PART - I

DEVELOPMENT PLAN - AN INTRODUCTION

DEVELOPMENT PLAN - AN INTRODUCTION

A. LOCAL DEVELOPMENT PLANS AND INTEGRATED DISTRICT DEVELOPMENT PLAN

The development concept of an area can be conceptualised by analysing the development problems and potentials of that area as well as the existing status of various development sectors.Based on development concept, the long range development perspective for comprehensive development of that area along with complimentary sectoral development, suggestions are framed. The 'development plan' for an area comprises this long range development perspective and the sectoral development proposals-spatially located and phased, derived within the frame work of the long range development perspective.

Here, it must be taken note of that such a 'Development Plan' for an area can be prepared based on the development policies and proposals both of the surrounding areas and the region as a whole. In other words, both horizontal and vertical integration are to be achieved.

Subsequently to enactment of 73rd and 74th Constitutional Amendment Acts, respective jurisdictional areas of the three tires of Panchayats viz. Grama Panchayat, Block Panchayat and Jilla Panchayat along with Urban local government viz. Municipal Councils/Corporations are Planning areas. The District Planning Committees (DPCs) Constituted under Article 243 ZD of the constitution of India shoulders the responsiblity of achieving integrated development of the district that comprise of both rural and urban areas. As per the said Article, consolidation of plans prepared by the Panchayats and Municipalities in the district and preparation of draft development plan for the district as a whole are responsibilities of District Planning Committees. The Kerala Panchayat Raj Act and the Kerala Municipalities Act, 1994 also stipulate the preparation of long range development plans by Local Self Governments.

The District Planning Committee, Kollam, realising this constitutional responsibility, decided to prepare Integrated District Development Plan for the District (IDDP) as a whole and Local Development Plans (LDPs) for all Local Self Government Institutions in the district in Spatial Planning Approach and initiated a pilot project of preparation of Development Plans as a joint project of all Local Self Governments in the District as approved by Governments vide G.O (MS) 62/03/Planning dt. 01.08.03. The designated nodal agency for giving technical support for the project is the Department of Town and Country Planning. The Development Plans prepared under this project is unique in many ways.

- The project is based on participatory spatial planning approach. All the development partners like Technocrats, Politicians, NGO's, Government Departments, common men and other decision makers are involved in the process of preparation of LDP and IDDP.

- Unlike other spatial plans prepared in this country, specialty of IDDP and LDP is that the sectoral policies of various development agencies of the planning area are translated to spatial plans. Thus there was a clear change over from sectoral approach to spatial planning approach as the projects ensures integration of various development sectors over a space (An LSGI in the case of LDPs and

District as a whole in the case of IDDP). The integration of various sectors is performed by taking into account the specialities in social, physical and economic aspects of the space, over which the sectors are integrated. This ensures the best and optimum utilization of land, the most valuable resource in the planning area.

- The local plan preparation included integration of analysis based on people's aspirations and technical spatial analysis. The district plan preparation comprised of integration of sectoral analysis and spatial analysis including settlement studies. Thus the development perspectives are evolved by integrating the view points of various stakeholders, both from mere aspirations and scientific analysis.

- Both IDDP and LDPs are prepared, based on top down grass root up approach. The data collection, analysis and carving out of local level proposals are done at the grass root level which is later modified, based on the policies derived at a higher level i.e. at the district level while preparing the IDDP. At the same time the policies at the higher level are formulated taking into account the proposal at the lower level (LSGI level).

- State of the art technology - GIS, GPS and satellite imagery, to name a few - are utilized in the preparation of LDP and IDDP.

Now that the draft IDDP for Kollam is prepared and this will act as a broad frame work for preparation of Local Development Plans for Local Self Governments in Kollam. The Local Development Plan for Paravoor also has been prepared within this frame work. Here, it must be specifically noted that for finalising the IDDP for the District, draft LDPs of all LSGs in the district shall be an input. Hence, it is of atmost importance that the LDPs of LSGs are prepared in a time bound manner.

While preparing Development Plan of an area in the spatial planning approach, the specialities of the area are given due importance. Some of them are attached to the location/regional setting of the area. Coastal areas show entirely different physical features from that of high land areas. The resource availablity of different areas also may be entirely different ranging from the fertile agricultural lands in one place to rare earths and minerals in certain other place. Also, different areas display different characteristics with reference to size, density, distribution and composition of population.

