the economic base of this region are likely to govern and guide the development requirements here. These dynamics are appropriately incorporated in our analysis by broadly

assessing the pilgrimage characteristics. Adding to this are the functional disposition of activities and land uses in Sabarimala and the present socio-economic and travel patterns, vis-à-vis the accessibility. Analysis on these aspects is made to clearly present the potentials and needs of the pilgrims. Other externalities which would govern the demand are increasing trend of pilgrim population arrivals along with increased commercial and retail activities which sustain the livelihood of local community in Sabarimala and henceforth the potential demand for additional infrastructural facilities and amenities.

### **Preferences**

The responses received are analysed at disaggregate levels by each survey type. The respondent's characteristics together with their preferences in terms of the strengths and weaknesses are analysed and presented.

### **Perspective**

The potentials assessed together with preferences expressed are consolidated to present a *demand perspective* of the project by broad functional categories of the project components. This effort is made to clearly assess the range of demand based on time factor.

### **Priorities**

The prospects for Sabarimala development have been conceived and composed during the process of concept formulation itself. The concept plan was accepted by all stakeholders and became the base document for transfer of immediately required land for development. It may be noted that many suggestions had been put forth during the concept plan stage. By taking this thinking forward in this report, effort has been made to define the acceptability of each specific proposal at user end i.e. at the pilgrim level; which is again supplemented with demand assessed by broad activity types over planning time periods / horizons.

### **Objective of Demand/Preference Assessment Surveys**

The development issues stated so far has been studied from the point of view of the observed facts and preliminary studies under taken. However, the actual *concept* for development and *planning* for development needs to be undertaken based on the preferences or the needs stated by the potential users namely the pilgrims. In order to do so, extensive interaction with the different groups of people, who are likely to be associated with the project, needs to be undertaken. In order to accomplish this, detailed primary demand/perception assessment surveys were conceived.

The major objectives of the demand/perception assessment survey are the following:

- To identify the missing pilgrim facilities in Sabarimala;
- To identify the basic pilgrim amenities to be provided in Sabarimala, so as to make it welcoming for visiting pilgrims as well as prevent the misuse and disuse of space and environmental components;
- To understand the preferences for each activity and amenity as perceived by the pilgrims as well as the local communities, so that the Sabarimala development is envisaged and planned to cater to the actual needs and demands;
- To assess the scope of setting up crowd management measures.
- To suitably incorporate other suggestions of the interviewees on Sabarimala development (conceptualization as well as design).

With the above stated objectives, the survey formats have been designed so as to get relevant responses from the various categories of stakeholders. The formats, in certain instances, have been left open ended for capturing the thoughts of the people, without restricting them.

## Respondent Groups

**Respondent Groups:** In order to assess the demand correctly, the target groups for interview need to be identified with great care, coupled with the design of questionnaires. The target groups identified for the demand assessment surveys are as follows:

### iii) Pilgrims

- Local Pilgrims (pilgrims from Kerala) at Pampa and Sannidhanam
- Local Pilgrims at base camps such as Erumely, Nilakkal, Vandiperiyar etc
- Pilgrims from other States at Pampa and Sannidhanam
- Pilgrims from other States at base camps such as Erumely, Nilakkal, Vandiperiyar etc
- Pilgrims at various major transit nodes like Ernakulam, Kottayam, Pathanamthitta, Thiruvananthapuram, Alappuzha, Kollam etc
- Pilgrims visiting during lean seasons

### ii) Local Households

- Other Local resident population including the Attathodu colony

### iii) Others

- Pilgrim Tour operators from other States
- Social/religious organizations associated with Sabarimala
- Commercial establishments at Sabarimala –Temporary/Permanent
- Educational institutions who undertake researches in topics associated with Sabarimala
- People's representatives / visionaries / government officials
- Shopkeepers associations and Business houses operating in Sabarimala.
- Staff and service providers

## Interview Focus by respondent Groups

Each target group for interview has been identified in order to get the required feedback for project development. The survey formats have been designed for smooth and easy interaction with the interviewees. The focus of the interview by each of the target groups is as follows:

### a) Pilgrims:

The Pilgrims have been interviewed to get feedback on:

- Percentage composition of pilgrims from various areas of origins
- Major destinations en-route to Sabarimala
- Budget allocated for the Holy trip and their affordability and willingness levels viz a viz the cost levels at Sabarimala
- Frequency of travel as Pilgrim
- Opinion on major development initiatives required at Sabarimala

The pilgrim categories interviewed are pilgrims from other States (captured both at Sabarimala and at major transit nodes during the peak season), Local pilgrims from within the State of Kerala (captured both at Sabarimala and at major transit nodes during the peak season) and the pilgrims visiting during



lean season. The responses of the pilgrims visiting during lean season have been observed to be very limited, and hence have been omitted from the analysis. This may be attributed to comparatively less pilgrim influx, lesser stay duration and lesser demand for facilities during the lean days.

### **b) Local Households**

The Local resident population within the Sabarimala region has been interviewed with a focus on:

- Infrastructural facilities and public utilities not available to them;
- Their preferences on the services/amenities to be provided in Sabarimala
- Their perception of the Sabarimala development
- The willingness to and extent of their participation Sabarimala Related activities

### **c) Others:**

In this category, a wide range of target groups have been identified with different objectives.

- i) *Pilgrim Tour Operators*: They are expected to know the pilgrim circuits, the major pilgrim destinations, which the pilgrims visit en-route, as well as their feedback on Sabarimala Development, along with their preferences on the type of facilities to be developed at Sabarimala.
- ii) *People's Representatives/Visionaries/Government Officials*: The feedback from this group is very vital, as they have been involved in the policy related decision making, at some point of time in their career. Their feedback on the growth of the pilgrimage, factors inhibiting its growth, facilities required to boost the same as well as their feedback on the project is very precious. Their view on how the project should be developed has also been recorded.
- iii) *Educational institutions* associate research in topics associated with Sabarimala: The teaching professionals are expected to be more objective in their thinking and decision making and hence they have been interviewed to understand their perception on the project along with their preferences on the extent and type of development required here.
- iv) *Commercial establishments, business houses at Sabarimala –Temporary/permanent*: To understand the operational aspects and their willingness to provide better services if basic and well planned infrastructure is provided.

## **Sampling Procedure**

The sampling procedure, which has been adopted for conducting the demand/perception assessment survey, has been so designed to achieve a representative sample the responses of which could be relied upon while planning amenities and facilities here.

### ***Pilgrims***

In order to capture a representative perception on development at Sabarimala, it was proposed to cover a sample of about 1percent of the Pilgrims from other State and 1percent of the local pilgrims, in and around Sabarimala. Separate sampling of local pilgrims were carried out as they also form hosts to the pilgrimage and hence clear understanding of their preferences and views on development need to be captured. The number of pilgrims who visited Sabarimala in the month of December and January during the representative day of the previous peak season was compiled and the sample size estimated, which has been presented in the table below:

### Pilgrim Sampling Procedure

Major Transit/base camp/Place	Pilgrims from outside		Local pilgrims	
	<i>Per day Total Pilgrims approx on a representative day</i>	<i>Target Sample</i>	<i>Per day Total Pilgrims approx on a representative day</i>	<i>Target sample</i>
<b>Peak season</b>				
Sannidhanam	32000	320	10000	100
Pampa	30000	300	10000	100
Nilakkal	9000	90	9000	90
Erumely	8000	80	1000	10
Vandiperiyar	1600	16	200	2
Kottayam	5000	50	2000	20
Pathanamthitta	6000	60	2000	20
Ernakulam	7500	75	2000	20
Alappuzha	1600	16	400	4
Kollam	5000	50	2000	20
Thiruvananthapuram	5000	50	2000	20
<b>Lean season</b>	1000	10	4000	40
<b>Total proposed</b>		<b>1117</b>		<b>446</b>
<b>Total Achieved</b>		<b>896</b>		<b>416</b>

The Pilgrim visitations during lean season were subjected to a total of 50 interviews. The responses of the pilgrims visiting during lean season have been observed to be very limited, and hence have been omitted from analysis. This may be attributed to comparatively less pilgrim influx, lesser stay duration and lesser demand for facilities during the lean days.

### Household

The household samples in the Panchayat area have been decided on random basis with respect to their proximity to the Pilgrim activity zones. The survey sample though small in proportion where to comprehend the apprehensions and expectations of the people in this region with respect to Sabarimala development. The households in Attathodu colony, and resident population around Nilakkal were selected for interviews. Due to limited time and resources, the sample size for these two categories was fixed at 10 and 15 interviews, respectively.

### Other Categories

For the other categories, no systematic procedure has been adopted. A reasonable number of interviews to be undertaken have been fixed and an attempt to achieve the target has been made.

## SURVEY RESULTS

This section presents the results of the demand/Perception assessment survey. The ensuing sub-sections, states in brief, the major highlights of the analysis.

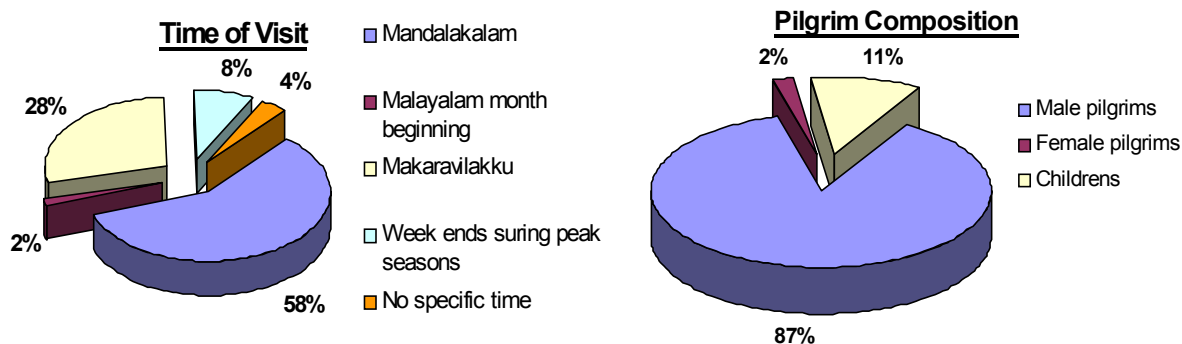
### Profile of Pilgrims

#### Profile of Pilgrims from Other States

Of the total pilgrim interviewed 26percent where from within the state and rest 74percent from outside the state.

The pilgrims from other States have been captured both within and outside the Sabarimala region. The required number of pilgrims could be intercepted for interview as the survey was conducted during the season. Of the total number interviewed, it has been observed that most of the pilgrims originate from Tamil Nadu (28percent), Karnataka (21.78percent) and Andhra Pradesh (21.6percent). Other pilgrims interviewed were from Maharastra, Pondicherry, Orissa and even Malaysia. The most preferred time of visit by 58percent of the pilgrims across the section has been *Mandalakalam* or Mandalapooja period.

Almost 88percent of pilgrims interviewed where in “groups” of sizes varying from minimum of 2 to maximum 108 number of pilgrims per group for pilgrims from Karnataka, minimum 2 to maximum of 115 numbers for pilgrims from Tamil Nadu and minimum 2 to maximum of 184 numbers for pilgrims from Andhra Pradesh. The average group size recorded had been 16 but the largest group size recorded during the survey was of 184 members, from Old city of Hyderabad, Andhra Pradesh.



Preferred Time of visit of Pilgrims from Other States

Composition of Pilgrims from Other States

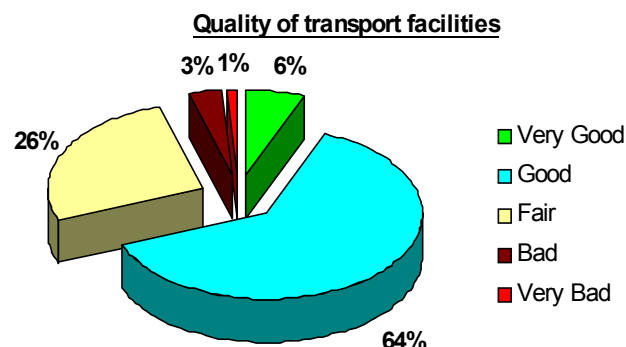
Almost 5percent of the total pilgrims from other States are first-time visitors to Sabarimala. Among the total, about 40percent have visited Sabarimala less than 5 times but majority i.e 60percent have visited more than 5 times. The maximum number of visit by an individual recorded is 56 times (a devotee from Sivakasi Tamil nadu had been visiting Sabarimala since 1950).

Pilgrims who have visited Sabarimala more than twice comprised 98percent of those from Karnataka who were interviewed, 96percent from Tamil nadu and 97.4percent from Andhra Pradesh. But in total almost 97percent have visited here more than once. Among them almost 21.4percent claim visitation every year. Among the devotees from other States, repeated visits to Sabarimala (>10 times in recent past) is seen to be high among the pilgrims from Tamil Nadu with 34.6percent followed by Karnataka (29.3percent) and Andhra Pradesh (21.4percent).

**Mode of Travel:** About 48.12percent of the pilgrims prefer to move by car, jeep or tempo, whereas about 37.10percent prefers bus and train mainly for long distance travel. Air transport has been the least preferred mode. It is strange to observe that certain trips are being performed on foot and even by cycle, from adjacent areas of Tamil Nadu.

About 96percent of the pilgrims were satisfied with the quality of transport facilities provided by the State.

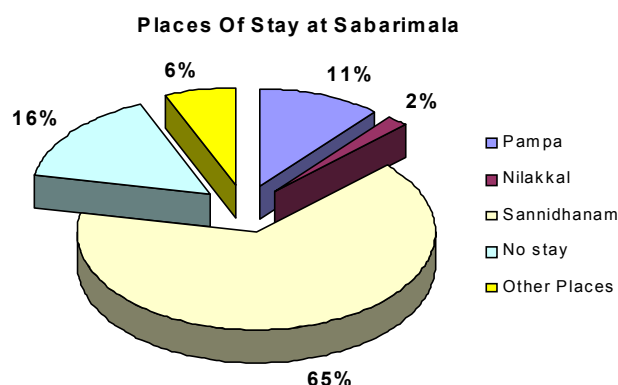
Mode	Percentage of Respondents
Air	0
Rail and Bus	37.10
Car, jeep, Tempo	48.12
Bus	14.27
Others (walking, cycle, auto rickshaw, moped, bike etc)	0.51



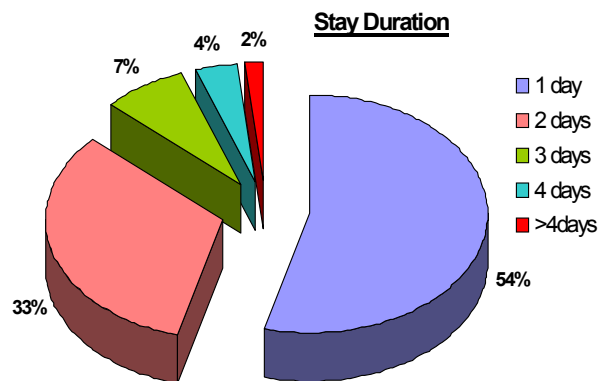
Pilgrims Perception on the Quality of Transport facility provided

Of the total pilgrims, about 29.75percent takes break journey at various halting stations, such as Guruvayur (21.67percent), Erumely (12.62percent), Kottayam (8.56percent), Kuttalam (4.59percent), and other religious locations en-route Sabarimala.

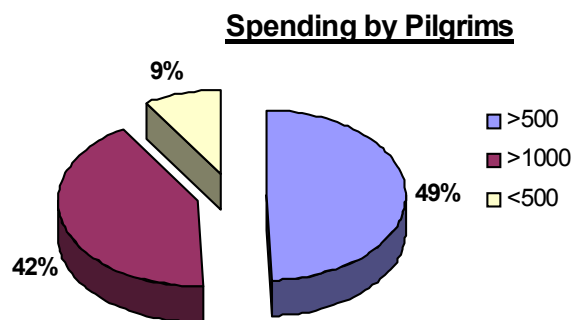
**Stay details:** Pilgrims from other states stays longer than the local pilgrims at Sabarimala. The stay duration ranges from 1 to 2 days, with the maximum stay observed being 8 -10days. Almost 82.43percent of the pilgrims surveyed stated that they stay for at least one day at Sabarimala, Pampa or Nilakkal. Of this almost of 65.13percent of the pilgrim stay at Sannidhanam, 11.22percent at Pampa and 2.72percent at Nilakkal. Those who stay at Sannidhanam claimed that they do it because they fail to get *darshan* at the first chance or for viewing *Makarajyothi*. They remarked that facilities for stay are meager but however, they prefer to wait in such conditions as proper waiting facilities are absent.