Aspects like availability of physical or social infrastructure also show wide variation between different areas. If water scarcity is a major problem in Grama Panchayat 'A', flooding will be the major issue faced by Grama Panchayat 'B'. While preparing Development Plans in Spatial Planning Approach such peculiarities will become the basic parameters in deciding upon the development proposals of the area. Such development proposals are not formulated in an isolated manner but, the integrated development concept of the area derived through integrating key development sectors of the region, become the basis for which.

The first stage in preparation of Development Plans is extensive training programmes to various stakeholders. At the second stage, extensive data collection comprising primary surveys (physical survey, socio-economic survey, heritage survey etc.) and data collection from secondary sources are included. This stage is followed by data analysis, identification of development issues, setting up of Goals and Objectives, formulating development concept, carving out policies, strategies and development suggestion and finally compiling these into a report form.

B. LOCAL DEVELOPMENT PLAN – PARAVOOR

The preparation of the Paravoor Development Plan has been efficiently carried out under the leadership of Paravoor Municipal Council. The time bound completion of different phases of the preparation of the Development Plan for Paravoor was carried out by the Spatial Integration Committee constituted for the Paravoor Municipality with the Development Standing Committee Chairman as Chairman and people who are actively engaged in decentralised planning, capable of giving opinion on the Development of Paravoor as members. One civil engineering graduate is appointed as engineering trainee. The chairman, convenor, joint convenor and engineering trainee of the Spatial Integration Committee, had attended different training programmes on the procedure for the preparation of the Local Development Plan. The procedure adopted for the preparation of Paravoor Development Plan is briefly explained below.

1. For each ward, two survey trainees are selected and with their help land use survey and socio-economic survey were conducted. These two surveys are completed within one month. The land use survey is conducted in 1:5000 scale re-survey map. The copies of the map are prepared by the district office of the Town and Country Planning Department. The land use survey maps are scanned and digitised in geographical information system. From each ward 10% households are selected and socio-economic survey was conducted. The socio-economic survey was conducted in a well designed schedule and the data entered in to the computer with the help of a computer institute and handed over to the district office of the Town and Country Planning Department.

2. Along with these details, secondary data were collected. These details were consolidated in a specified format given by Town and Country Planning Department and given to the District office of the Department at Kollam.

3. The details collected ward wise (Socio-economic survey details, secondary data) and the land use details of the ward (area under each land use, ward wise) are collected and a master table in excel format is prepared. This gives all details regarding a ward and it is a data bank. The master table is prepared by the Kollam District Office of the Department of Town and Country Planning.

4. Ward map in GIS (Geographical Information System) format and the master table having ward wise data are compiled to generate maps/figures depicting ward wise distribution of different aspects analysed. The details are used for spatial analysis conducted by the Town and Country Planning Department. In the spatial analysis the important aspects such as land use analysis, population studies, study of occupational structure, the character of activities ward wise, study of different sectors, existing situation etc are included.

5. For ensuring public participation in the preparation of Local Development Plan, special ward sabhas were conducted in which the preparation process, the land use map etc. are detailed, and the development problems and suggestions were consolidated first ward wise, and then at Municipal level.

6. Based on the suggestions of the ward sabha and existing Development Report, the Spatial Integration Committee had prepared the local level analysis report. In the local level analysis report the economic base of the Municipal area, important junctions, their order, ward wise development proposals and general details of the Municipality etc. are included.

7. Based on the spatial analysis and local level analysis, the problems and potentials of different development sectors are consolidated by Town and Country Planning Department. Results of sectoral analysis of each development sector in the Integrated District Development Plan were also considered for consolidating the problems and potentials of different development sectors in Paravoor Municipal Town.

8. The major observations and findings on the development sector were discussed in the Spatial Integration Committee and got approved with changes.

9. Along with this, the Spatial Integration Committee, with the help of Town and Country Planning Department, determined the future economic base activities of the Town. The changes to be brought in the Municipal area in tune with the same are discussed and the Development concept formulated.

10. Based on this concept, the Development Policies for each Development sector were determined and according to which the development proposals formulated.

11. For the implementation of the Development Proposals, projects are identified with costing, time frame for implementation, phasing, development agency etc.
12. All these proposals were discussed in the Municipal Council and approved by the Council.

13. The Development Plan(report as well as maps) prepared.

Paravoor is the first Municipality in Kollam District to prepare a Local Development Plan under the programme of preparation of Local Development Plan and Integrated District Development Plan.

A Development Plan for Paravoor prepared by Town and Country Planning Department in 2002 is existing and under consideration of Government for sanction. The Development Plan noe prepared

under the auspices of the District Planning Committee, Kollam, is based on the Development Concept of the District and the changes which had occurred after 2002 were also included. So based on the provisions of the Town Planning Act, this Development Plan may be made applicable to Paravoor Municipal area.

CHAPTER 1

Introduction to Paravoor Minicipality

This chapter detail out general information like regional setting, history etc of Paravoor Municipality.

1.1 Regional setting of Paravoor in Kollam District

Paravoor is one of the Urban Local Bodies of Kollam District. Paravoor Municipal area falls in the revenue villages of Paravoor and Kottappuram. The Municipality has an extent of 16.2 Sq.km and has 29* wards. Paravoor Municipality is about 12 Km south of Kollam town and 50 Km north of Trivandrum city. It is located (Figure 1.1) by the side of Arabian sea and blessed with scenice beauty. Paravoor Municipality is located at South west corner of Kollam District. It lays in between north latitude of $08^0 47'.00"$ and $08^0 50'.30"$ and east longitude of $76^0 38'.30"$ and $76^0 42'.00"$.

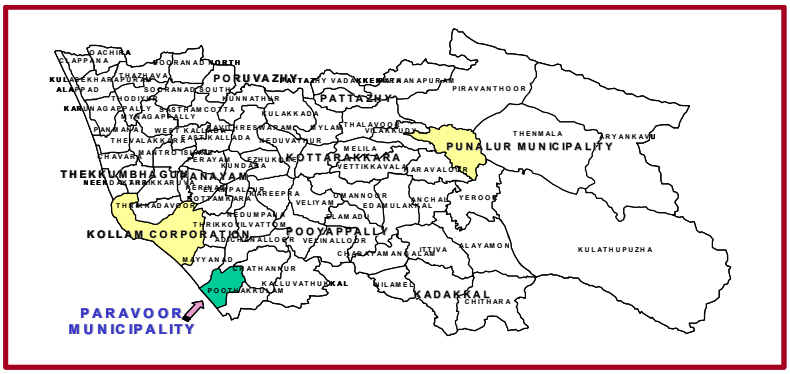


Figure 1.1 -Location of Paravoor in Kollam

Bhoothakulam, Mayanad, Adichanalloor, Chathanoor Grama Panchayats and Idava Grama Panchayat in Thiruvananthapuram District are the neighbouring local bodies of Paravoor Municipality(Figure 1.2). Lakshadeep Sea is located on the western side of Paravoor. Paravoor is bounded by two back waters, Idava Nadayara back water at south and Paravoor back water at north. These two back waters are connected by T.S Canal which is running along the western side of the Municipality. Paravoor Municipality is located 14 K.M away from Chinnakkada, the major commercial centre of Kollam District. The regional commercial centres around Paravoor Municipality are Kottiyam, Chathanoor, Parippally in Kollam District and Varkala in Thiruvananthapuram District. The distance to the above centres are given below.

Chathanoor	-	8 Km
Kottiyam	-	12 Km
Parippally	-	6 Km
Varkala	-	20 Km

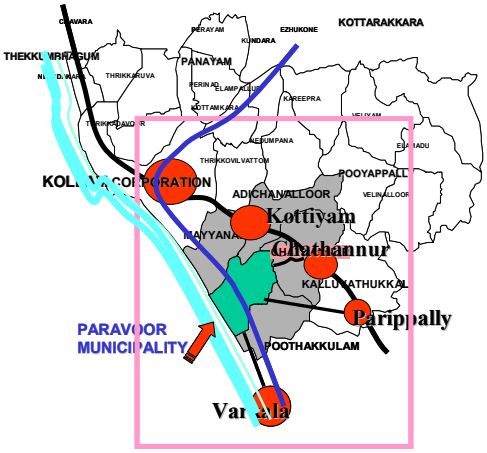


Figure 1.2- Neighbouring Panchayats, important commercial centres near by Paravoor Municipal Town

* Now in Paravoor Municipal Town there are 29 wards. Almost all details (Census,Panchayat level statistics),are available for 26 wards before 2005.So Development Plan analysis are conducted considering the old 26 wards. But Development Concept, sectoral proposals etc.are given in the report based on new (29) wards.

Paravoor, Alappuzha, Kollam and Thiruvananthapuram were important ancient commercial centres of Southern Kerala which were connected by a waterway. This water way (T.S.Canal) is existing even now, but is not navigable or not suitable for transportation. Presently Paravoor is connected by road and rail with the other centres in the Kollam region.