Places of Stay by Pilgrims in Sabarimala



Duration of Stay By pilgrim at Sabarimala



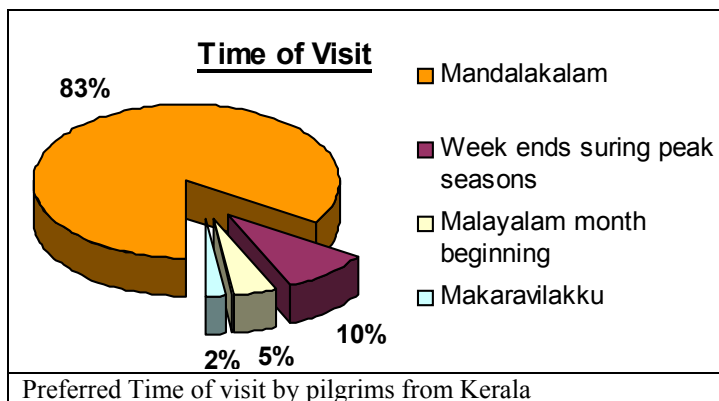
Expenses incurred by Pilgrims for the pilgrimage

**Spending:** Most of the pilgrims remarked that per head expense incurred by them for their trip to Sabarimala is more than Rs. 500 (even >Rs 1000). The heads of expenditure by various groups from

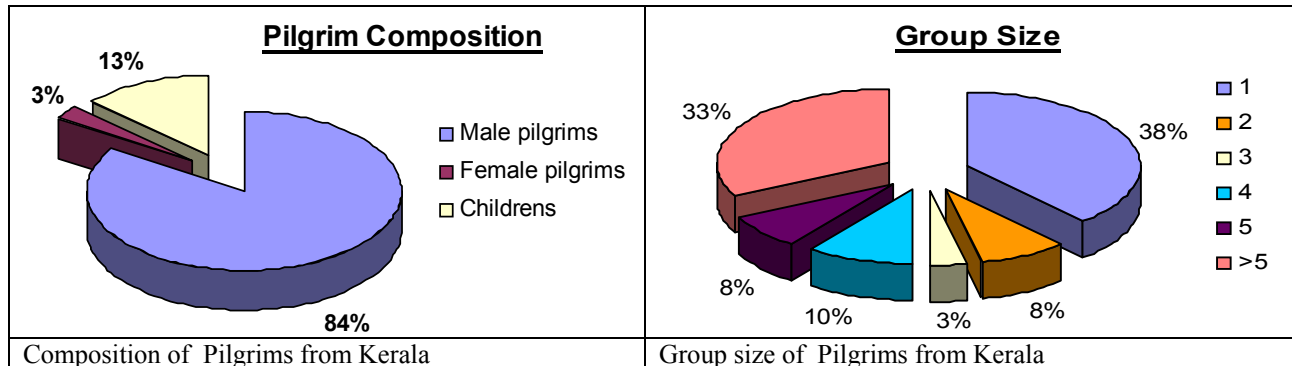
different States are noted different. Travel from farther areas such as Andhra Pradesh has shown maximum expenditure, where almost 42percent spends more than Rs 1000 on travel alone. The maximum expense stated by those surveyed was Rs. 5000 per head (Expenses were on food, travel and accommodation). Of the total amount spent, almost 60percent had been on travel and 30percent for food and water alone with only 10percent spent other heads including stay expenses.

**Profile of Pilgrims from Kerala**

**Pilgrim Profile:** Pilgrims from within the State have been interviewed at locations both within and outside the Sabarimala region. Of the total pilgrims interviewed, majority were found to be from central and northern parts of Kerala. The most preferred time for visiting Sabarimala for these pilgrims is Mandalakalam. It has been observed that only 2percent of the pilgrims from the State visits Sabarimala during the Makaravilakku period.



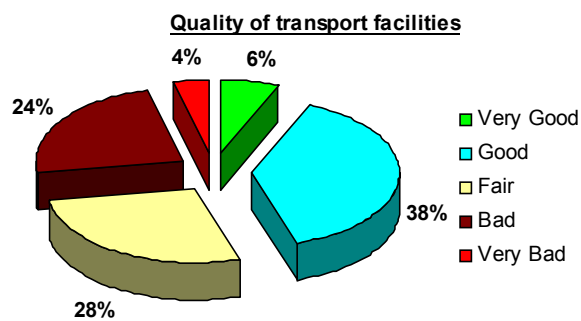
Almost 38percent of pilgrims interviewed were those who visit individually (not in groups) where as the remaining 62 percent were in groups with an average group size of 6. Among those surveyed, largest group comprised of 76 pilgrims from Malappuram.



Only 9percent of the pilgrims are first time visitors while almost 35percent of the pilgrims had visited Sabarimala more than 5 times. Almost 91percent have visited here more than once and among them, 14.56percent claimed that they visit annually.

**Mode of Travel:** Most of the pilgrims (60percent) prefer to move by car, jeep or tempo, whereas about 40percent prefer bus mainly for long distance travel. Other means including private buses, auto which are preferred by less than 1percent of the pilgrims.

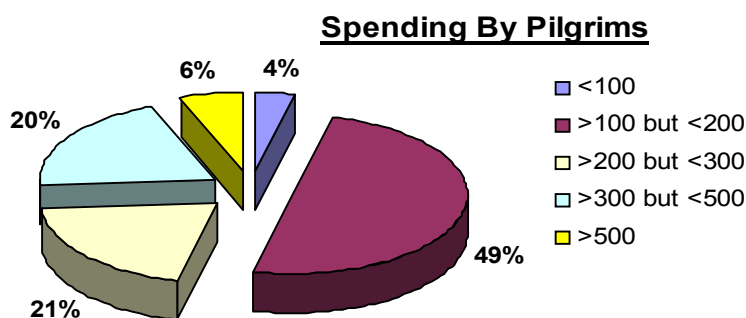
Mode	Percentage of Respondents
Rail and bus	0.61
Car, jeep, Tempo	59.86
Bus private	0.65
State Bus	38.65
Others (walking, cycle, auto rickshaw, moped, bike etc)	0.23



Pilgrims View on Quality of Transport facility provided

**Stay details:** Longer stay of the local pilgrims in Sabarimala area is less. Almost 93 percent stated that they return home the same day after *darshan*. Maximum duration of stay at Sabarimala by local pilgrims has been recorded as 3 day.

**Spending:** About 64percent of the local pilgrims remarked that expense incurred by each of them for their trip to Sabarimala was below Rs 300. The maximum expense stated was Rs. 600-700 per head by those who chartered car/van/buses to come to Sabarimala. Of the total spent, only 12percent had been for food and water while major heads of expense were transportation and stay.



Spending pattern by a average local Pilgrim

**Pilgrim’s perception on developmental aspects**

**Improvement aspects:** The pilgrim across the sections expressed maximum concern over the poor condition of existing sanitation facilities. The second most prominent issues were safety and security.

Improvement aspect	Preferences for additional amenities at Sabarimala																																
<table border="1"> <caption>Prioritization of Issues based on Pilgrims Perception</caption> <thead> <tr> <th>Issue</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Sanitation</td> <td>57%</td> </tr> <tr> <td>Safety</td> <td>21%</td> </tr> <tr> <td>Health</td> <td>9%</td> </tr> <tr> <td>Accommodation</td> <td>8%</td> </tr> <tr> <td>Transport</td> <td>3%</td> </tr> <tr> <td>Pilgrim Management</td> <td>2%</td> </tr> </tbody> </table>	Issue	Percentage	Sanitation	57%	Safety	21%	Health	9%	Accommodation	8%	Transport	3%	Pilgrim Management	2%	<table border="1"> <caption>Preferences for additional amenities at Sabarimala</caption> <thead> <tr> <th>Amenity</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>toilet</td> <td>37%</td> </tr> <tr> <td>communication facility</td> <td>29%</td> </tr> <tr> <td>health</td> <td>9%</td> </tr> <tr> <td>information kiosk</td> <td>9%</td> </tr> <tr> <td>water kiosk</td> <td>4%</td> </tr> <tr> <td>oxygen parlors</td> <td>3%</td> </tr> <tr> <td>resting place</td> <td>3%</td> </tr> <tr> <td>parking</td> <td>3%</td> </tr> </tbody> </table>	Amenity	Percentage	toilet	37%	communication facility	29%	health	9%	information kiosk	9%	water kiosk	4%	oxygen parlors	3%	resting place	3%	parking	3%
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Prioritization of Issues based on Pilgrims Perception	Preferences for additional amenities at Sabarimala																																

**Amenities in Lookout:** The most prominent needs of the pilgrims are good toilet facilities and better communication facilities. Location wise requirement of amenities is as follows:

At Nilakkal: Good toilet, parking ground, taxi service, resting place, better hotel facilities, space for self cooking and accommodation cottages. Among these, 65percent of the pilgrims voiced their demand for toilets, lodging and parking whereas almost 20percent of the pilgrims had no specific suggestion.

At Sannidhanam: Comfort station along with resting places, cleanliness, good water supply, fire wood and queue management system. Almost 35percent of the respondents stated that no additional facilities are required to be provided at Sannidhanam. About 67percent of the pilgrims stated the need for more *Nadapanthal* facilities / resting areas.

At Pampa: Good toilets, parking ground, cloak room, resting places, better hotel facilities, space for self cooking and accommodation cottages. Among these, the need for toilets and parking facilities were voiced by 55percent of the respondents whereas almost 15percent of the pilgrims had no specific suggestion.

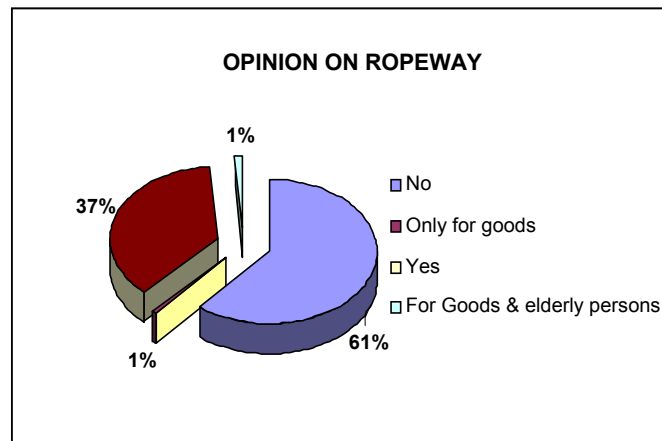
Following figure depicts the general perception of pilgrims coming to Sabarimala with respect to need of various amenities in Sabarimala.

<p><b>Additional Toilet Requirement</b></p> <p>89% Yes, 11% No</p>	<p><b>Water Kiosk</b></p> <p>63% Yes, 37% No</p>	<p><b>Oxygen Parlour Requirement</b></p> <p>65% No, 35% Yes</p>
<p>Pilgrims opinion on need for toilets</p>	<p>Pilgrims opinion on need for Water Kiosk</p>	<p>Pilgrims opinion on need for Oxygen parlour</p>
<p><b>Information Kiosk</b></p> <p>54% No, 46% Yes</p>	<p><b>Cloak Room</b></p> <p>69% No, 31% Yes</p>	<p><b>Communication Facilities</b></p> <p>97% No, 3% Yes</p>
<p>Pilgrims opinion on need for Information Kiosk</p>	<p>Pilgrims opinion on need for Cloak Room</p>	<p>Pilgrims opinion on need for Communication Facilities</p>
<p><b>Health facilities</b></p> <p>85% No, 15% Yes</p>	<p><b>Resting Area</b></p> <p>66% No, 34% Yes</p>	<p><b>Parking Requirement</b></p> <p>89% No, 11% Yes</p>
<p>Pilgrims opinion on need for Health Facilities</p>	<p>Pilgrims opinion on need for Resting area</p>	<p>Pilgrims opinion on need for Parking Facilities</p>

**Ropeway Acceptability:** Only 39percent of the respondents agreed to the concept of rope way but with certain reservations such as:

- Only to be use for goods transport
- May help old people (above 60’s), the invalid and the children to get to Sannidhanam

About 61percent expressed their strong agreement to the idea that ropeway would not fit the religious convictions existing here. In their perceptive, as ropeways are mainly suited for picnic or recreational purposes it may motivate the pilgrim ‘tourists’ to throng this place. Such a system would also disrupt the sensitive and fragile environment here.

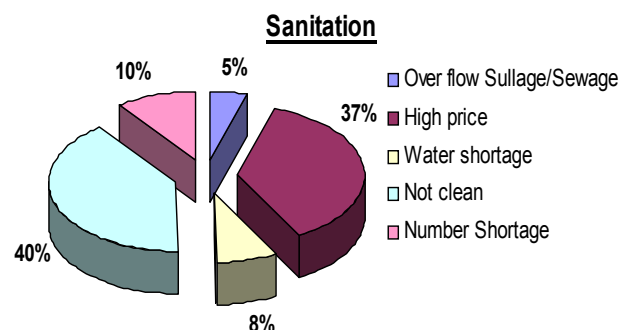


Perception of Pilgrims on Ropeway

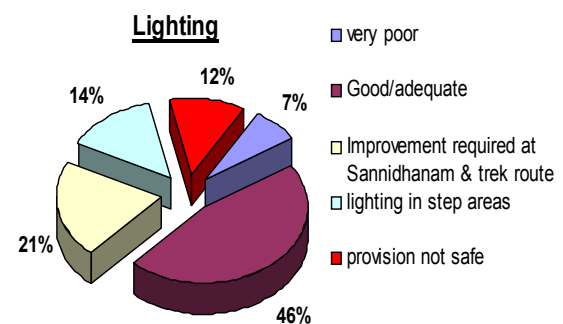
**Improvement required:** The respondents were critical about the urgent requirement to improve upon the safety, security and cleanliness aspects along with the crowd management at various locations at Sabarimala. Most of them cited poor health and hygiene conditions prevailing in most of the pilgrim activity centers at Sabarimala. The respondents expressed the need to improve upon the existing resting places along the trek routes.

**Infrastructure:** Most of the respondents did not show any specific concern towards the effectiveness of existing sewage treatment facilities, drainage facilities, solid waste management or lighting. But in general, all respondents agreed to the fact that safety and security along with health and hygiene are the priority areas where focused developmental initiatives are required. Pilgrims expect medical services, basic accommodation and food facilities. Most of the respondents feel that both bottled water and water kiosks should be provided. Most of the respondents stated that they had not felt any water shortage but they doubt the quality of the water supplied. Most of the respondents stated that the main reason for open defecation is non-availability of good toilets in required numbers. Most respondents felt that proper awareness along with some enforcement (as some people are habitual to such practices which need to be regulated) of proper hygiene behavior could help in reducing this practice.

The pilgrim’s perception on various services and infrastructural provisions are as follows

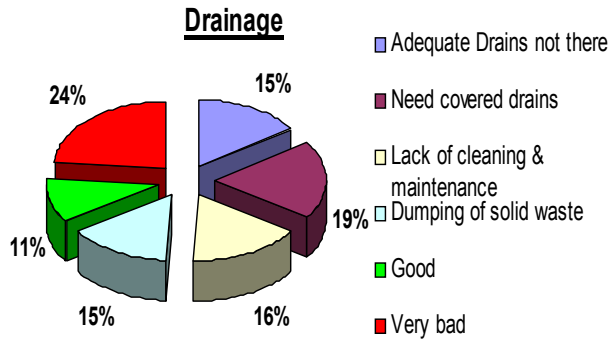


Pilgrims Perception on Problems associated with sanitation

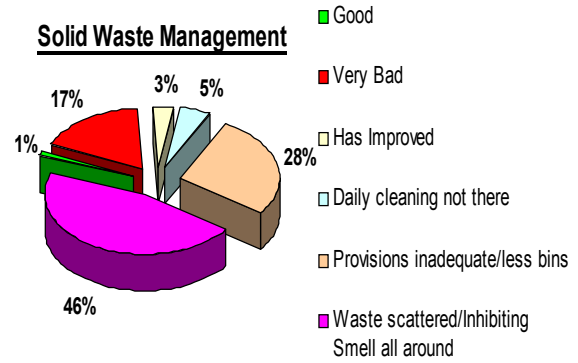


Pilgrims Perception on Problems associated with Lighting

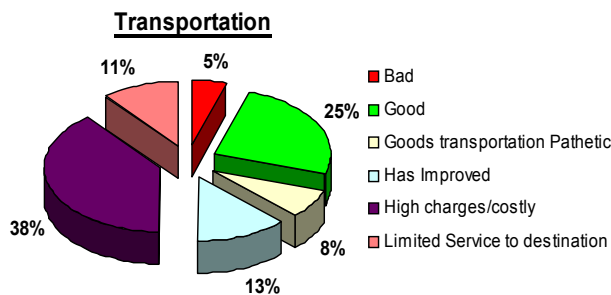




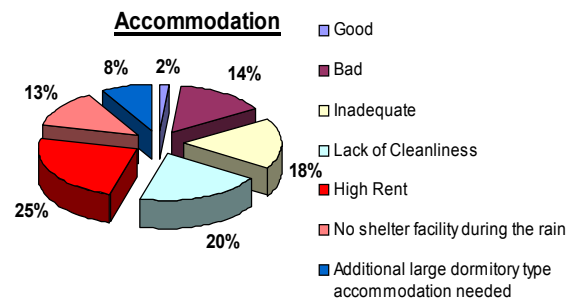
Pilgrims Perception on Problems associated with sanitation



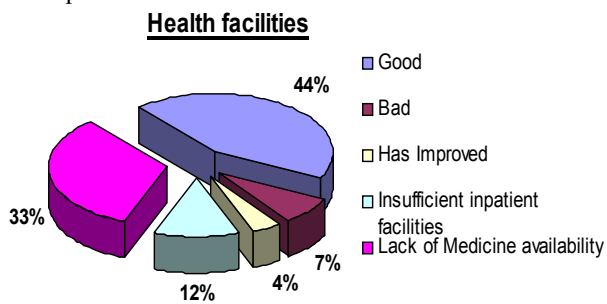
Pilgrims Perception on Problems associated with SWM



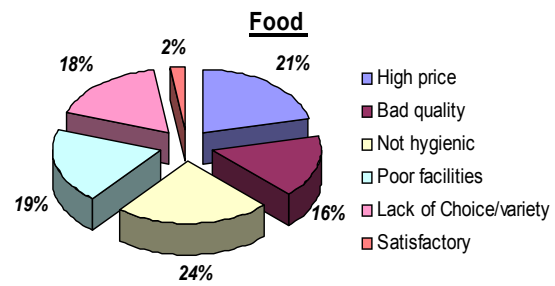
Pilgrims Perception on Problems associated with Transportation



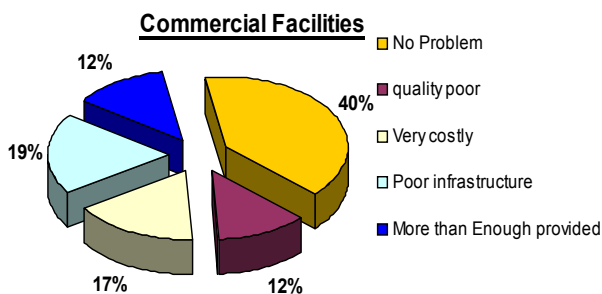
Pilgrims Perception on Problems associated with Accommodation



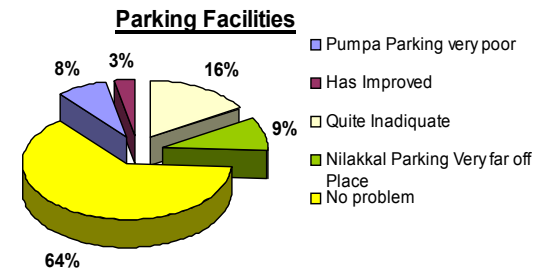
Pilgrims Perception on Problems associated with Health facilities



Pilgrims Perception on Problems associated with Food Facilities



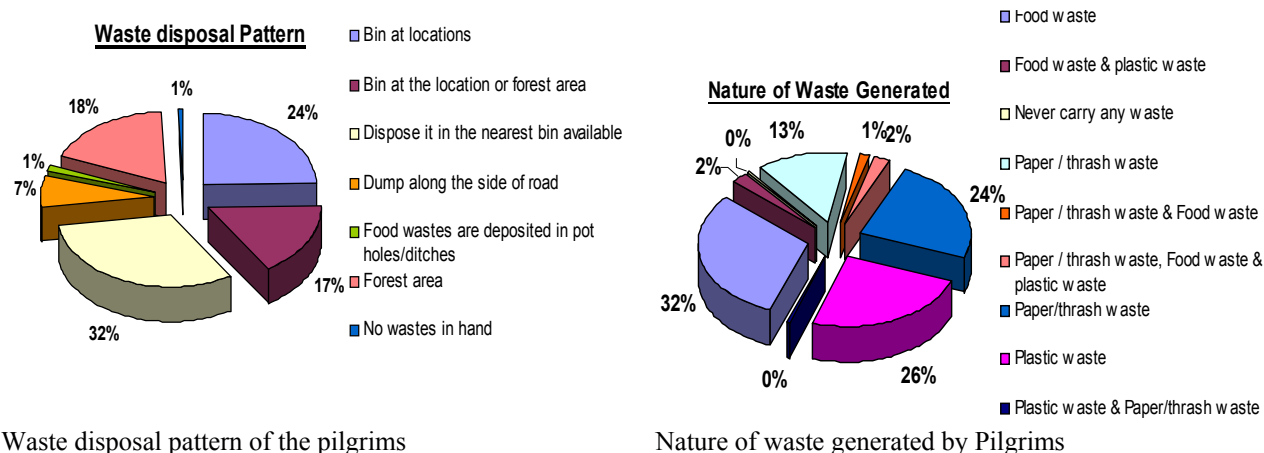
Pilgrims Perception on Problems associated with Commercial facilities



Pilgrims Perception on Problems associated with Parking facilities

**Solid waste management:** Most of the respondents stated that they dispose off the waste in the bins provided and if not provided in any other convenient place. Only 16.77percent of the respondent stated that if the bins are not accessible, they carry the waste until they find a proper place to dispose it. Almost 31.12percent stated that they dispose it in the forest. Most problematic and the common

waste generated by the pilgrims are organic waste in the form of food waste along with paper and thrash. Plastic wastes in the form of plastic kits and pet bottles form the bulk of inorganic waste.



Waste disposal pattern of the pilgrims

Nature of waste generated by Pilgrims

**Sannidhanam Improvement:** Almost 36.78 percent of the respondents stated that the amenities provided at Sannidhanam are good, but most of them pointed out the poor maintenance and lack of hygiene. About 55 percent of the pilgrims interviewed stated that accommodation facilities may be arranged at other locations than Sannidhanam, while 30 percent stated that commercial establishments except those selling *pooja* related things and essentials goods may be shifted out of Sannidhanam. About 80 percent of the respondents agreed to the suggestion that there was an urgent requirement to rearrange the queuing system at Sannidhanam.

**Responses of Other Groups**

***Pilgrim Tour Operators:***

Travel agencies such as Vivekananda Travels and Srinath Travels operate numerous services to Sabarimala.

**Srinath Travels** has been offering the pilgrims a miscellany of tours mainly associated with Spiritual and Cultural aspects with emphasis on Religion and Spirituality. The prominent among their services is the Sabarimala pilgrimage. They conduct holy trips to Sabarimala during the peak season (November, January) as well as on lean season (1st day of every Malayalam month). The main stay of the transportation offered is through buses, vans and cars. Sabarimala Trips are usually 5 day long and the general itinerary followed by this travel agency is as follows:

Day one of the trip starts with holy tour in Chennai, visiting Kapaleeswarar temple and Ashtalakshmi temple. On second day they travel to Sabarimala via Trichy, Madurai, Rajapalayam, Courtrallam and Shengottai. On the third day the pilgrims presents their offerings at the following temples: The Thiruvarammula temple, The Thrippuliyur temple, The Thrichitattu temple, The Thiruvanvandoor temple and the Thrikkodithanam temple. The Pandalam Palace where Lord Ayyappa was brought up also forms a special stop in the itinerary. Before reaching the final destination of Sabarimala the final halt station is at Erumely and at the banks of River Pampa from where, they visit Sannidhanam and back. Day four registers the return procedures which is usually routed through Kanyakumari, Rameswarm and on Day five, the pilgrims are expected to be returned back to their respective destination.

Similarly Vivekananda Travels along with numerous other travel agencies are operating services to Sabarimala during the season. Vivekananda travels has a mini base station near the Malliyoor temple premises near Kottayam, where in the Pilgrims are provided accommodation before proceeding to Sabarimala.

:

The major needs (as been recorded during the survey) of the travel agencies which organize the spiritual trip across states to Sabarimala are

Facilities en-route where they can park and accommodate pilgrims during a break journey, in the form of a small transit camp or base camp en-route where in pilgrim could avail comfort facilities along with other services.

The requirements at base camps are

- Comfort facilities (Toilet and bathing facilities)
- Vegetarian Hotels, restaurant, snack bars etc.
- Parking area along with a work shop
- Camp ground where those pilgrims who prefer to cook can prepare own food
- Communication facilities and medical shops

#### **a) Discussions with Local Bodies, Commercial establishments and households**

Outcome of the detailed discussions with local bodies and households is presented in Annexure (database) and section 4.3 of the Regional Module (Description of Main Areas of Influence) of this report. Outcome of the discussion with commercial establishments is provided in the Infrastructure Module: Amenities and Facilities section

#### **b) Reconnaissance Surveys:**

**Objective: To understand the space transformations and activity rendering during the season and to collect necessary data required to plan better facilities for the pilgrims during the season.**

#### **Reconnaissance survey: Erumely**

**Trip Date: 21 to 25 Dec 2005**

#### **Trip Activities**

1. Did a exploratory study of the Town
  - a. Visited shops, Parking area and the like along the main alleyways
  - b. Visited the starting point of Trek route to Pamba Sannidhanam and enquired the about the condition there from the local resident.
  - c. Visited the Solid waste disposal site in town ward
    - i. Area – 5 cents
    - ii. Incinerator: fuel used coconut shells
    - iii. All waste including plastic waste being incinerated
    - iv. No space available for land filling for rejects
2. Visited the Panchayat office and enquired about the development aspects
  - a. No updated detailed map of panchayat was available.
  - b. Separate meetings for Traffic and transportation, Water and Sanitation studies

#### **Reconnaissance Survey : Temples**

**Trip Date: 26 to 28 Dec 2005**

Site	Temples- <ol style="list-style-type: none"> <li>a. Chottanikara Devi Temple</li> <li>b. Vaikom Mahadeva Temple</li> </ol>
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	<ul style="list-style-type: none"> <li>c. Malliyoor Mahaganapathy Temple</li> <li>d. Adityapuram Surya Deva Temple</li> <li>e. Kadathuruthy Mahadeva Temple</li> <li>f. Ettumanoor Mahadeva Temple</li> </ul> <p>Also visited Major Ekadesi Sri Mahadeva temple near Nadakkavu Thripunitara being developed as Edathavalam for Sabarimala pilgrims by TDB</p>
Purpose of the visit	To ascertain the Sabarimala Pilgrim Movement within the region and specifically their visit to respective temples to access the facilities available
Activities	<p>Visited six temples of importance to Sabarimala pilgrimage and carried out reconnaissance survey to access the existing facilities and needs.</p> <ul style="list-style-type: none"> <li>1. Collected available reading materials</li> <li>2. Interacted with the temple officials and the local people</li> </ul>
Field observations	<p>Chottanikara</p> <ul style="list-style-type: none"> <li>1. Two Parking areas of total area of around 3acre available (can accommodate 30-40 vehicles at a time). Different parking lots for heavy and light vehicles provided</li> <li>2. Accommodation facilities provided by both Devaswom and Private</li> <li>3. Toilet Facilities are less.</li> <li>4. Pilgrims cook in the available area in the parking lots, which is meagre and facilities for waste disposal meagre</li> <li>5. Roads are narrow and cannot cater to the heavy rush during the peak season</li> <li>6. No proper mechanism for SWM with Devaswom (open burning of waste and open dumping into nearby compound) but have some primary collection setup of panchayat (through Kudumbasree) operating for keeping the periphery clean.</li> <li>7. Provides Annadanam on a regular basis</li> </ul> <p>Vaikom Mahadeva Temple</p> <ul style="list-style-type: none"> <li>1. Very Limited parking area</li> <li>2. Narrow one way road access around</li> <li>3. Very limited comfort stations</li> <li>4. Accommodation provided by private agencies only</li> <li>5. Temple pond is used for bathing</li> <li>6. Provides Annadanam on a regular basis</li> </ul> <p>Malliyoor Mahaganapathy Temple</p> <ul style="list-style-type: none"> <li>1. Facilities to accommodate 1000 pilgrim at a time being constructed in the temple precinct and the additional land purchased near the temple</li> <li>2. Free food to all</li> <li>3. Vivekananda Travel agency use this location as their main base camp during Sabarimala season and hence arranges all related accommodation and food facilities for the Sabarimala pilgrims who uses the travel service here during the return journey</li> <li>4. Limited toilet facility, need improvement</li> <li>5. Bathing facility limited, ponds need to be cleaned and improved upon</li> <li>6. Access road narrow and ill maintained. Need Percent / panchayat support to improve access</li> <li>7. Parking space for few hundred vehicles exists in front of the temple</li> <li>8. Drinking water accessibility and availability limited</li> </ul>

### 3. Reconnaissance Survey: Proposed Base Camp areas

Trip Date: 4<sup>th</sup> and 7<sup>th</sup> Jan 2006

Site	<ul style="list-style-type: none"> <li>▪ Vandiperiyar</li> <li>▪ Sathram</li> <li>▪ Uppupara</li> <li>▪ Nilakkal</li> <li>▪ Pampa</li> </ul>
Purpose of the visit	<p>To ascertain the Sabarimala Pilgrim Movement with the region and to access the facilities available at various location of importance</p> <p>To discuss with main stakeholders</p>
Activities	<p><b>Day One Itinerary</b></p> <ul style="list-style-type: none"> <li>▪ Did reconnaissance of routes and facilities along Vandiperiyar – Sathram – Vallakkadavu – 6<sup>th</sup> Mile - Uppupara</li> <li>▪ Discussion with authorities</li> </ul> <p><b>Day Two Itinerary</b></p> <ul style="list-style-type: none"> <li>▪ Discussion with KSRTC, at Pampa with respect to transport facilities</li> <li>▪ Shop identification at Pampa for carrying out sample weight quantification study</li> </ul> <p>Nilakkal Visit to review the state of affairs during peak season and the take stock of the developmental work progress.</p>
Field observations	<p>Vandiperiyar – Sathram</p> <ul style="list-style-type: none"> <li>▪ Road from Vandiperiyar to Sathram via tea estates are very poor in condition (surface and geometry) through which only jeeps can ply. Buses uses to ply many years back</li> <li>▪ Tea estates (RBT) mainly remain unutilised commercially. Employees themselves found to pluck leaves and sell in market in the absence of regular activities</li> <li>▪ At Sathram TDB has a temple and parking ground (48 acres of land has been previously with TDB, present status to be ascertained)</li> <li>▪ Small settlement is found in and around the temple area</li> <li>▪ Electricity is available</li> <li>▪ Water availability is from small rivulets flowing through this area</li> <li>▪ Also have Forest office, School and Primary Health Centre adjacent to Temple</li> <li>▪ 12 Km of Trek route from Sathram to Sannidhanam (via Uppupara)</li> <li>▪ Existing toilets are 5 in No: and lack maintenance</li> <li>▪ One tea shop and some viri space provided</li> <li>▪ Maximum of 200-300 pilgrim resort to this route during the season on a daily basis</li> <li>▪ Around of 4-5 thousand pilgrims passess through Sathram on Makaravilaku day.</li> </ul> <p>Uppupara</p> <ul style="list-style-type: none"> <li>▪ At around 16 km from Vallakkadavu (diversion from 6<sup>th</sup> Mile along the road from Vallakkadavu to Kochu Pampa – Angamoozhy – after which around 10 km of “Koop” Road)</li> <li>▪ Shops managed by EDC</li> <li>▪ Water availability limited</li> <li>▪ Open grassland mainly used by pilgrims in lakhs to view Makarajyothi</li> <li>▪ Good view of Sabarimala area below</li> <li>▪ Only Jeep and KSRTC service to the location available</li> <li>▪ No Electricity supply to the area</li> </ul>

**4. Reconnaissance Survey: Sabarimala, Cheriyanavattom, Valiyanavattom, Pamba**

Trip Date: Dec - Jan 2006

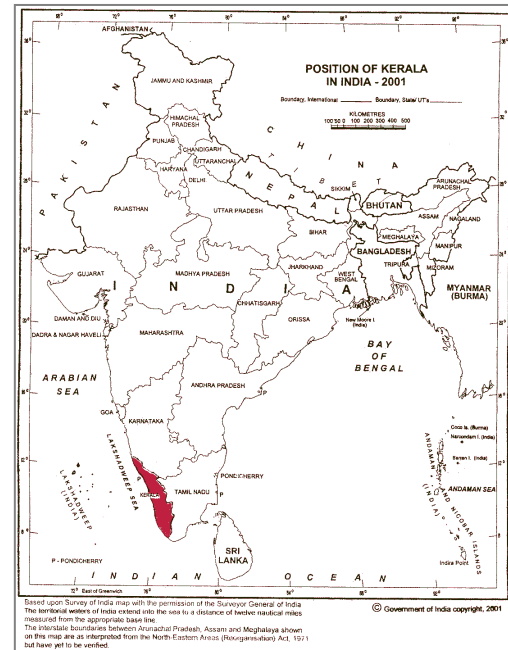
Site	<ol style="list-style-type: none"> <li>1. Valiyanavattam</li> <li>2. Cheriyanavattam</li> <li>3. Pamba</li> </ol>
Purpose of the visit	To Monitor and facilitate the Solid waste quantification study and to study Valiyanavattam and cheriyanavattam area
Activities	<ul style="list-style-type: none"> <li>▪ Did reconnaissance of Valiyanavattam and Cheriyanavattam area</li> <li>▪ Site Discussion With Kumarakom Nature club to organize the study</li> </ul>
Field observations	<p>Valiyanavattam</p> <ul style="list-style-type: none"> <li>▪ Only two pipe existing water to the area</li> <li>▪ No separate drinking water facility</li> <li>▪ 90percent of the temporary structure to facilitate Viri</li> <li>▪ medical shop and dispensary run by Ayappa seva sang</li> <li>▪ Though toilet provide open defecation rampant along pamba river</li> <li>▪ No solid waste management</li> <li>▪ Electricity supply existing with lighting along path from pamba to Valiyanavattam</li> <li>▪ Tree cutting seen for food preparation</li> </ul>

### Annexure 3: Environmental and Socio-Economic Scenario of the Host Region

The socio-economic profile of the host region viz, State of Kerala; in terms of demographic aspects, macro economic developments, and the performance of various sectors of the economy is provided here. It also explains the temporal and spatial distribution of demographic and economic aspects in the State, with specific reference to Sabarimala pilgrimage. Detailed review of various aspects for the Districts falling under Planning Regions 1 and 2 has been presented along with the general description of the State.

#### 1. Natural Setting

Kerala, the Southern-most State of the Indian Union has many reasons to be proud of. Its physical characteristics as well as demographic and socio-economic features are unique. In the human development and related indices it occupies prime position among the Indian States. Kerala is the only State in India with a positive sex ratio. It is also one of the densest States in the country.



#### Topography and Soils

Covering an area of 38,863 sq km, Kerala lies along the shores of the Arabian Sea and is approximately 600 km long and about 75 km wide at its widest point. Based on physical features, it is divided into three geographical regions, i.e sandy coastal region, midland region and hilly region.

**Sandy coastal region:** This is a narrow strip of low-lying land, interspersed with extensive backwaters. This strip comprises about 10 percent of the total area and supports 26 percent of the population

**Midland region:** This is an undulating region to the east of the coastal sandy region having clustering hills and numerous valleys watered by many streams. This area covers about 42 percent of the total area and supports 59 percent of the population; it grows an intensive diversity of seasonal, annual and perennial crops such as rice, sugarcane, tapioca, banana, coconut, arecanut, pepper, cashew, rubber etc.