1.2 History of Development Administration

As per the Village Panchayat Rule VII of 1925 of Sreemoolam Praja Sabha, Paravoor is one of the six Panchayats formed in Travancore in 1932. Pozhikkara, Kongal, Kottappuram, Kurumandal, Koonayil, Kolakkode, Bhoothakkulam were the six desams included in the Paravoor Panchayat during that time. For administrative convenience, Paravoor Panchayat was divided in 1953, into Paravoor Panchayat and Bhoothakkulam Panchayat. Paravoor Panchayat, thus formed had five desams namely Pozhikkara, Kongal,Thekkumbhagam, Kottappuram and Kurumandal. A change in the boundary of the Panchayat had been made later and Koonayil desam was also included in the then Paravoor Panchayat. Paravoor Panchayat was upgraded to a Municipality in May 1st, 1998.

1.3 History of Development

Paravoor had a well developed commercial connection with other neighbouring centres. It can be persumed that the commercial development which arose in first Century, had reflected in Paravoor also. In ancient times the centre of developement administration in Paravoor was Pozhikkara located by the side of the sea. The Palace, Pozhikkara temple, the Rest house, Police station, Post office, Court etc. were located in this place. The remains of the palace, temple and post office are seen in Pozhikkara even now. History says that the mint of Travancore was shifted to Paravoor from Padmanabhapuram in between 1800 to 1824.

In 1824 Rani Gouribhai had constructed the Paravoor thodu which connects the two back waters of Paravoor and Idava Nadayara. This water way connects Paravoor with Kollam, Thiruvananthapuram and Alappuzha. In the past this was the main connection of Paravoor with Kollam.

Products like Coir, Koppra and Pepper were tansported from Kollam to Aleppey via Ashtamudi lake. Facilities for export of these items were also available at that time. This increased commercial activities within and surrounding areas of Paravoor. The present day marketing facilities of Paravoor are developed on the initiative of a resident of the locality, Sri. Narayanan Nair, Kottapuram, who voluntarily contributed land required for a trade centre(adjacent to Paravoor junction) and subsequently developed a road through his land so as to provide linkages to the market - the present Pozhikkara - Parippally road. English education was started in Travancore in 1834 during the period of King Swathi Thirunal. At this time Paravoor was a part of Travancore. An english medium school the Kottappuram High School (Now K.H.S Malayalam Medium School) was started in 1907 in Paravoor on the initiative taken by Kottavila Narayanan Nair and Chamavila Govinda Pillai. This was the only English High School in between Attingal and Kollam. Pupil from surrounding area of Paravoor, mainly from Eravipuram, Mayyanadu, Kappil, Edava, Varkala, Chathanoor, Adichanalloor and Vellinalloor had studied in this school.

According to Government direction, education to backward community students was made free at Kottappuram High School.. Public opinion was raised to make the education of ezhava students also free. But this request was declined by the management in the absence of enabling Government directions. Under these circumstance, with the help of Paravoor S.N.V Council and residents of the locality, a High School was started in 1923 near Kottappuram. This School was inaugurated by Sree Narayana Guru. Later the school was named as S.N.V Girls High School. This is the only Girls High School between Kollam and Attingal, even now.

On the completion of Thiruvananthapuram - Kollam railway line, a railway station was establishedat Kurumandal in Paravoor 1918. The improvement of the transportation facilities made the Paravoor market more vibrant. In the long run, centre of administration had been transfered from Pozhikkara to Paravoor junction (Figure 1.3).