**Hilly region:** This is a region with extensive ridges and ravines of the Southern and Western Ghats, much of it is forested, covering about 48percent of the total area supporting about 15 percent of the population. It contains extensive plantations of tea, coffee, sandalwood, rubber, cardamom and other spices.

The Southern and Western Ghats form the eastern boundary of Kerala and are divided by the Palakkad Gap, a lowland area reaching into Tamil Nadu. The coastal areas are largely made up of alluvial deposits whereas upland areas are made of lower pre-cambrian rocks divided in

some areas by lateritic deposits. The coastal areas are dominated by alluvial soils whereas lateritic soils and forest loam cover much of the hilly areas of the mid-land and high land region.

## **Climate**

Kerala has humid tropical climate with relatively little temperature variation across seasons. It is neither very cold in winter nor very hot in summer. The monthly average temperatures at Kovalam (Thiruvananthapuram) vary from 28°C to 33°C. Kerala is subject to both the southwest and northeast monsoons. The southwest monsoon lasts from the end of May until September, with peak average rainfall in June of 330 mm at Kovalam (Thiruvananthapuram). The northeast monsoon is in October and November with a peak average rainfall in October of 280 mm at Kovalam (Thiruvananthapuram). Minimum average rainfall of 20 mm occurs in January. The average annual rainfall of various Districts in Kerala varies from 2002 mm in Thiruvananthapuram District to 3594 mm in Wayanad District.

The highlands of Sabarimala region are colder during the December – January period which corresponds to the peak pilgrim season while the previous months are mostly rainy and this often hampers the last minute preparations for the Sabarimala pilgrim season. Mostly the pilgrims are exposed to vagaries of climate during their wait to reach the Sannidhanam as it is either humid and hot or breezy and cold. Hence queuing areas and all structures should be sheltered against heat and rain but open for maximum ventilation as possible. The rain renders the trek routes slippery and the concreted areas mossy.

## **Water Resources**

As a result of the relatively high rainfall falling on the Ghats there are a total of 41 west flowing rivers and three east flowing rivers in the State. Due to their drop in elevations these form significant sources of hydro-electric power and many have been harnessed for this purpose. Many power projects have been delayed or abandoned because of environmental concerns. A series of lagoons were formed by the natural interaction of the ocean and the rivers and are known as backwaters. This provides an extensive resource for irrigation and many of the lagoons have been poldered for the cultivation of rice below the water level of the lagoons. These backwaters were also the major means of storm-free transportation until the advent of road and rail transportation. Some rivers are used for city water supplies and are socially sensitive if contaminated. For example, a spill of phenol in the catchment area of the Peechi Reservoir supplying drinking water to the City of Thrissur and surrounding communities required an expensive cleanup operation using activated carbon powder. Sewage contamination of River Pampa as a result of Sabarimala pilgrimage renders water borne diseases to the continuous stretch of settlements downstream till and around the final discharge point – the Vembanad Lake. There are extensive groundwater resources in the coastal alluvial plains but much of these are saline.

## **Ecology, National Parks, Wildlife Sanctuaries and Forest Reserves**

The State's ecology is rich in its diversity and about 25 percent of its total area, i.e., 1,081,509 hectares, is forested. This includes 915,115 hectares of reserve forests, 18,479 hectares of proposed reserve forests and 189,087 hectares of vested forests. Wildlife sanctuaries occupy about 204,247 hectares of these. Increasing civic consciousness and the vigilant protective



measures of the Forest Department in conservation of the forest eco-system in Kerala has resulted in gradual but steady improvement in regenerating the degraded forests. Major forest products are timber, firewood, cardamom, honey, reeds, bamboo, sandalwood etc.

More than 500 species of trees have been identified and the wildlife sanctuaries contain mammals, such as elephants, tigers, leopards, lion-tailed macaque monkeys, and ibex including rare and endangered species.

There are a number of national parks in addition to wildlife sanctuaries, many of which are contained within these national parks. The parks and sanctuaries in Kerala include the Shenduruny Sanctuary in Kollam District, the Silent Valley National Park in Palakkad District, the Peechi-Vazhani Sanctuary in Thrissur District, Chinnar Sanctuary in Idukki District, the Eravikulam National Park in Idukki District, the Thattekkad Bird Sanctuary in Idukki District, the Idukki Sanctuary in Idukki District, and the Periyar National Park and Sanctuary in Idukki District. Sabarimala is located in the buffer zone of the Periyar Tiger Reserve. In addition the national parks and sanctuaries such as the Bandipur National Park, the Mudumalai Sanctuary, the Parambikulam Sanctuary, and the Anaimalai Wildlife Sanctuary located in Tamil Nadu State along the border of Kerala. Area Characteristics



The total area of the State, which is divided into 14 administrative Districts, extends over 38,800 sqkm, which is nearly 1.2 percent of the total area of the country. Idukki is the largest District in the State with 5,019 sq km, and accounts for nearly 13 percent of the total area of the State. Idukki is followed by Palakkad, Malappuram and Thrissur. Alappuzha is the smallest District with an area of about 1,414 sq km and accounts for 3.6 percent of the total area of the State.

## 2. Population

### Demographic Character

The total population of Kerala in 2001 stood at 31,838,619 as per the provisional results of the Census of India 2001. While all India decadal growth rate of population during 1991-2001 is 21.34 percent, in Kerala this has further dipped to 9.42 percent from 14.32 percent during 1981-1991. The State has retained its pre-eminent position in the sex ratio, i.e., the number of females per thousand males. The proportion of female to male population has further gone up from 1036 in 1991 to 1058 per 1000 in the present census. District-wise analysis shows that the highest sex ratio of 1094 is found in Pathanamthitta District and the lowest in Idukki District with 993 females per 1000 males. However, it is alarming that the sex ratio of population below six years of age is less than one, indicating less number of female children growing up which may impact the overall sex ratio in the following census period. The broad demographic features of each District along with its area, number of village, towns and households have been reproduced in the Table below.

**Table Showing the Details regarding the Districts in Planning Region**

<b>District</b>	<b>Area (sq km)</b>	<b>Number: of Villages</b>	<b>Number : of Statutory Towns</b>	<b>Number of Households</b>
Kasargode	1992	112	5	225252
Kannur	2966	78	6	457368
Wayanad	2131	48	1	166763
Kozhikode	2344	87	3	567658
Malappuram	3550	122	5	612413
Palakkad	4480	144	4	530216
Thrissur	3032	204	7	639871
Ernakulam	3068	90	9	693161
Idukki	4358	64	2	265344
Kottayam	2208	89	4	434520
Alappuzha	1414	77	5	483960
Pathanamthitta	2637	65	3	297134
Kollam	2491	93	3	593314
Thiruvananthapuram	2192	91	5	759382

It is a noteworthy feature of Kerala that the aged population (above 60 years) is increasing year after year. During 1961 the aged population constituted only 5.9 percent of the total population in Kerala. It increased to 6.2 percent in 1971; 7.5 percent in 1981. The percentage of aged population to total population of Kerala further increased to 10.6 percent in 1991 and has been estimated to have reached about 15 percent in 2001. The relatively higher proportion of elderly persons in the population has several implications in relation to health needs, work participation rate, dependency rate and pension and social security requirements.

The State with an average of 90.92 per cent literacy, against the national average of 65.38, is once again on the top among all the States and Union territories. Among the Indian States, Kerala is in third position in respect of density, the first being West Bengal and the second, Bihar. In 1991, the average density of population in the State was 749 persons per sq. km. as against 273 at the national level, showing that the State is highly populated. Density of population has also shown an increase to 819 persons per sq km in the 2001 census.<sup>12</sup>

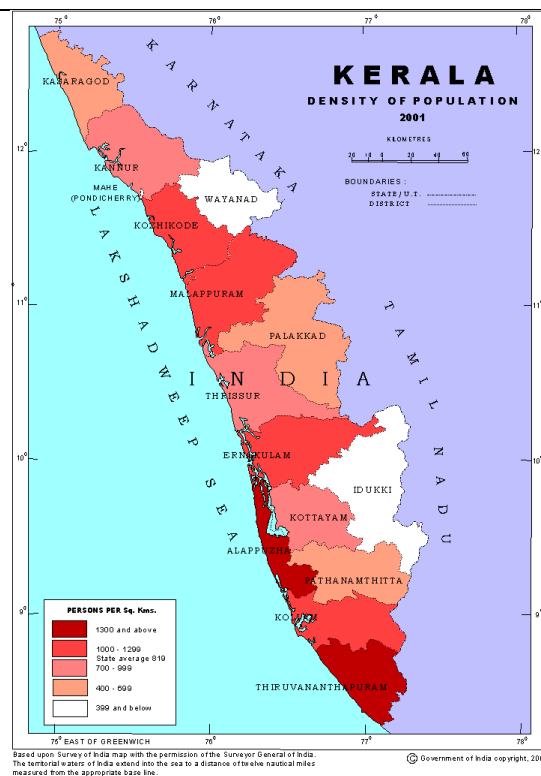
In terms of the size of total population, Malappuram District ranks first, closely followed by Thiruvananthapuram and Ernakulam Districts.

Among the Districts, Alappuzha has the highest density with 1489 persons per sq. km. closely followed by Thiruvananthapuram District with 1476 persons per sq. km. Idukki District has the lowest density of 252 persons per sq. km. Eight Districts have densities higher than the State average and six Districts lower than the State average.

<sup>12</sup> Source: Provisional Population Totals: India. Census of India 2001, Paper 1 of 2001

**Demographic Characteristics of the Planning Region**

District	Population (No:) 2001	Decadal Growth of Population (1991-2001)	Density of Population (Persons per sq km) 2001
Kasaragod	1204078		604
Kannur	2408956		812
Wayanad	780619		366
Kozhikode	2879131		1228
Malappuram	3625471		1021
Palakkad	2617482		584
Thrissur	2974232		981
Ernakulam	3105798	9.09	1012
Idukki	1129221	6.96	259
Kottayam	1953646	6.76	885
Alappuzha	2109160	5.21	1492
Pathanamthitta	1234016	3.72	468
Kollam	2585208		1038
Thiruvananthapuram	3234356		1476
<b>Kerala</b>	<b>31841374</b>		<b>819</b>

**Birth, Death and Infant Mortality Rate**

In terms of life expectancy at birth, Kerala (more than 70 years in 1991) is at least ten years higher than the all India (close to 60 years) average. Under five years and infant mortality rates are also one of the lowest in Kerala outperformed by only two states viz., Mizoram and Nagaland. Kerala's life expectancy for males is 69.1 and for females 76.1 in 1998.

**Rural-Urban Break up**

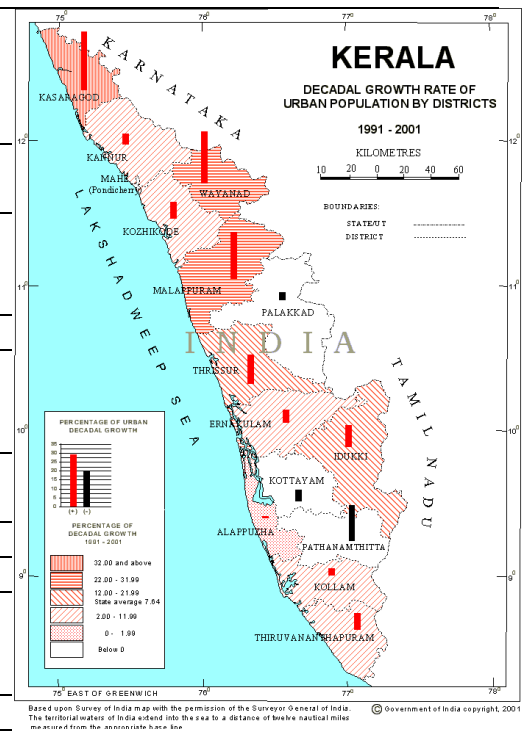
In Kerala, rural area is not clearly distinct from the urban and this paints a picture of 'urban – rural continuum' or 'rurban' running north south and east west within the geographical boundaries. Predominance of rural population is more pronounced in Wayanad, Idukki, Malappuram, Palakkad, Kasargode, Kottayam and Kollam Districts, where more than 80 percent of the total District population dwells in rural areas.

The urban population has risen above one million in Kannur, Kozhikode and Ernakulam Districts in the 1991 census. *Percentage of Decadal growth (1991-2001) of urban population is lowest for Kottayam and Pathanamthitta Districts, where as it is more than state average for Idukki District.*

The distribution of towns/cities by population size is shown in the following Table. The major towns (Class-I and Class-II) in each District are tabulated as follows in accordance with the 1991 Census)

**Distribution of towns/cities by population**

District	Class-I	Class-II	Disposition in the Planning Region Considered
Kasaragod	--	Kanhangad, Kasaragod	Plng Region 3
Kannur	Talassery	Kannur, Payyanur, Thaliparamba	Plng Region 3
Wayanad	--	--	Plng Region 3
Kozhikode	Kozhikode	Beypore, Cherivannor, Vadakara	Plng Region 3
Malappuram	--	Manjeri, Ponnani	Plng Region 3
Palakkad	Palakkad	--	Plng Region 3
Thrissur	--	Thrissur	Plng Region 2
Ernakulam	Kochi	Edathala, Kalamassery, Thrippunithura	Plng Region 2
Idukki	--	--	Plng Region 1
Kottayam	--	Kottayam	Plng Region 1
Alappuzha	Alappuzha	Kayamkulam	Plng Region 2
Pathanamthitta	--	Thiruvalla	Plng Region 1
Kollam	Kollam	Vadakevila	Plng Region 2
Thiruvananthapuram	Thiruvananthapuram	--	Plng Region 2



As per 1991 census, the rural component in the total population was 73.6 percent and the urban 26.4 percent, which is marginally higher than all-India average of 26.1 percent. Nearly, 90 percent of the rural population in the State lived in large size villages, having population of 10,000 and above.

There has been a steady increase in the size of urban population and number of towns since 1901. The urban population in the State since 1961 (census) has registered over a three-fold increase. The average annual growth rate during the period 1961–91 was 3.8 percent. There has been a further acceleration of the growth rate in the 1981-91 decade. The urban population has gone up from nearly 4.8 million to 7.7 million, increasing by 1.6 times, registering a growth rate of 4.8 percent per annum.

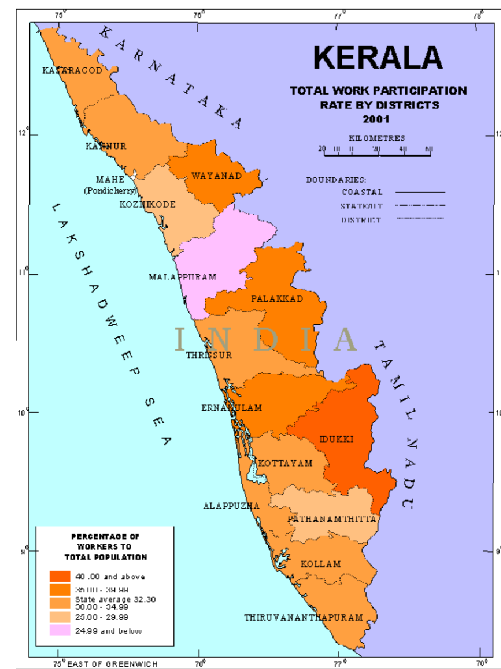
The total urban population in the state in 1991 lived in 197 town/cities of varying sizes. Of these, 7 were class I cities accounting for 31.6 percent of the total urban population in the State. Another 16 percent lived in class II cities, 40 percent in class III cities and nearly 11 percent in class IV towns.

**Trends in Population Growth**

The State population has increased during every decade since 1901. The total population has increased from 1901 to 1991 by nearly 4.55 times, registering an average annual growth rate of 1.7 percent. The decennial growth rates increased steadily from 16.0 percent in 1931-41 to

26.3 percent in 1961-71, and then declined to 19.2 percent during 1971-81 and further to 14.3 percent during 1981-91, where as it has been recorded as 9.42percent during 1991 to 2001.

Considering the long-term growth rate 1901 to 1991, Idukki registered the highest growth rate of 3.5 percent per annum, followed by Wayanad by 2.5 percent and Kollam and Thiruvananthapuram 2.0 percent. In fact, Idukki and Wayanad had the least Population amongst Districts in the State in 1901. In the medium term 1961-1991, Wayanad recorded the highest growth rate 3.0 percent per annum, followed by Malappuram 2.7 percent, Kasargode 2.5 percent and Kannur 2.2 percent and Kasargode (12.03 lakh). During 1991-01, among the Districts, Pathanamthitta had the lowest decadal (1991-2001), growth rate of population of 3.72percent and Malappuram the highest growth rate of 17.22percent.



Based upon Survey of India map with the permission of the Surveyor General of India. © Government of India copyright, 2001. The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.

### Economic Classification of Population

Workers are classified into main workers, marginal workers and non-workers<sup>13</sup>. A comparison of the figure of the last four Census shows that though the percentage of total workers has increased in the State, there has been a decline in the percentage of main workers. Simultaneously the percentage of marginal workers has increased considerably, particularly in the last 10 years. Though the overall work participation rate has increased marginally, the female work participation rate is lower in the state especially in rural areas, pointing to the problem of unemployment of literate women. Female workers are predominant as agricultural laborers (36 percent), with manufacturing-household and other than household industry (20.7 percent) and other services (23.8 percent).

### Work Participation Rate

Work participation rate for Kerala as per 2001 census is 32.3percent. Work participation is higher than 40percent in Idukki, Wayanad and Palakkad Districts. The rate is least in Pathanamthitta and Malappuram (lowest).