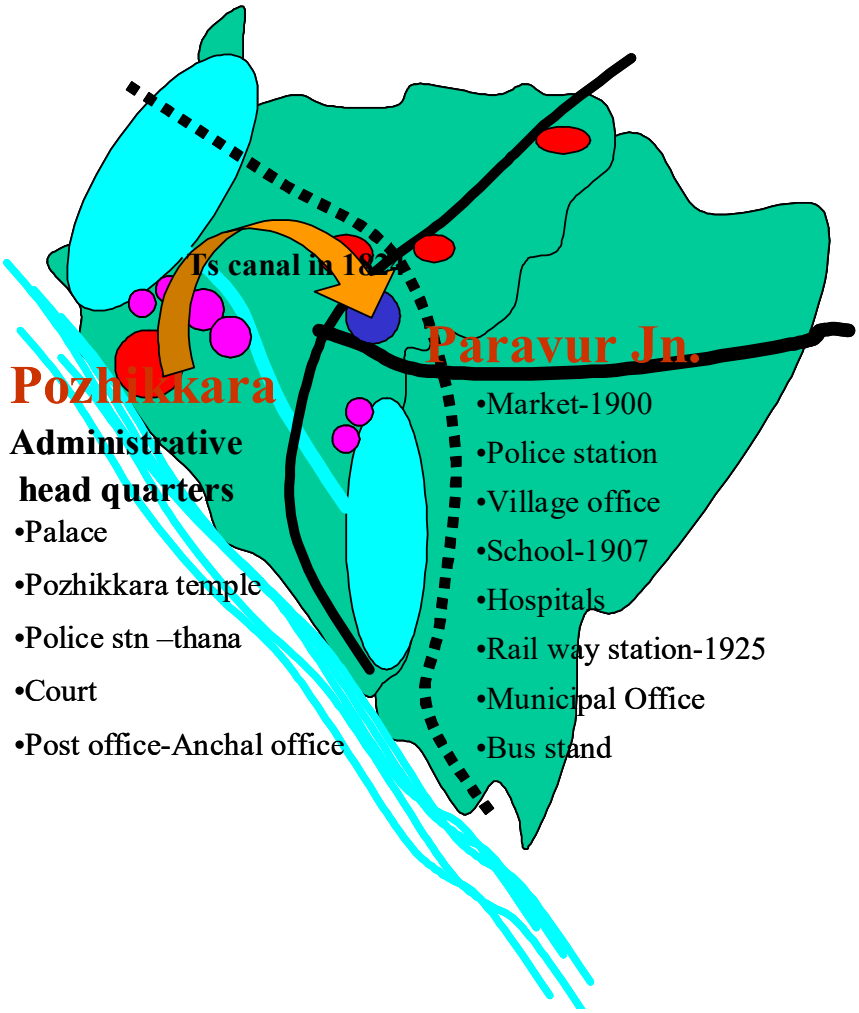


Figure 1.3 - Shifting of Administrative Centre from Pozhikkara to Paravoor Junction



Paravoor Junction



Paravoor Market

1.4 Historical and Cultural Background

Paravoor had made major contributions to the arenas of literature, arts and sports of Kerala State.

The oral and written historical documents show that the first name of Paravoor was actually Paraveyyoor, which means a coastal rural area. Paraveyyoor has been transformed into Paravoor in later days.

Lakshadweep sea is located in the Western side is of Paravoor Municipality. Practically there is no flood in Paravoor because estuary through water from Back water drained in to the sea. The fertility of the soil in Paravoor make this place suitable for Agricultural and Horticultural activities. The Municipal area is bounded by sea, back waters and thodus. The presence of the water bodies make Paravoor an area for fishing. Transportation facilities through water ways increased the connection of Paravoor with other centres of trade and commerce.

Paravoor is a part of Pennarasunadu in between Venadu and Deswinganadu. There was no control by the Venadu Kings or Deswinganadu thiruvadi on Paravoor. Paravoor is under the regim of Attingal Ammathamburatti. Therefore Paravoor is known as a land of lady rulership. The Archeological



Estaury in Paravoor back water





Municipal Park. The dead body of the Music Director Devarajan Master is buried here.

specimen available on the history of Paravoor is Pozhikkara Sasanam which is believed to be written in AD 12th Century.

Veluthampy Dalava's contemporary, Paravoor Vazhavila Kanakku Chempakaraman Sankara Pillai has contributed in a great way to the growth of Paravoor. The scholar Kesavan Asan and great poet K.C.Kesavapillai are the contributions of Paravoor. Kesaveeyam is the epic of Sree Kesavapillai. Kongal Thundathil artist Achuthan Pillai is a famous artist from Paravoor. He was selected to draw the paintings of the members of the royal family of Travancore. Paravoor Devarajan Master, the great film music director of films, is also from Paravoor. Paravoor has contributed great men of arts and music. The National award winner for Art direction, Sri.Devadathan, Art Director, Jai Singh were the contributions of Paravoor. Paravoor is blessed with natural features and famous for commercial activities. There for people migrated to Paravoor had settled in Paravoor. This have created opportunities for cultural exchange.

1.5 Geographical features

Paravoor is bounded by sea cost &backwaters which make Paravoor a scenically beautiful area. North east part of Paravoor is Chathanoor Panchayat and on eastern side Bhothakkulam

Geographically Paravoor is divided into three catgory.

1. High land area
2. Low land area
3. Costal land

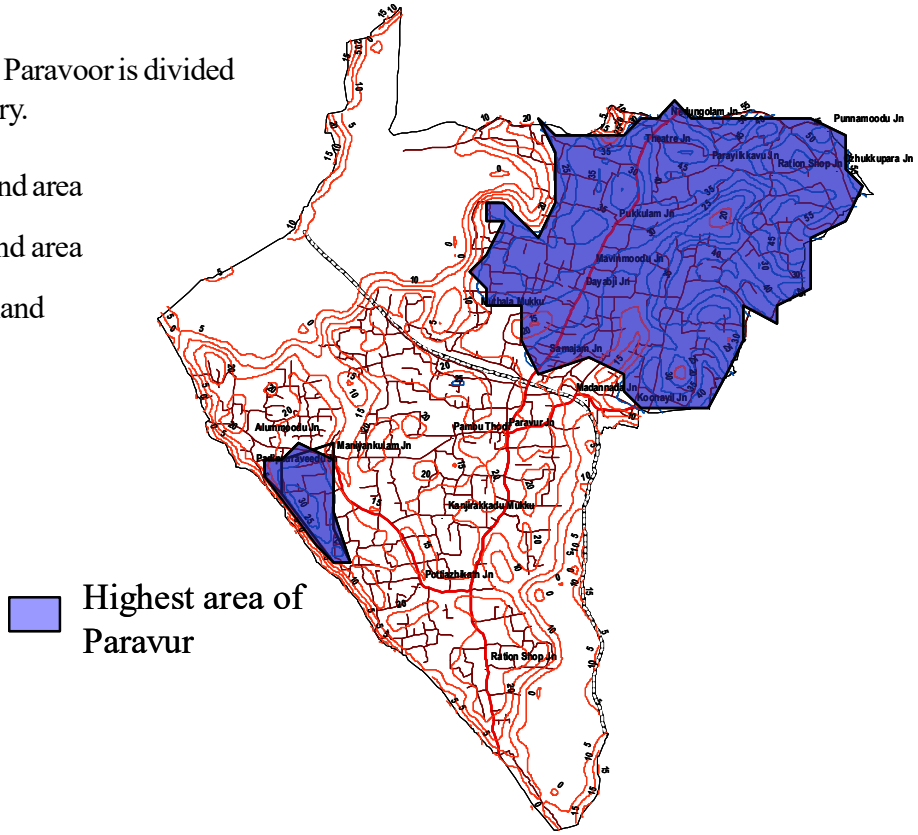


Figure 1.4 Contour Map of Paravoor

Panchayat. South east is bounded by edava Panchayat. Edava Panchayat is separated by Edava Nadayara Kayal. These two Panchayats are connected by Kappil bridge. The contour map of Paravoor shows slope of this area in between 0^0 & 15^0.

1. High Land Area

Nedungulam, Ozhukupara, Koonayil, Perumbuzha are high attitude plain land in Paravoor (Figure 1.4). The soil condition is sand and laterite soil. It is very fertile for the cultivation of paddy, tapioca, coconut etc. The paddy fields are 5 to 10 mts below the normal ground level. The major portion of the paddy field is in Koonayil area.

2. Low Land Area

Kurumandal, Kottappuram, Eastern side of Kongal are low lying plain land. Sandy soil is seen in this area. This land is lying on Southern side of the Municipality. This is a high density area lying 8.0 meter above M.S.L. Coconut is the main crop. Plantain and tubers are other agricultural crops seen in this area.

3. Costal Land

Costal land is 4 meter high above M.S.L. The area is thickly populated. The major crop here is coconut. The main occupation of the people is fish catching. The extend of the Paravoor Kayal is 5 Sq.Km. The Ithikkara river is joining with the Paravoor Kayal on this area. Sunset is a beautiful view which can be seen from this area.

1.6 Biodiversity

Though coconut is the main crop of Paravoor other horticultural products like Mango, Jackfruit are also plenty here. Tamarine, Njavara, Thulasi, Thzhuthama, Kurunthotti, Kasthoori Manjal, Karukappullu, Adalodakam, Kiriyath, Koduthuvva, Kaithoni, Keezharnelly, Ummam, Karunochiyila, Moodillathali, Kudangal, Neerotti, Nandhyarvattom, Naruneendy, Bhrammim, Muthanga, Koduveli such types of medicinal plants are seen in this area.

CHAPTER 2

Land Use

The Town and Country Planning Department and the Paravoor Municipality jointly conducted land use survey as a part of preparation of Local Development Plan. The analysis of different land uses is given in this chapter.