## 3. Macro Economic Developments

### State Income (Net State Domestic Product)

The Kerala economy as per quick estimate registered a growth rate of 6.1 percent in 2002-03, a significant jump from the 4 percent growth of the preceding year. State Income, i.e. Net State Domestic Product at factor cost at constant prices (1993-94) is estimated at Rs. 37031.33 crore during 2002-03 as against Rs.34905.99 crore during 2001-02, registering a

<sup>13</sup> \* In census 1991 these are classified as main workers, having worked for 183 days or more in a year.

\*\* These are marginal workers, as per census, having worked for less than 183 days in a year.

\*\*\* Percentage of full time (main) workers to total population.

growth rate of 6.1 percent. At current prices the state Income is estimated at Rs. 83782.01 crore during 2002-03 as against Rs. 73048.95 crore during 2001-02 recording a growth rate of 14.7percent compared to 14.6 percent in 2001-02.

The annual average growth rate of State Income during 1970's at current prices was 10.73percent and at 1970-71 prices was 2.16 percent. During 1980's it was 12.15percent at current prices and 3.39 percent at 1980-81 prices. The average growth rate during 1990's at current prices was 13.51percent and at constant prices was 5.99 percent. The computation of state income does not include remittances from outside the state. If remittances from outside the state were also added to GDP, the state income would 20percent more than the present GDP.

### Sectoral Composition of State Income

The contribution from primary, secondary and tertiary sectors to the Net State Domestic Product at constant prices (1993-94) constitutes 17.5 percent, 18.7percent and 63.8percent respectively during 2002-03. At current prices, the primary, secondary and tertiary sectors contribute 17.6percent, 24.2percent and 58.2percent respectively to the Net State Domestic Product during 2002-03. It is hence clear that service sector is the largest contributor to State Income, whereas the primary sector including agriculture shows the minimal contribution.

### Sectoral Growth Rates

The rates of growth for different sectors as well as the total economy for the last three years are summarized below.

Year	Sectoral Growth Rate (in per cent)			
	Primary	Secondary	Tertiary	Overall
2000-01	-19.6	10.14	10.48	2.60
2001-02	-1.03	- 6.00	9.28	4.00
2002-03	- 4.38	4.80	9.78	6.10

Structurally it is the service sector, which is growing fast. The contribution of the Agriculture Sector declined from 19.1 percent in 2001-02 to 17.2 percent in 2002-03. At the same time the service sector has grown from 61.7percent to 63.8percent of the economy.

### Per Capita Income

With the economic growth of the nineties the per capita income has gone beyond the national average for the first time. Per capita Net State Domestic Product at current prices increased from Rs.22668 in 2001-02 to Rs.25, 764 in 2002-03 recording a growth rate of 13.7percent. The per capita state income at constant prices (1993-94) was Rs.11388 in 2002-03 as compared to Rs.10, 832 in 2001-02, showing a rise of 5.1 per cent during the year. At the same time the National per capita Income at constant prices was Rs11010 during 2002-03.

## 4. District Income

### Total Income

District-wise distribution of Net State Domestic Product at factor cost at current prices shows that Ernakulam District continues to have the highest income of Rs. 10428 crore in 2002-03 as against Rs. 9046 crore in 2001-02 with a growth rate of 15.3 percent over the previous year. At constant prices it comes to Rs.4567 crore in 2002-03 as against Rs.4277 crore during 2001-02. Thiruvananthapuram District stands second with an income of Rs. 9153 crore in

2001-02 at current prices followed by Thrissur (Rs. 8459 crore), Kozhikode (Rs.7639 crore), Kollam (Rs. 6737 crore) and Malappuram (Rs. 6316 crore). The lowest income was recorded in Wayanad District (Rs. 1994 crore) in 2002-03 preceded by Kasargode (Rs. 2894 crore) and Pathanamthitta (Rs.3341 crore), whereas Kottayam and Idukki occupy a position just above the low ranked Districts.

### **District-wise Per Capita Income**

Among the Districts, Ernakulam stood first with the per capita District income of Rs. 32918 at current prices in 2002-03 as against Rs. 28826 in 2001-02 with a growth rate of 14.2 percent. Idukki District has the second largest per capita income of Rs. 31697 in 2002-03 followed by Kottayam (Rs 28622), Thrissur (Rs. 27871), Thiruvananthapuram (Rs.27686) and Pathanamthitta (Rs.26901). The lowest per capita income was recorded in Malappuram District (Rs. 16766) in 2002-03 preceded by Palakkad (Rs.22132), Kasargode (Rs.23414) and Kannur (Rs.24369). The highest rate of growth of per capita income of 15.2 percent was recorded in Thiruvananthapuram District in 2002-03 followed by Pathanamthitta (14.6 percent) and both Ernakulam and Kozhikode districts 14.2 percent. The lowest growth rate was recorded in Wayanad District (10.3 percent) preceded by Kasargode (10.7 percent) and Idukki (12.6 percent).

### **Composition of District Income**

The dominance of agricultural and allied activities is all the more pronounced in Wayanad and Idukki Districts where the primary sector had contributed 76 percent and 66 percent respectively to the District income. These Districts are major centres of spice cultivation, which is a high priced cash crop.

Districts –wise analysis shows that rate of growth of primary sector ranged between 1.2 percent and 7.9 percent, secondary sector between 10.9 percent and 31.1percent and tertiary sector between 16.7 percent and 17.2 percent. The highest rate of growth of primary sector was recorded in Pathanamthitta District (7.9percent), secondary sector in Idukki District (31.1percent) and tertiary sector in Thiruvananthapuram District (17.2percent).

### **Poverty Level**

Poverty indices (based on district-wise per capita income at constant prices as indicator) have shown that Malappuram in the northern region, Palakkad in central and Alappuzha in the Southern region are the poorest districts. Most of these Districts have remained poor and the condition is generally worsening, since the per capita indices, have been decreasing in comparison of the State figure.

It has been observed that the central region (with Idukki and Ernakulam Districts) has been performing well throughout the analysis period, whereas the northern region remained below the State level. The District of Wayanad in the northern region has recorded an appreciable growth in the per capita income.

## **5. Land use Pattern**

According to the land use pattern in 1996-97, the net area sown in Kerala was nearly 2.26 million ha, accounting for 58 percent of the total land area in the State, Land under forest accounted for over 27.8 percent. The cultivable waste and fallow land (current and other than current) accounted for nearly 4 percent. Land put to non-agricultural use was over 8 percent. The area under forest has remained the same at about 1 million ha. The net sown area has

increased by 73,000 ha. during 1985-86 to 1996-97 (i.e. about 3.6 percent increase). The land under non-agricultural use since, 1985-86 has increased by 13 percent, i.e. an increase of about 35,000 ha. During the same period the fallow land (current and other than current) has been increased by 18 percent and the cultivable wasteland has been considerably reduced by 62 percent i.e. a decrease of about 78,000 ha.

*Forest areas dominate two Districts, namely Pathanamthitta and Idukki where more than half of the area is under forest.* Other Districts with forest areas more than the State average include Wayanad, Thrissur, Kollam, Palakkad and Malappuram. Amongst these Districts Idukki and Palakkad have the largest forest areas in the State. The Districts with little forest include Kasargode, Ernakulam and Kottayam, while Alappuzha has practically no forests.

The Districts with the highest percentage under non-agricultural land are Alappuzha, Ernakulam, Kottayam, Kozhikode and Palakkad. Of these, Palakkad has the highest area under non-agricultural use in the State followed by Ernakulam.

The percentage of net area sown is highest at 82.4 in Kottayam, followed by Alappuzha (76 percent), Kasargode (73 percent), Ernakulam (72 percent), Kozhikode (70 percent), Kannur (69 percent) and Thiruvananthapuram (67 percent). Among the Districts, the net sown area, in terms of its size, is the highest in Idukki and accounts for 9.3 percent of the State total. This is followed by Palakkad (9.2 percent), Malappuram and Kannur (9.1 percent), Kottayam and Ernakulam (8 percent)

## 6. Agriculture

The economy of the project influence area is largely agriculture oriented. The agriculture economy has been fairing badly since 2000 mainly due to sharp decline in prices. The resource potential for development of agriculture and its importance to the area economy varies from district to district. The importance of agriculture and allied activities could be assessed in terms of the main work force laying sectors and sectoral contribution to district income. The resource potential, apart from the land-use pattern, depends on the size of holding, irrigation facilities, soil conditions and farming techniques.

### Cropping Pattern

Crops grown in Kerala include cereals and millets, pulses, sugar, spices and condiments, fruit and vegetables, oil seeds and non-food (cash) crops. Oil seeds apart from groundnut and sesame include coconut. Non-food crops include fibre, drugs and narcotics, plantation crops (comprising tea, coffee, rubber and cocoa) and fodder crops. In Kottayam and Pathanamthitta, more than half the cultivated area is under non-food crops. Food grains, particularly paddy and cereals are grown in all Districts, but the major concentration is in Palakkad, Alappuzha, Ernakulam and Thrissur. Among these Districts, the areas under paddy, cereals and pulses in Palakkad is the largest in the State, followed by Ernakulam and Thrissur. Amongst spices, cardamom is largely grown in Idukki and the District accounts for over 73 percent of the total area under cardamom in the State.

Non-food crops, comprising betel leaves, rubber and cocoa are grown in almost all areas. Groundnut and cotton are exclusively grown in Palakkad, while tea and coffee are largely grown in Idukki and Wayanad. The area under these crops varies from 23 percent in Palakkad to about 57 percent of the total cultivated area in Kottayam.



The area under coconut varies from 4.2 percent in Wayanad to 35.3 percent in Kozhikode. The other Districts with coconut areas at 25 percent and above are Thiruvananthapuram, Malappuram, Kasargode, Kannur, Alappuzha and Thrissur. Kozhikode District has the highest area under coconut in the State (13.5 percent) and is followed by Malappuram and Kannur. Predominance of coconut is observed in Low land areas.

### **Agricultural Production**

Palakkad is the granary of the State, producing 34 percent of the State production of rice, 98 percent of cereals, 30 percent of pulses and 45 percent of sugar. The other major rice producing Districts in the State are Ernakulam, Thrissur and Alappuzha. These account for over 33 percent of the rice production in the State. Apart from Palakkad the largest producer of pulses, include Kollam, Ernakulam and Kannur Districts. As per recent statistics, the productivity of rice at 2,291 kg/ha was the highest (in the State) in Palakkad, followed by 2,199 kg/ha in Wayanad and 2,165 kg/ha at Kottayam as against the state average of 2,023 kg/ha.

Sugar production is mainly confined to Idukki and Palakkad Districts. Kollam and Kasargode Districts are the major producers of fruit and vegetables and together contributed over 30 percent to the State production. The other large producers of fruits and vegetables are Thiruvananthapuram, Kottayam, Malappuram and Palakkad.

The major producers of non-food crops (in total) are Kannur, Wayanad, Kasargode and Kozhikode. These together, account for about 72 percent of total production in the State. Among these, rubber is grown mostly in areas falling under highlands and midlands with Kottayam being the largest producer accounting for 25 percent of the State production, followed by Ernakulam, Pathanamthitta, Kollam and Idukki.

## **7. Livestock and Poultry**

Livestock and Poultry population is widely dispersed in each District, with major concentrations in rural areas. The last two livestock census reveals a drastic decline in livestock and poultry population and it needs urgent correction. Non availability of quality fodder, lack of sufficient land for fodder cultivation, high feed and feed ingredient cost, labor cost, increased consumption of meat and indiscriminate

In the case of poultry and duck population declined during 2000 census was 34.07 per cent and 12.27 per cent respectively. During 2003 they further declined by 27.06 per cent and 35.30 per cent.

In the livestock sub-sector there is an alarming decline in the number of livestock compared to the 1996 figures. The latest Livestock Census 2000 shows a decline of 24.4 percent in cattle population, 42.73 percent in buffalo population and 34.07 percent in poultry population. During the year milk production has come down by 11 percent (from 27.18 lakh tonnes to 24.19 lakh tonnes), and egg production has come down by 32.7 percent (from 2 billion to 1.34 billion).

The spatial distribution of the different categories of livestock in Kerala shows a regional pattern. While dairy activity is popular in almost all Districts, poultry rearing is concentrated

in Idukki and Pathanamthitta, goats in Malappuram and duck in Alappuzha and Kottayam Districts. The emerging trend also reveals a shift in the population of dairy cattle from the coastal Districts to midland and high land regions. Palakkad has the largest number of livestock and poultry contributing about 11 percent to the State total. In cattle and buffalo population, its share in the State is 10.7 percent and 21.6 percent respectively. Malappuram has the largest number of goats; over 11 percent share in the State total. The major concentration of sheep population is in Idukki, Wayanad, Kannur and Malappuram. These together accounts for about 65 percent of the total sheep population in the State. Pigs are mainly reared in Idukki and Kottayam Districts and these two Districts account for over 57 percent of the pig population in the State. The growth in livestock and poultry population since 1987 is presented. The cattle population has declined in most of the Districts, with the exception of Idukki, Palakkad, Malappuram and Kasargode. These Districts had recorded low growth rates, varying from 3 percent to 0.5 percent per annum. The buffalo population also shows a general decline of which, Kozhikode and Kannur were the worst affected.

## 8. Fisheries

### Marine Fisheries

Marine Fisheries are concentrated in the coastal Districts, Kozhikode and Kollam being the major fish landing areas. In 1996, about 112,000 tonnes of marine fish production was recorded in Kozhikode and 110,000 tonnes in Kollam. The other major producers were Ernakulam, Thrissur and Alappuzha. The Production of marine fish has declined since 1995.

The export of marine products from the state during 2002-03 increased by 12 per cent in quantity terms and 10 per cent in rupee terms and 8 per cent in dollar terms compared to the previous year.

### Inland Fisheries

The state is endowed with rich inland water bodies consisting of 44 rivers (having an area of 0.85 lakh ha) 30 major reservoirs (0.30 lakh ha) fresh water ponds and tanks (0.25 lakh ha) 45 backwater and extensive brackish water are a (2.43 lakh ha). But the inland fish production accounts for only about 11.06percent of the total production. Even though the state is endowed with extensive water spreads offering tremendous potential for the development of inland fisheries, this opportunity has not been tapped to the desired extent.

Ernakulam is the major centre of inland fishing. In 1996, Ernakulam had the highest landings totalling over 20,000 tonnes, accounting for over 40 percent of the total State production. Alappuzha has over 10,000 tonnes of inland fish production, followed by Kollam with over 5,600 tonnes.

The annual growth rate in inland fishing since 1993 has been higher in Pathanamthitta (9.7), Palakkad (9.6) and Malappuram (8), which are generally placed under areas with low levels of fish production. Ernakulam and Alappuzha with over 40 percent and 20 percent share in State production registered 4.6 percent and 4.8 percent growth rates annually.

## 9. Industry

The registered factories and the Small-Scale Industries (SSI) are well spread out in the State, while large and medium scale industries are highly concentrated in certain Districts. In 2001 the number of working factories in 12 Districts increased marginally compared to the previous year, and decreased slightly in Idukki and remained constant in Kasargode. As in previous years Ernakulam District had the highest number of factories ie. 2946 followed by Thrissur (2563), Palakkad (1980) and Kollam (1908). Wayanad District had the lowest number of factories followed by Kasargode (272). Number of workers in all Districts except Idukki, Thrissur, Kozhikode and Kasargode increased during the period. Malappuram District recorded the largest percentage increase followed by Wayanad, Kottayam and Palakkad. The Districts, however, vary widely in the number of units located, the employment generated and rate of growth recorded over a period of time. These aspects are analysed in the following section.

### Registered Factories

The number of factories, in 1997-98, however varied amongst districts from 1 percent to over 15 percent of the State total. Ernakulam recorded the highest number 2,570 factories accounting for 15.6 percent of the State total. The other Districts, following Ernakulam, in ranking order, were Thrissur, Palakkad, Kannur, Kollam and Kozhikode.

The Districts with a low level of factories were Wayanad, Kasargode, Idukki and Pathanamthitta each with less than a 3 percent share in the States total.

During 1990-91 to 1997-98, the average annual growth rate of registered factories was 4.2 percent at the State level. Ernakulam recorded the highest growth rate at 6.8 percent per annum. Kasargode with comparatively low base (number of factories) registered annual growth rate of 6.6 percent, Alappuzha 5.6 percent and Kannur 5.6 percent per annum. Those falling below the State average were Idukki (1.7 percent), Kozhikode, Thrissur, Kottayam, Malappuram and Thiruvananthapuram.

The average number of workers employed in the registered working factories in the State increased from 4,36,410 in 2001 to 4,37,340 in 2002 showing a very marginal growth of 0.21 percent. The number of employees decreased in private sector where as in public sector it rose by 1.20 percent. Of the total 4,37,340 workers 3,28,875 were in private and 1,08,465 in public sector factories.

### Small Scale Industries

The Small Scale Industrial Units registered in Kerala as on 31.3.2003 was 2.70 lakhs with an investment of Rs.3911 crores, providing employment to 12.15 lakh persons. The registration during the year 2002-03 was 12,334 units as against 18,114 in 2001-02. In spite of the decline in the number of registration of units, value of output recorded an increase of Rs.1,869.35 crores during 2002-03. The total number of SSI units promoted by SC/STs and women by March 2003 was 10,643 and 49,101 respectively.

Ernakulam District had the largest number of 24,447 units, during the period 1985-86 to 1997-98. Thiruvananthapuram ranked second with over 19,500 units in 1997-98, improving its position from earlier years 1985 to 89. The other Districts in ranking order were Thrissur, Kottayam, Kollam and Alappuzha each had their number above 9 percent of the State total.

Over the long-term, 1985-98 period, the average annual growth rate registered in the State was about 16 percent. Pathanamthitta, which had a low base (in number of units) in 1985, experienced the highest growth rate of about 24 percent per annum, maintaining a continuous increase in the number of units through out this period. Similarly, Idukki and Wayanad with low bases in 1985 registered 20.6 percent and 19.6 percent annual growth rate respectively in the number of units.

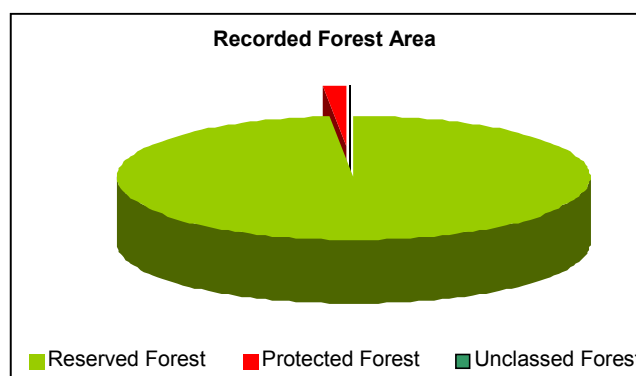
In the Industry Sector, SSI units are the largest source of employment in the State. In 1997-98, SSI units in Kollam provided employment for over 140,000 workers accounting for about 15.5 percent of total work force in SSI Units in the State. Ernakulam, at the same time, provided employment to about 1,22,000 workers and in Alappuzha over 87,000 workers were engaged in SSI units. The annual growth in total employment in SSI sector during the period 1985-98 registered about 28 percent, while the units increased by about 16 percent over the same time.

### Medium and Large Sale Industries

Ernakulam is the major centre of industrial activity with 145 units. In 1996-97, 75 companies gross block investment amounted to Rs. 8,333 million and provided employment to 13,268 persons. Kasargode, Wayanad, Pathanamthitta and Idukki have only a few industries and hence the size of investment and employment generated in these Districts are at a comparatively low level.

## 10. Forest

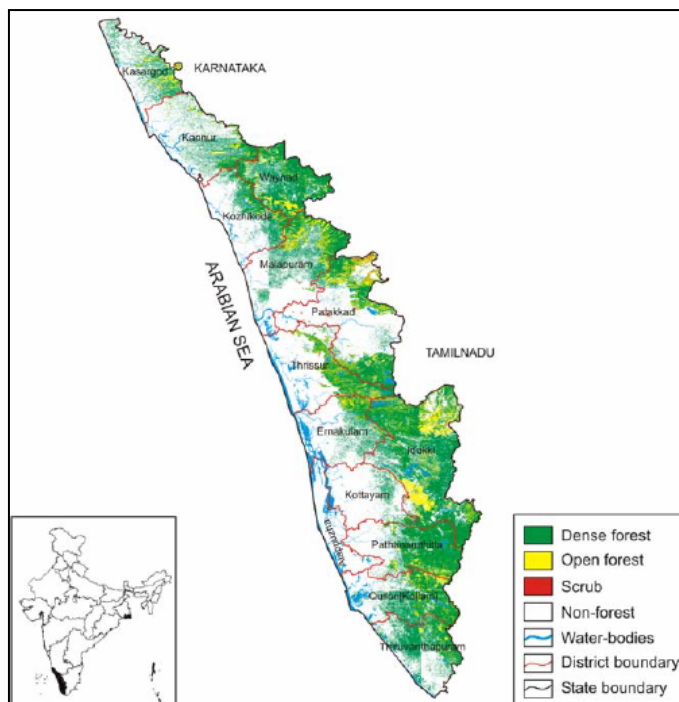
Forest cover of Kerala is largely spread over the Western Ghats of the state. The Western Ghats represent one of the world's 18 hot spots of bio-diversity and are considered to be a repository of rare and endangered flora and fauna



The percentage of forest cover in Kerala to that of India is 1.5 per cent. The total recorded forest area forms 28.9percent of the total area of the State<sup>14</sup>. Kerala Forest department data shows that, out of the total area under forests (11263.879 sq. km.), 9284.86 sq. km. falls under reserve forest, 1837.45 sq.km under vested forests and 141.57 sq. km falls under the proposed reserve.

Forest cover includes all lands more than one hectare with a tree canopy density of more than 10 percent including nonforest area. Certain areas with tree canopy such as coconut, orchards, coffee and tea estates have been included in the assessment, and the forest cover constitute 40 percent of the State's geographical area. Per capita Forest and Tree Cover is 0.05ha. Major forest produce includes timber, reeds, Bamboo and firewood. Their total production shows a declining trend from 1993-94 onwards. Reeds and bamboos show sharp decline in supplies during the period while the extraction of timber is on the increase.

<sup>14</sup> State of Forest Report (2001), Forest Survey of India, GoI



The nature of forests in Kerala shows a wide variation ranging from tropical wet evergreen to tropical dry deciduous forest.

*Protected areas are managed now as showcases of biodiversity with predominance for large animals in habitat management. Participatory management based on the principles of eco-development has been initiated and this strategy has attracted co-operation of the neighborhood communities and forest dependent communities.*

The total forest area in the State according to the records of the Forest Department, is 1.12 million ha, i.e., 29 percent of the total land area. The effective forest area is 0.94 million ha (i.e., 24 percent of the total land area). The difference of 0.18 million ha consists of areas diverted to other uses. *The highlands of the Western Ghats on the eastern boundary of the State constitute the main belt of forests. Over 59 percent of the land area of Idukki and Pathanamthitta Districts is under forest.* The percentage of forest cover of Kerala at 24 percent is higher than the national average of 19.5 percent.

*Out of the total reserve forest area of 9,157 sq. km. in the State (1996-97) Ranni Division, was having the largest area 1,050 sq km. It was followed by Thekkady Division with 777 sq km. The other Division with over 600-sq km. areas under reserve forests were Kottayam, Munnar and Malayattur. Vested forests are spread over 1,755 sq. km. in the State. Nilambur north and south division together were having over 334 sq. km. as vested forests, followed by Mannarkkad Divisions with 320 sq km and Wayanad north and south division with about 320 sqkm. Other division with comparatively large vested forests were Kozhikode 205 sq km., Palakkad 165 sq km., Kannur 83 sq. km. and Kottayam with 31 sq. km.*

The total area covered by the plantation of various species is about 159,000 ha. Among various species of plantation, teak (48 percent), eucalyptus (18 percent) and softwood and mixed plantation (23 percent) constitute the major items. In addition, the area under cashew, bamboo and others is about 6 percent. The total area under plantation, compared with 1991-92, has increased by over 5,000 ha. The maximum increase of 3,419 ha has been reported in softwood, followed by Bamboo with 1,533 ha and teak plantation 761 ha. The area under sandalwood has also increased from a low base of 11 ha to 4,074 ha over the same period.

The contribution of forestry and logging to the State income (at constant price) has declined from Rs. 1,238 million in 1980-81 to Rs. 441.6 million in 1994-95 and further to Rs. 316.1 million in 1997-98. Consequently, the forest sector share in the State income has declined from 3.2 percent in 1980-81 to 0.7 percent in 1994-95 and 0.4 percent in 1997-98.

## 11. Transport Sector

Transport development plays a crucial role in improving the economic performance of the State and the well being of its population. In this regard, provision of efficient and economical services are two important features of any transport system. This can effect rural and urban productive activities promote regional development, the functioning of markets, development of trade and commerce, export promotion and personal welfare. The availability of adequate and good infrastructure is an essential pre-requisite for the development of a cost-effective transport system. Infrastructure interventions are in many cases more important than prices in achieving supply response. The transport system of the State consists of 1.38 lakh kms of Road, 1148 kms of Railways, 1687 kms of Inland Waterways and 111 Statute miles of airways and 17 Ports.

### Road Network

Length of roads in Kerala is 4.2 percent of that in the country. Kerala has a satisfactory road network as compared to other States. Congestion and poor maintenance lead to increasing road accidents. Now a major challenge is the upkeep, upgradation and expansion to the standards prescribed by the Indian Road Congress for each category of road. Upgradation and maintenance of 1143 kms of state highways and major District roads have been taken up under the Kerala State Transport Project (KSTP) to develop the roads to national standards. Road traffic has been growing at a rate of 10 to 11

percent every year, resulting in excessive pressure on the roads in the State. Total road length in Kerala during 2002-03, increased to 1,38,196 kms from 1,25,835 kms in the previous year, registering an increase of 9.82 percent. The roads maintained by Panchayats increased by 3.73 percent during 2002-03. The road density in Kerala is 3.56 kms per sq.kms, which is far above the all India average of 0.91 km and is a reflection of the unique settlement patterns in the State. In relation to population, for every one lakh population in Kerala, there are 434 kms of road against a corresponding value of 299 kms at national level.

#### Agency Wise distribution of road length in Kerala (2003)

Department	Length (km)	Percentage
Panchayat	95515.888	69.12
PWD (RandB)	21467.492	15.53
Municipalities	7696.769	5.57
Corporation	5853.281	4.24
Forest	3770.74	2.73
Irrigation	1929.875	1.4
PWD (NH)	1523.954	1.1
Others (Railways, KSEB)	438.472	0.31
Total	138196.471	100

The road network in Kerala, as on 31.03.2003 maintained by Public Works Department (Roads and Bridges) (PWD (RandB)) totalled over 21,467.492 km in length. Out of the total road length of 95,515.888 kms under Panchayats, 58465.967 kms

#### *The peculiarities of roads of Kerala and issues thereon:*

- Two monsoons covering nearly eight
- High intensity and density of population
- Habitats and economic activities on roadside
- Non-availability of barren land an high cost of land acquisition for new roads and bye passes

#### **Issues of maintenance of roads**

- Deterioration of roads is faster due to:
- Heavy seasonal rainfall (average 3000 mm/ year)
- Insufficient pavement structure
- High intensity of traffic and overloaded vehicles
- Inadequate drainage
- Heavy ribbon development
- Raising of adjacent land

#### **Why roads are below standard**

- Most of the roads are evolved roads
- Not designed as per standards
- Increased traffic intensity

Source: Economic review 2003, Kerala State Planning Board, Percent

(61.21 percent) are graveled and 24,330.108 km (25.47 percent) are black topped. Of the 14 Districts in the State, Kottayam District has the major share of PWD roads with a length of 2,173.427 kms (10.12 percent) as on 3/2003. Wayanad District has lowest share with 515.897 kms. (2.4 percent).

National Highways and PWD maintained roads are by far the most important and accounted for 10.6 percent of the total road network. National Highways 47, 17 and 49 with a total length of 1,011 km traverse through the State providing inter-state linkages and forms the most traffic intensive roads in the State.

Over 70 percent of the State highways are single lane with carriageway width 3.75m with 1m unpaved shoulders on either side. Hardly 30 percent of State highways are double lane with 7 m carriageway width and 2.5 m shoulders at some of the places. Major District Roads (MDR), Other District Roads (ODR) and village roads are essentially single lane, but are not uniformly of 3.5 m width.

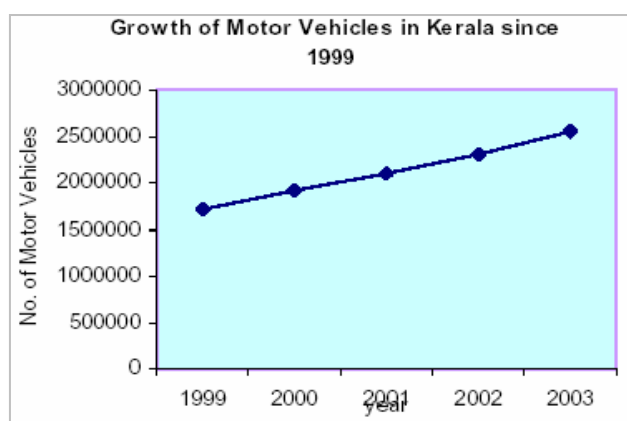
Even though Kerala is comparatively better placed than most other states as regards road length, the condition of many of these roads is very poor. Therefore the main emphasis under road development in Kerala has been on improvement and upgradation of existing roads rather than on construction of new roads.

The traffic density in National Highways and State Highways has already surpassed the capacity of two lanes (10000 PCUs) ie. the traffic demand in most of the urban roads has reached the level of 30,000 – 40,000 PCUs thereby making their widening to four and six lanes, especially in the high density corridors, a matter of urgent necessity.

## Road Transport

Road transport is the dominant mode of transport for moving goods and passenger traffic. The transport sector bears a close and complex relationship with all other sectors of the economy and transport improvements stimulate economic development. The sector has grown significantly during the last 50 years. Road transport acts as the feeder service to the rail traffic, air traffic and Port and Harbors. The vehicle density in the State is very high compared to many other States in India. Private Service providers dominate the Road Transport industry. The road freight services are wholly owned and operated by the private sector.

### Fleet Size and Composition



There are 29249 buses in the State as on 3/2003 including private buses. 10.30 The vehicle population in Kerala is growing at the rate of 10 percent per annum. The growth of motor vehicles since 1993 is shown in the Figure below. The Motor Vehicles Department registers motor vehicles and is responsible for the enforcement of Motor Vehicle Act and Rules in the State. The number of motor vehicles having valid registration as on 3/2003 stood at 2552171 as against

2315372 in the previous year, of which 236819 vehicles are newly registered during 2002-03. Personal vehicles recorded a faster growth.

Auto rickshaws accounted for 18.16 percent of the total fleet, cars / jeeps form 15.7 percent, buses 3.27 percent, goods vehicles form 4.72 percent while two wheelers formed the bulk of the fleet occupying a whopping 67.68 percent.

#### *Passenger Transport Vehicles*

Passenger transport vehicles in the State include autos (3 and 4) wheelers, cars / jeep cabs (taxis) and buses – contract carriages, stage carriages, and private buses (including omni and school buses). Out of the passenger transport vehicles fleet, 3 and 4 wheeler autos formed a major group accounting for over 58 percent, tourist and other cabs represented 19 percent and jeeps 6.5 percent. For buses, contract carriers were 30 percent, stage carriages 65 percent and private carriages about 15 percent. The contract carriage buses are small in size, with carrying capacity varying from 12 to 30 passengers.

#### *Goods Vehicles*

Three wheelers (goods carriers) comprised over 14 percent of the goods vehicles, light motor vehicles with 4 tonne and 6 tonne load capacity accounted for 48 percent (24 percent each). Medium and heavy vehicles accounted for 38 percent.

#### *Growth by Vehicle Type*

An analysis of growth of motor vehicles and road development in the State during the last five years reveals that vehicle population has increased from 1.51 lakh in 1998 to 25.52 lakh in 2003, while only a marginal increase of 1.36 percent has been achieved in the case of augmentation of road length during the same period. About 649 vehicles are newly added to the vehicle population every day. Of this 439 are two wheelers. The highest vehicle population was recorded in Ernakulam District and 4,46,959 (17.51percent) followed by Thiruvananthapuram District with 3,50,455 (13.73 percent) vehicles. Wayanad has the lowest number of vehicles ie. 33,550 (1.31 percent). The fast growth of road transport has been associated with a steep rise in the number of accidents.

Growth rates for car, bus and goods vehicles were about 9 percent, 5.4 percent and 7.8 percent respectively, while that for two wheelers and auto rickshaws was 17 percent. During the recent period, 1995-1998, bus and goods vehicle growth rates experienced a phenomenal increase of 17.7 percent and 11.5 percent per annum respectively.

## **Transport Operations**

#### *Bus Services*

The passenger transport services in the State are provided by both the public and private bus operators through “Stage” and “Contract” carriage operations. The scheduled route services on designated routes are provided by stage carriages and other non-scheduled services by contract carriage.

Inter-State routes with neighbouring states are operated under reciprocal agreement. In 1997, (March) Kerala State Transport Authority had issued 441 (390 regular and 51 temporary) inter-state permits to stage carriages and 44 (34 regular and 10 temporary) to contract carriages for operating on inter-state routes.



Stage carriages provide scheduled bus services on predetermined bus routes. These comprised intra-urban routes, upcountry routes, inter-city routes (all within the state) and inter-state routes of varying length. The fares charged on these routes are prescribed and approved by the State Transport Authority.

Over 61 percent of the bus fleet in the State is being operated as contract carriages. Contract carriages provide bus service to pre-booked passengers, individually or in a group, between given points on a contractual basis. These services are generally patronised by excursion parties, pilgrim groups and marriage parties. Tour conductors patronise contract carriages on established routes. The number of contract carriage buses has increased appreciably over 1996-97, due to the Government policy of providing self-employment to educated youth in the transport sector. During 1997-98, the number of contract carriages increased from 18,661 to 33,910, resulting in an 82 percent increase in a single year.

### **(i) KSRTC Operation**

The scheduled bus services are provided by Kerala State Road Transport Corporation (KSRTC), the State Government undertaking and a large number of private operators. KSRTC is managed by a Board of Directors, consisting of the Chairman, and 10 Members. One of the Board Members is the Managing Director.

The financial requirements of the corporation were met from contributions by the State and Central Governments. The investment of State and Central Governments as equity was about Rs. 840 million and Rs. 232 million respectively. Now the development funds of KSRTC are being made available mainly through Kerala Transport Development Finance Corporation as loans.

Kerala State Road Transport Corporation (KSRTC) is the largest single public sector undertaking, which carries out transport operation in the State. The State owned KSRTC has only 14.71 percent of the total number of stage carriages in the State. Private operators mainly carry out the passenger transport operation in Kerala. There were 29249 buses in the State as on 3/2003 including private buses. The Corporation commissioned 800 buses during 2002-03 for replacement of old buses. As on 31-8-2003 it possessed 4174 buses. Out of this 394 buses (9.44percent) are aged above ten years. The number of schedules operated as on 3/2003 has increased from 3576 to 3651 in 2002-03. The corporation operated its bus services to a length of 4124.44 lakh kms as against 4148.15 lakh kms in the previous year with a marginal decrease of 0.59 percent. About 11306.79 lakh passengers traveled in the KSRTC buses during 2002-03 as against 11087.16 lakh passengers in the previous year. The average length run by a bus in a day was 365 km during the period under review.