2.1 Analysis of the existing land use

The land use map of the Paravoor Municipality and the neighbouring Panchayats of Bhoothakkulam and Chirakkara are shown in Figure 2.1.

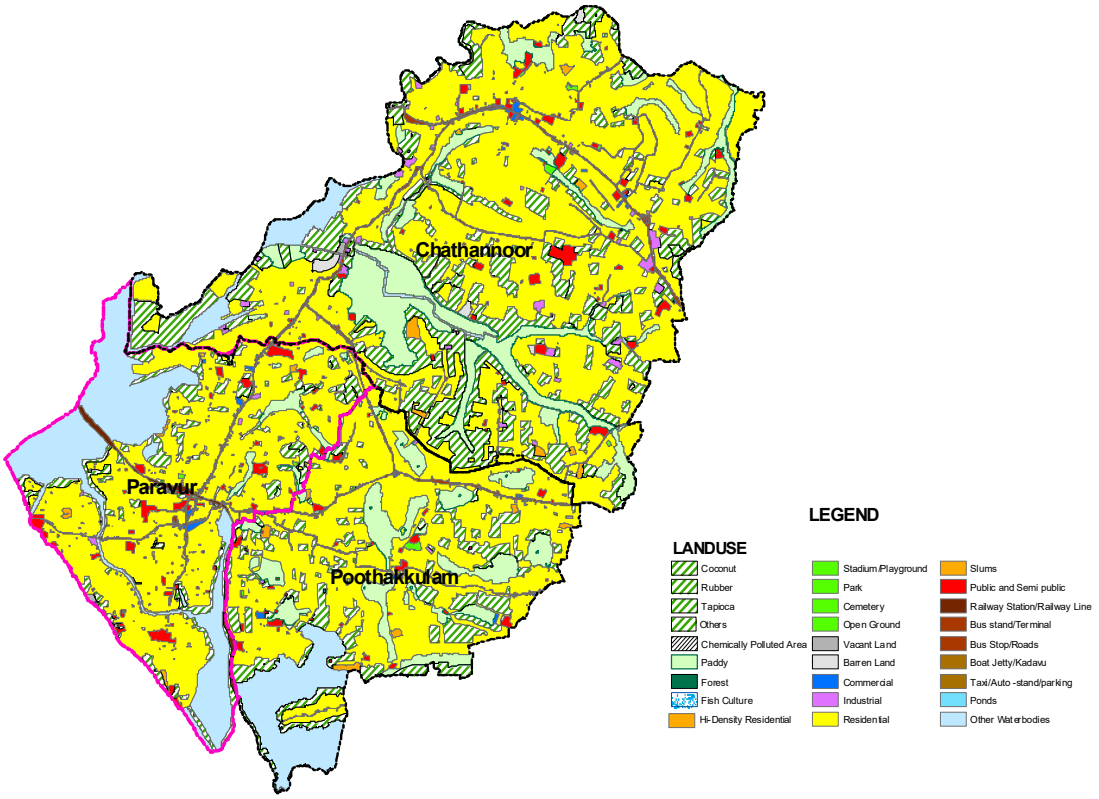
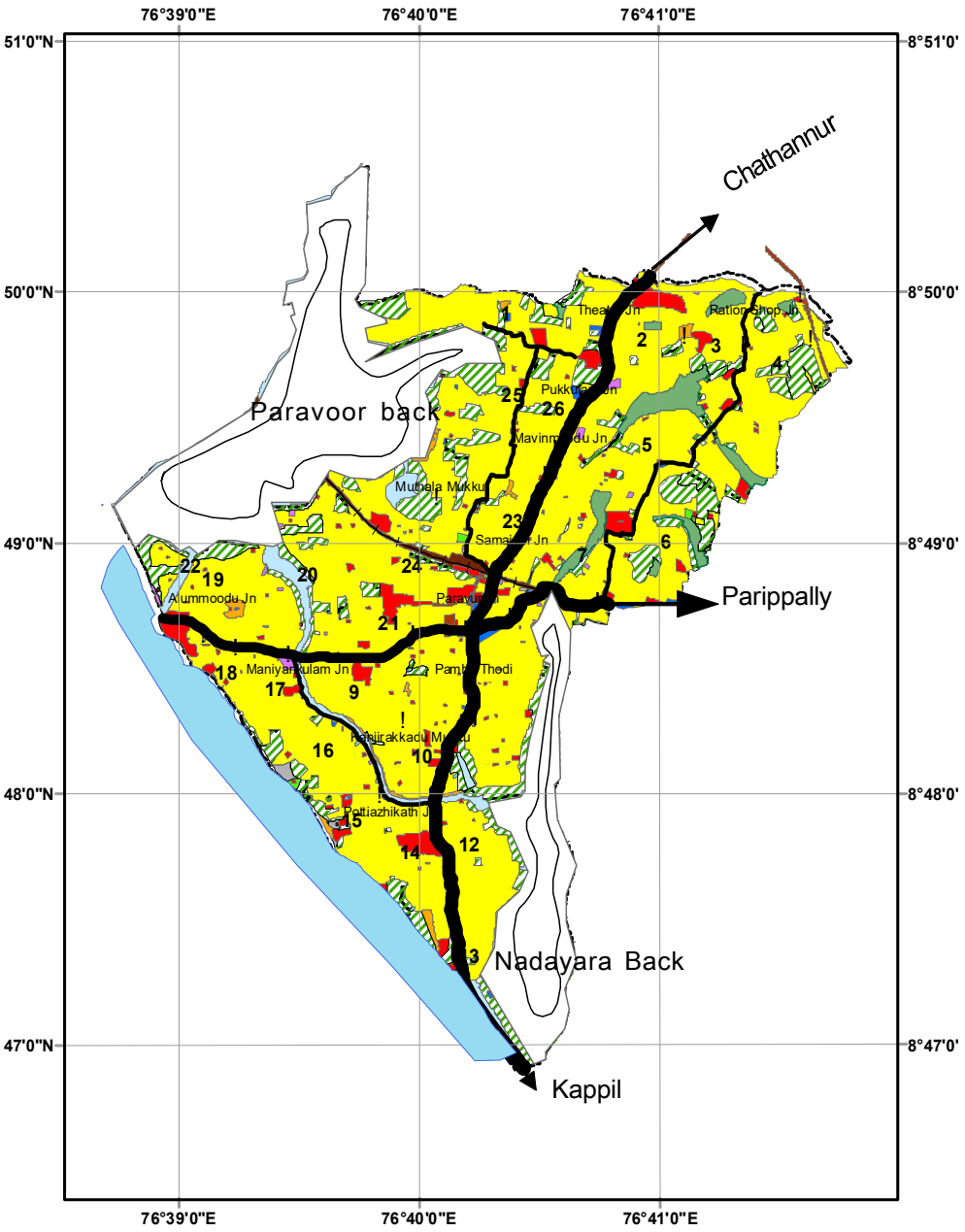