Transport undertakings face financial constraints. Operational losses are also partly attributable to operations of uneconomic routes for several reasons. In the year 2003, Kerala registered 38967 accidents (107 per day) in which 2839 persons were killed (8 per day) and 49450 persons were injured. Out of this KSRTC buses were involved in 1174 accidents (3 per day) whereas Private buses were involved in 4681 accidents. The breakdown level of KSRTC buses is also very high.

## (ii) Private Bus operations

Private bus operators with a fleet of 17,789 stage carriage buses, in 1996-97 operated on 1,771 city and 11,721 inter-city and upcountry routes. Most of the city routes, about 90 percent, are short haul up to 40 km. in length. Out of the inter-city routes operated by private operators, 44 percent are short haul up to 40 km, and less than 44 percent are medium haul routes 40 to 80 km and 12 percent are long haul routes above 80 km. It is estimated that the private bus fleet operated over 5.4 million vehicle-km in 1996-97. Private bus operators had thus a slight edge over KSRTC in its fleet utilisation and average daily performance averaged 85 percent and 350 km per day respectively. The occupancy ratio was over 85 percent with the number of passengers averaging 47.2. The contract carriage bus fleet size in 1997 was over 12,000 (inclusive of 1155 school buses). Of these 60 percent were mini buses (with seating capacity below 20 persons) and 20 percent, medium size buses (with seating capacity above 20 persons).

There has been a notable growth of contract carriages in the State. This has resulted in stiff competition amongst operators. It is concluded that the supply of services, in this category, is generally more than the demand. Consequently the vehicle utilisation is low at 80,000 km per year averaging to 230 km per day. The average occupancy for this group of vehicles was recorded as 20.3 passengers.

### *Goods Transport*

Goods transport vehicles in the state are mainly registered in the names of individual owners (over 90 percent). According to registration records of the Motor Vehicles Department, these are largely single vehicle owners. Almost all the newly registered vehicles are hypothecated as the vehicle purchases have been financed by private/public (institutional) financiers, usually for a period ranging from 3 to 5 years.

The trucking operations in the State are almost entirely in the private sector. Individual truckers - single vehicle owner drivers - predominate, accounting for over 70 percent in Light Transport Vehicles operations and 40 percent in inter city and inter state operations.

In inter city and inter state transport operations, the vast majority of truckers, depend on the transport companies for obtaining business, acting as booking agencies and transport brokers (middleman) and or transport contractors. Field enquiries revealed that on inter-city operations over 40 percent of goods vehicles are associated with transport companies while the remaining 60 percent operate through transport brokers and or transport contractors. These transport companies maintain close liaison with shippers and truckers.

The freight market in Kerala is divided into four distinct segments; (a) intra-urban (essentially local haulage) (b) upcountry (essentially short haul intra-Taluk) (c) inter-city (intra-state) and (d) inter-state operations. The vehicle and carrying capacity (by type) deployment lead and load in these market segments vary widely. Consequently the vehicle utilisation and freight rates differ. In intra-urban local haulage 3-wheelers with 0.5 tonne capacity are used for small loads.

LMVs concentrate largely on upcountry short haul routes operating on intra-taluks routes, mainly from the plantation / farmhouses / forest areas to the nearest market place carrying local produce, including rubber, bananas, coconuts, fish, etc as well as for carriage of building

materials like bricks, sand and stone to construction sites. In addition LMVs also cater for inter-city operations on short to medium hauls carrying goods in small loads up to 6 tonnes. The average utilisation of the vehicles has been estimated at about 220 km per day. Medium and heavy goods vehicles are largely operated on inter-city and inter-state routes. These vehicles operate carrying full truckloads as well as parcels. The average utilization of these vehicles has been reported at about 400 km per day, for 300 days a year operation, totalling 1,20,000 km per annum. The number of National permits in force by March 1997 was 7,916 as against 1,709 in March, 1990.

#### *Road Accidents:*

Kerala is among the most accident-prone States in India. The incidents of road accidents in Kerala are quite high and the state ranks fourth among the states in the number of accidents. Kerala has 6567 vehicle per 100 sq. km of area and 8016 vehicles per lakh population. The corresponding all India figure is 1673 and 5489. Kerala State has nearly three percent of the country's population, but it has recorded nearly 12 percent of the country's road accidents.

The State has recorded the highest accident rate of 15 accidents per 1000 vehicles as against the national average of 7.27 accidents per 1000 vehicles. Kottayam records around 10percent increase in number of accidents over the year 2002 to 2003 while the death due to accidents has increased by 38percent during the same period. Driver's fault was identified as the most common cause of accidents in 98.58 percent of the traffic mishaps. Thirty two percent of the total vehicles involved in accidents are the two wheelers followed by Car/Jeep (19 percent) and Autorikshaws (18percent). About 68.68 percent of the accidents occurred in day – time. Other causes such as mechanical defects, poor road conditions, fault of pedestrians, bad weather conditions contribute hardly two percent of the accident. *Number of accidents was highest in Kottayam and lowest in Wayanad.*

## **Railways**

The railway network runs multi-gauge operations extending over 1148 route km in Kerala of which 94.14 kms is meter gauge.

The total route length in the State is served by 13 Broad Gauge railway sections and 4 Metre Gauge sections. The railway operations on these sections are controlled by three divisions of Southern Railways, namely Thiruvananthapuram, Palakkad and Madurai. The metre gauge sections traversing through the State are under the jurisdiction of Madurai Division.

The railway operations in the State are controlled by the Thiruvananthapuram, Palakkad and Madurai Divisions of Southern Railway. The entire railway route length of the State is spread along 13 railway routes of which highest number of railway stations (92) is in Thiruvananthapuram – Walayar route. The route length has remained stagnant in the State for a number of years.

Thiruvananthapuram division ranks second in number of passengers carried and passenger earnings. Forty-seven Express/Mail trains and 59 number of passenger trains are being operated by the Division to carry 1.65 lakh passengers daily. Thiruvananthapuram Division carried 1217 lakh passengers during 2002-03 against 1,214 lakh passengers in the previous year. The total revenue receipts from passengers in 2002-03 amounted to Rs. 22,792.00 lakh in Thiruvananthapuram division as against 19,312 lakh in the previous year (18.02percent

increase). The goods traffic has increased during 2002-03 from 36.3 lakh tonnes to 40.71 lakh tonnes (10.8 percent decreased) in this division. Railway electrification and track doubling works have commenced in various sections, and some have been completed. The railway electrification work viz. Ernakulam to Kottayam as well as via Alappuzha is in progress. The work of gauge conversion between Kollam and Punalur which carries most of the Sabarimala pilgrims is also in progress.

Kerala depends heavily on railways for the import of various items from other parts of the country. Railways also have an advantage of being less energy intensive and more environment friendly system of transport. The pressure on the road system in Kerala is extremely heavy which necessitates the development of Railways.

### **Inland Water Transport Network and Operational Performance**

Inland Waterways in Kerala stretches to a length of 1,687 kms corresponding to 11.6 percentage of a total of 14,544 km in the country. The major stretch of canal in the State is the West Coast Canal connecting Hosdurg in the north and Thiruvananthapuram (Poovar) in the south, having a length of 560 kms.

The rapid development of land transport modes has resulted in negligence of development and maintenance of waterways and other infrastructure as well as the floating assets.

The inland waterways are divided into the National Waterways and State Water Ways. The Inland Waterways Authority of India is responsible for development, maintenance and regulation of National Waterways for shipping and Navigation and also to advise the Central and State Governments on matters related to development of the sector. As for State Waterways, the Govt. of Kerala is responsible for the development, maintenance and regulation of waterways and water resources. At present, the main navigation route in Kerala is the West Coast Canal having a length of 558 km divided into 9 sections.

The State Water Transport Department and Kerala Shipping and Inland Navigation Corporation render transport services in the waterlogged areas of Alappuzha, Kollam, Kottayam, Kasargode and Kannur Districts. The State Water Transport Department renders service in the movement of passenger traffic while Kerala Shipping and Inland Navigation Corporation, is mainly engaged in the business of transportation of cargo and passengers.

There was a decline in number of passengers traveled from 216 lakhs in 2001-02 to 188 lakhs in the year 2002-03. There were 85 boats under the possession of Water Transport Department and 52 were put into operation. The number of schedules remained at 644 as in the previous year. There was a reduction in route length operated by 6.83 percent, from 6,775 kms in 2001-02 to 7,272 kms in 2002-03. The revenue earned by the department recorded a marginal increase of Rs. 11 lakhs and reached Rs. 500 lakhs in 2002-03.

Inland Waterways in Kerala is not utilized to its full potential for movement of people and goods. Bottlenecks in using the existing waterways to the optimum level include lack of depth in waterways caused by slitting and lack of maintenance and dredging, lack of maintenance of navigation system, poor bank protection, lack of modern crafts and accelerated growth of water hyacinth. There are also other constraints like absence of navigational aids, lack of modern Inland Craft terminals and cargo handling facilities.

## Air Transport

### *Terminals and Passenger Traffic*

Thiruvananthapuram, Kozhikode and Kochi are the three airports in Kerala. Thiruvananthapuram and Kochi were declared as international airports. Kochi international airport is a venture of state government. Air transport plays a major role in the development of tourism, both domestic and international. During 2002-03, 31,481 flights (15,324 domestic and 16,157 international) were operated from all the three airports as against 28247 (15,136 domestic and 13,111 international) in 2001-02. There was an increase in the number of flights by 10.27 percent. A total number of 23,17,116 passengers (7,42,724 domestic and 15,74,392 international) were carried during the reporting period from the three airports as against 23,03,817(8,24,652 domestic and 14,79,165 international) passengers in the previous year showing a marginal increase of 0.58 percent.

### *Cargo Traffic*

Kerala State Industrial Enterprises Ltd runs two air cargo complexes at Thiruvananthapuram and Kozhikode Airports. The company is the official export house for promotion of exports as recognized by Government of India. The Company also acts as the virtual office of Agricultural and Processed Food Products Export Development Authority Ministry of Commerce, Government of India, for the Kerala State.

## 12. Communications

### Postal Service

Kerala postal circle has a postal network of 5077 post offices. Postal services, duly supported by a technology-based network are an important component of the modern and efficient information and communication system. The information technology revolution has a vast potential for the development of postal sector both in terms of coverage of area as well as quality of services.

#### **Postal System at a glance in Kerala**

Post offices functioned during 2002-03	5077
Head post offices	51
Sub post offices	1463
Extra departmental sub post offices	527
Branch offices	3036
Speed post centers	44
Other postal services	90
Rural post offices	4197
Urban post offices	880
Area served by one post office (sq.km)	7.67
Population served by one post office	6288

### Telecommunications

Kerala Telecom circle serves the whole of Kerala State, the Union Territory of Lakshadweep and part of Union Territory of Pondicherry (Mahe). The circle has ten major Secondary Switching Areas (SSA), one major Telecom District and one minor S.S.A of Lakshadweep. Kerala has an impressive record of performance in telecom sector. BSNL has become the premier cellular service provider in Kerala. The cellular mobile services in Kerala were

launched on 23-10-2002 covering 128 cities and towns and 2112 kms of Highways. The State has a telephone density of 94.88 per 1000 population and 101 per 1000 population inclusive of BSNL cellular mobile connections as on 31-3-2003. BSNL provides cell connectivity at Sabarimala during the pilgrim seasons.

Mobile connections in Kerala continued to increase and the phone connection in the State has crossed the one million mark. At the end of December 2003, the state had 10.23 lakh mobile owners as against roughly 33 lakh phones in the state and Madhya Pradesh. All mobile companies operating out of the state showed healthy growth during December 2003. The growth during 2003 is as high as 93percent, with the total mobile ownership number growing from 5.31 lakh in December 2002 to 10.23 lakh in December 2003.

### **13. Social Development**

Social development of Kerala has attained commendable success. Kerala is the land of high literacy and health care where enrolment in primary schools is nearly as high as in West Europe and infant mortality rates are as low as in New York. Apart from historical factors, the successive Governments of the State have followed a development strategy by consciously investing in social development sectors like education, medical services and public health. Kerala's pioneering redistributive policy, measures like land reforms; introduction of housing schemes for economically weaker sections and the comprehensive coverage of a public distribution system deserve special mention. The institutional and non-institutional social security measures introduced by the successive Governments in Kerala were largely directed at reducing income insecurity and deprivations among weaker segments in the State. Kerala has made notable achievements in health standards as reflected in the attainment of a low infant mortality rate, low maternal mortality rate, low birth rate, low death rate, and high life expectancy at birth. This has been made possible through a wide network of health infrastructure and social factors such as women's high education levels, and general health consciousness and awareness.

### **14. Tourism**

Kerala has been branded as one of the most wanted tourism destination. The major tourist attractions in the State are the Kovalam beach as a seaside resort, the houseboats in the canals and backwaters, and wildlife sanctuaries at Thekkady, Parambikulam (Palakkad District), Sultan Bathery, Wayanad and Mananthavady. In addition, there are South Indian architectural marvels like the Padmanabhaswamy Temple in Thiruvananthapuram. The Sabarimala temple of Lord Ayyappa is the most famous pilgrim-tourist centre along with Guruvayoor Sri Krishna Temple. Thrissur is the cultural centre of the State and the famous Kathakali centre, Kalamandalam, is a place of interest for art lovers. Thiruvananthapuram, the capital city abounds in temples, mosques and churches. Valley lagoons, Neyyar dam and Ponmudi, the famous hill stations are the other tourist centres in and around Thiruvananthapuram. Thenmala is the major project undertaken under Eco-Tourism programme.

Tourist arrivals in Kerala during 2002 were about 5.8 million of which domestic tourist constituted about 5.6 million and foreign tourist 0.2 million. Kerala accounted for a 9.85 percent share in the total foreign tourist arrivals in India in 2002 as against the figure of 8.23

during the previous year. The details of tourist arrivals in Kerala both foreign and domestic are presented below.

**Details of Tourist Arrivals in Kerala**

Year	Foreign Tourist Arrivals ('000)			Domestic Tourist Arrivals ('000) (Kerala)
	India	Kerala	Percent share in India	
1990	1,329	66	5.0	866
1991	1,236	69	5.6	948
1992	1,434	90	6.3	994
1993	1,442	95	6.6	1,027
1994	1,532	104	6.7	1,284
1995	2,123	142	6.7	3,915
1996	2,287	176	7.7	4,403
1997	2,374	182	7.7	4,953
1998	2,358	189	8.05	4481
1999	2482	202	8.15	4888
2000	2649	210	8.00	5011
2001	2537	209	8.23	5239
2002	2361	232	9.85	5568

There is an overall decline in the foreign tourist arrivals, which could be considered as a reflection on the general recessionary trend in the country. The natural calamities over the world, South East Asian crisis, political instability and competing pricing in air fares and hotel package deals are some of the major factors influencing the decline in foreign tourists. At the same time, there is a perceptible increase in the domestic tourist arrivals.

Post September 11, 2001 (attack on the World Trade Centre), a revival was observed from October 2002 onwards. While the international tourist inflow to India in the year 2002 recorded a decline to 6.92 percent, Kerala witnessed a considerable growth of 11.37 percent, including a 6.27 percent increase in domestic arrivals. In 2003 there has been a further spurt. According to reports, the increase in tourist inflow this year is expected to be nearly 30 per cent. *While domestic arrivals were earlier largely pilgrims (mostly Sabarimala pilgrims), nowadays 30 per cent of domestic arrivals are also tourists.*

Total State allocation for tourism during 2002-03 was 74.25 crores while central financial assistance for tourism was 8.61 crores. Returns / earnings from tourism in 2002 were 705.67 crores. In spite of these investments, the Task Force on Tourism Development has observed that the problem of lack of infrastructure facilities, information systems, marketing and publicity still inhibit tourism development in the State. Considering the tourism potential it becomes imperative to develop the tourist promotion policy in the State in addition to sizeable investments in developing the infrastructure.

## 15. Prospective Growth

### Population

The technical group on population projections has estimated the growth in population for India and States from 1996 to 2016. The total population of Kerala State has been projected to increase from 30.96 million in 1996 to 32.53 million in 2001 and further to 35.65 million in 2011 and 36.9 million in 2016. The urban population is projected to increase from 8.9 million

in 1996 to 10.1 million in 2001 and further to 13 million in 2011 and 14.4 million in 2016. Accordingly, the share of urban population in the State is expected to increase from 26.4 percent in 1991 to 28.7 percent in 1996 and further to 31 percent in 2001 and 39 percent in 2016.

The above population projection both for total and urban population are further extended from 2016 to 2026 based on the past trends. The total population is projected to increase from 36.9 million in 2016 to 38.2 million in 2020 and further to 40.0 million in 2026. Urban population in the State is expected to increase from 14.4 million in 2016 to 15.5 million in 2020 and 17.1 million in 2026. Correspondingly, urban population as a percentage of total population would increase from 39.1 percent to 2016 to 40.4 percent in 2020 and 42.8 percent in 2026.

The annual growth rates for total and urban populations in the State during the period 2016-2026 are placed at 0.8 percent and 1.7 percent respectively.

### **State Economy**

The perspective presented in Kerala's Ninth Plan, (1997-2002), envisages an annual growth rate in State Domestic Product of 7 percent during the Plan period. To achieve this growth rate, the State's total investment requirement during the Ninth Plan period was estimated at Rs. 520 billion at 1996-97 prices. Of this Rs. 231 billion was stated to be the investment outlay of the public sector (both Central and State) and Rs. 289 billion as the private sector investment during the Plan Period. As against the above perspective, the Ninth Plan outlay was fixed at Rs. 161 billion, which is less than one-third the required size of investment.

The Plan document does not provide sectoral growth rates required to achieve the overall annual growth rate of 7 percent. The physical targets set out for productive sectors seem to be quite ambitious and devoid of reality. In agriculture, the Plan has targeted a 25 percent increase in rice, 52 percent increase in coconut and 80 percent increase in cashew production.

In the industrial sector the Government of Kerala enunciated an Industrial Policy, 1998 which laid overall objectives including (i) accelerated rate of industrial growth targeted at 9 percent annual growth. (ii) Creation of massive employment opportunities in the industrial sector, (iii) modernisation of the traditional sector, (iv) revival of sick and closed units both in private and public sectors, and (v) promotion of agro-based industries – with optimum utilisation of the resources available in the State.

In the broad strategies, emphasis is placed on attracting domestic and foreign investment along with provision of industrial and economic infrastructure, transport, communication and power. There is no indication of any major direct private investment (foreign or domestic) in the State. Economic growth is unlikely to show any significant takeoff unless Kerala attracts private investment particularly in export oriented activities.

It would not be unrealistic to assume that the SDP growth is likely to be in the range of 5 percent per annum (Scenario 1) during the Plan and beyond, instead of the 7 percent in the long term plan perspective.

The other case (Scenario 2) rather optimistic is based on a 10 to 15 percent increase in plan outlays (in real terms) and improved economic efficiencies. Accordingly, the economy will



accelerate and the NSDP growth rate will gradually increase to 6 percent per annum in the period 2012-2017, before tapering off to 5.6 percent and thereafter up to the study period 2025.

The projected growth rates staged over 5 yearly intervals are shown below:

<i>Period</i>	<i>Projected Annual Growth Rate (percent)</i>
Up to 2002	5.0
2002-2007	5.4
2007-2012	5.8
2012-2017	6.0
2017 onwards	5.6

The sectoral growth rates envisaged for both the scenario are as follows:

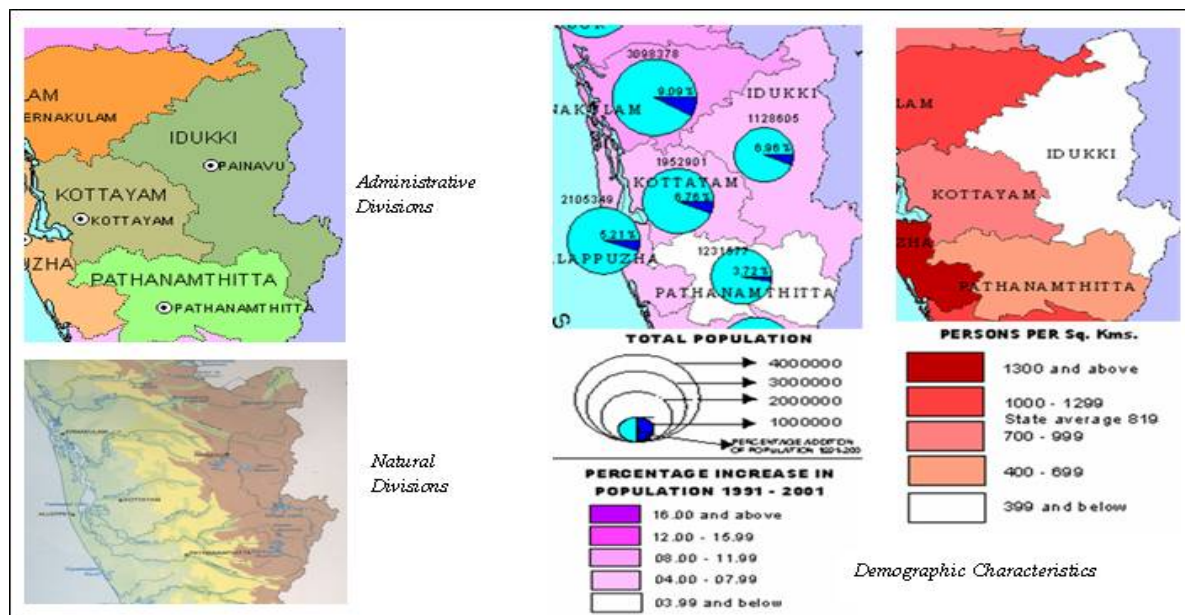
<i>Sector</i>	<i>Projected Sectoral Annual Growth Rates (Per cent)</i>					
	<i>Scenario 1</i>			<i>Scenario 2</i>		
	<i>1997- 2025</i>	<i>1999- 2002</i>	<i>2002- 2007</i>	<i>2007- 2012</i>	<i>2012- 2017</i>	<i>2017- 2025</i>
Primary	3.0	3.0	3.2	3.3	3.3	3.4
Secondary	5.5	5.5	6.0	6.5	7.0	6.0
Tertiary	5.7	5.7	6.3	6.6	6.7	6.1
Overall	5.0	5.0	5.4	5.8	6.0	5.6

According to Scenario 1 NSDP at constant prices will increase from Rs. 90.1 billion in 2000 to Rs. 305.1 billion in 2005, correspondingly per-capita income will increase from Rs. 2,792 in 2000 to Rs. 7,680 in 2025.

In scenario 2, the NSDP (at constant prices) will increase from Rs. 90.1 billion in year 2000 to Rs. 354.4 billion in 2025, correspondingly the percapita income will increase from Rs. 2,792 in year 2000 to Rs. 8,922 in year 2025.

## 16. Outline of the Immediate Planning Region (Planning Region 1)

Immediate planning region consists of the three Districts of Pathanamthitta, Kottayam and Idukki as described in section 2.2.1 of this report. These form part of the central Kerala and extend from Highlands of the east to the coastal plains of the west. These are the most important influence regions / areas of Sabarimala pilgrimage.



An outline of each of these administrative regions is presented in this section.

**Pathanamthitta District:**

Pathanamthitta is a combination of two words Pathanam and Thitta which mean an array of houses/ settlement on the river side.

*Natural Environment*

Pathanamthitta with an area of around 2637 sqkm, spread across mostly the highlands and midlands of Kerala can rightly be called the headquarters of pilgrimage tourism in the state. The topography of the District is highly undulating. It starts from the tall hill slopes covered with thick forests on the East along the mountains down to the valleys and small hills to the flat and of coconut trees in the Western borders of Alleppey district. The district is famous for its scenic beauty, fairs and festivals.

The district has more or less the same climate conditions as prevalent elsewhere in the State, viz., dry seasons from December to February and hot seasons from March to May. The south west monsoon from June to September and the north west monsoon from October to November provide fairly good rain. The south west monsoon is usually very heavy and about 75percent of the annual rain is received during this season. The climate is generally moderate, the temperature rising from 20 to 39 degree Celsius.

Pathanamthitta is a true tropical diversity adorned with fertile agricultural land, plantations and forests. Paddy, tapioca, varieties of vegetables and spices like cardamom, pepper etc. are extensively cultivated. The district also abounds in extensive rubber plantations. Forest covers an area of 1390.73 sq.kms. in the District. This is more than 50percent of the total area of the District, while the optimum area fixed by experts is only 33percent. The total cropped area in Pathanamthitta District is 1086.53 sq.km. The forests in the Districts can broadly be classified as evergreen, semi-evergreen and moist deciduous forest. Teak, rosewood, jack tree, manjakadambu, anjili, pala etc. are some of the important varieties of timber available

Three important rivers flow through this District. They are Pampa, Achenkovil and Manimala Rivers. The Pampa River is formed by the confluence of Pambayar, Aruthayar, Kakkadayar, Kakkar and Kallar. It descends from Sabarimala, flows through various parts of Ranni Taluk, enters Alappuzha District after joining with river Manimala and river Achenkovil and empties itself into the Vembanad Lake. The river Achenkovil is formed by the confluence of several small streams originating from Rishimala, Pasukidamettu and Ramakkaltheri and joins the Pampa at Veeyapuram in Alappuzha District.

### ***Socio-Economic Environment***

The headquarters of the District Panchayat is at Pathanamthitta. There are nine block Panchayats. They are Parakode, Pandalam, Kulanada, Elanthoor, Konni, Mallappally, Ranni, Koipuram and Pulikkeezhu. The number of Grama Panchayats in the District is 53. Adoor, Thiruvalla and Pathanamthitta are the municipalities. The District has two revenue divisions, viz., Thiruvalla and Adoor. The District consists of five taluks, viz., Ranni, Kozhencherry, Adoor, Thiruvalla and Mallappally. There are sixty-eight villages in the District.

#### ***Demographic Characters - Pathanamthitta***

<i>State / District</i>	<i>Population 2001</i>			<i>Percentage decadal growth rate</i>		<i>Sex-ratio (Number of females per 1000 males)</i>		<i>Population density per sq.km.</i>	
	<i>Persons</i>	<i>Males</i>	<i>Females</i>	<i>1981-91</i>	<i>1991-2001</i>	<i>1991</i>	<i>2001</i>	<i>1991</i>	<i>2001</i>
Kerala	31838619	15468664	16369955	+14.32	9.42	1036	1058	749	819
Pathanamthitta	1231577	588035	643542	+5.60	3.72	1062	1094	553	574

Nearly one-third of the electricity produced by the State comes from this District. Power is generated from the Sabarigiri Hydro-electric Project situated at the Pampa basin in the District. The abundant water resource in the District is also utilised for irrigation purposes through the Kallada Irrigation Project and the Pampa Irrigation Project.

### **Kottayam District**

Kottayam is a compound word formed by the words kotta and akam, which means the interior of a fort.

#### ***Natural Environment***

Kottayam District is bordered on the north by Ernakulam District, on the east by Idukki District and on the south by Alappuzha and Pathanamthitta Districts. The Vembanad Lake forms the western boundary. Kottayam lies between Latitudes 9° 15' and 10° 21' and Longitudes 76° 22' and 77° 25'. The District is naturally divided into highland, midland and lowland; the bulk being constituted by the midland regions. Taluks of Meenachil and Kanjirappally have highland and midland areas, while the other three taluks have Midland and Lowland areas. Kottayam District has a total area of 2,204 sq.km, which forms 5.7 percent of the total area of the State.

The hot season from March to May, is followed by the Southwest Monsoon form June to September. October and November constitute the post-Monsoon or retreating Monsoon

season, when day temperature increases gradually and the heat is nearly as intense as in summer.

The important rivers of the District are the Meenachil River, the Muvattupuzha River and the Manimala River.

The Meenachil River flows through the taluks of Meenachil, Vaikom and Kottayam. It is formed by several streams originating from the Western Ghats in Idukki District. At Erattupetta, Poonjar River also joins it, takes a sharp turn and flows towards the west. At Kondur, it is joined by the Chittar and at Lalam it receives the Payuapparathodu and flows in a south-west direction till it reaches Kottayam. Here, it branches into several streams before emptying into the Vembanad Lake. The important towns in the basin are Pala, Poonjar, Ettumanoor and Kottayam.

The Muvattupuzha River originates from Ernakulam District, flows through Vaikom Taluk and empties into the Vembanad Lake. The most important town in its basin is Vaikom, the famous pilgrim centre. The Manimala River flows through Kanjirappally and Changanassery taluks. The Chittar joins it on its course further down the west as it flows to Alappuzha District. The important town in the basin is Mundakayam.

### ***Socio-Economic Environment***

Kottayam District has two Revenue division viz., Kottayam and Pala. Vaikom, Kottayam, Changanassery, Meenachil and Kanjirappally are the taluks in the District. There are four municipalities, 11 development blocks and 73 Panchayats. Kottayam, Vaikom, Pala and Changanassery are the municipalities. Madappally, Pallom, Ettumanoor, Kaduthuruthy, Vaikom, Uzhavoor, Lalam, Erattupetta, Kanjirappally, Vazhoor and Pampady are the development blocks. Demographic characteristics in terms of population distribution, percentage decadal growth rate, sex-ratio and population density are presented in the table below:

#### ***Demographic Characteristics - Kottayam***

<b><i>State/ District</i></b>	<b><i>Population 2001</i></b>			<b><i>Percentage decadal growth rate</i></b>		<b><i>Sex-ratio (Number of females per 1000 males)</i></b>		<b><i>Population density per sq.km.</i></b>	
	<b><i>Persons</i></b>	<b><i>Males</i></b>	<b><i>Females</i></b>	<b><i>1981-91</i></b>	<b><i>1991- 2001</i></b>	<b><i>1991</i></b>	<b><i>2001</i></b>	<b><i>1991</i></b>	<b><i>2001</i></b>
Kerala	31838619	15468664	16369955	+14.32	9.42	1036	1058	749	819
Kottayam	1952901	964433	988468	+7.71	6.76	1003	1025	676	722

Kottayam has its place of honour in the cultural map of Kerala, being the first 100percent literate District in the State. Kottayam has many important temples and other religious institutions. Kunchan Nambiar, the father of Thullal, a popular temple art form, was supposed to have lived at Kidangoor in Kottayam.

### **Idukki District**

The word Idukki derived from the word *Idukku* that means a gorge.

### **Natural Environment**

Spread over an area of 5,061 sq. kms the District is marked by undulating hills and valleys. The high ranges vary in altitude from 2500 ft. above mean sea level in Kulamavu to more than 5,000 ft. above M.S.L. in Munnar. The highest peak in Kerala, Anamudi is in the District. It is 8,841 ft. high. The different levels of elevation promote the growth of diverse flora. Except a bit of midland region in the western portions of Thodupuzha Taluk all the remaining areas consisting of Devikulam, Peerumedu and Udumbanchola taluks and the eastern portion of the Thodupuzha Taluk are entirely highland region. There are eleven peaks in Idukki which exceed a height of 6000 ft. above M.S.L. The highland region is having a comparatively cold climate. In peaks above an elevation of 2400 meters the temperature at times falls down to near freezing point in the winter. Occurrence of mist is usual in the highland region lying over an elevation of 1300 meters above M.S.L.

The annual rainfall in the District varies from 250 to 425cms. But, it is recorded that the annual rainfall had gone up to 700cms in certain years. The eastern and northeastern regions of the District get very low rainfall in contrast to other areas. This may go up to 150cms at Marayur, Kanthalloor, Vattavada and Thalayar regions. Marayur and Kanthalloor are virtually rain shadow areas, lying in the eastern side of the Western Ghats.

Periyar, Thodupuzhayar and Thalayar are the three important rivers of the District. Though the Pampa River originates from the District it mostly runs through the Pathanamthitta District. Devikulam, Eravikulam and Elaveezha Poonchira are three fresh water lakes in Idukki.

The District has at present about 260907 ha. forest area. However, the sylvan wealth of the District and the animal life are fast disintegrating due to deforestation, indiscriminate felling of trees, encroachment and poaching. All kinds of wild animals with the exception of lions abound in the forests of Idukki. The grasslands of Peerumedu are a haven of carnivores like the tiger and the leopard. Bison, wild bear, langur and monkeys are a few other common denizens of the jungle. The Thar (striped goat) seen in Marayur region and Rajamala is found nowhere else in the world. The forest glades of Idukki resound in daytime with the sweet voices of birds. They include the small wild parrots, mynas, red horned sparrows and a host of other nondescript species. The valuable trees growing in the forests are teak, rosewood, deodars, sandal etc. The Forest Department has reared large Eucalyptus Plantations in the hilly tracts.

### **Socio-Economic Environment**

Demographic characteristics in terms of population distribution, percentage decadal growth rate, sex-ratio and population density are presented in the table below:

**Demographic Characters – Idukki**

State/ District	Population 2001			Percentage decadal growth rate		Sex-ratio (No. of females per 1000 males)		Population density per sq.km.	
	Persons	Males	Females	1981-91	1991-2001	1991	2001	1991	2001
Kerala	31838619	15468664	1636995	+14.32	9.42	1036	1058	749	819
Idukki	1128605	566405	562200	+10.45	6.96	975	999	236	252

The economy of Idukki is predominantly agricultural. Cardamom, tea, tapioca, rice, pepper, rubber, coconut, sugarcane, coffee, arecanut, ginger, lemon grass and vegetables are the most important agricultural produces of the District.

Crop husbandry and animal husbandry are thus the main occupations of the people. Agriculturists and agricultural laborers constitute the bulk of the population. About ten percent of the total population consists of estate laborers. Most of the Harijans work as agricultural laborers in the tea and cardamom estates. Ayyappancoil and Pampadumpara of Udumbanchola taluk, Kumily of Peerumedu taluk, Kuttampuzha, Mannamkandam and Marayur of Devikulam taluk, Vannappuram, Vazhathope and Velliyamattom of Thodupuzha Taluk are the concentrations of Harijans. *Mannans, Mala Arayans, Uralis, Muthuvans, Hill Pulayas, Paliyans and Ulladans* are the different groups of tribals in the District.

Eighty percent of the power production of Kerala is from Idukki District, which is generated from the different hydroelectric projects, scattered in the high ranges of the District. Idukki District is industrially backward, despite generation of large quantum of power. Government of India has declared the District as "No Industry District". Lack of infrastructural facilities, vastness and the resulting remoteness of the District and the diversity in climate are all factors, which hurdle the establishment and growth of industries in the District. At present there are 2082 registered small-scale industrial units functioning in this District. There are no railway networks through the District. There are 290 Post Offices and 73 Telephone exchanges in the District. Medical amenities are poor in the highland region. The tea estate companies maintain their hospitals and dispensaries where outsiders are also treated now.

**Annexure 4: Database on the Impacts of the Pilgrimage in Panchayats of Planning Region 1**