Figure 2.1 - Land Use Map of Paravoor Municipality and Neighbouring Panchayats.

The Figure 2.1 shows existence of a chain of paddy fields in Chirakkara Panchayat and Bhoothakkulam Panchayat. Dry crop cultivation is also seen in Chirakkara and Bhoothakkulam Panchayat But such a continous chain of paddy field is not seen in Paravoor Municipality. In Paravoor 13.33% of land is under agricultural activity. The area under agricultrual activity in Chirakkara & Bhoothakulam Panchayat are 34.06% and 28.95% respectively of the total geographical area.

The extent of the Paravoor Municipality is 16.20 Square Kilometers. It is divided into 26 wards. The exent of different land use in each ward is given in figure 2.3 and table 2.1.



Source: Land use Survey 2006

Figure 2.2 - Land Use Map of Paravoor Municipal Town in 2006

LEGEND

LANDUSE

Coconut	Stadium/Playground	Slums
Rubber	Park	Public and Semi public
Tapioca	Cemetery	Railway Station/Railway Line
Others	Open Ground	Bus stand/Terminal
Chemically Polluted Area	Vacant Land	Bus Stop/Roads
Paddy	Barren Land	Boat Jetty/Kadavu
Forest	Commercial	Taxi/Auto -stand/parking
Fish Culture	Industrial	Ponds
Hi-Density Residential	Residential	Other Waterbodies

Table 2.1 Land use in Paravoor

Land use	Residen-tial	Comme-rcial	Industrial	Public &semi public	Agricult-ural	Water body	Barren land	Transportation	
									Total
Extent in Sq:Km	9.02	0.13	0.05	0.59	2.16	3.86	0.04	0.37	16.22
Percentage of land use	55.61	0.82	0.29	3.62	13.33	23.81	0.24	2.28	100
Percentage of land use based on total habitable area (ie. excluding water body area)	73	1	0.4	4.8	17.5		0.3	3	

Source: Land use Survey 2006

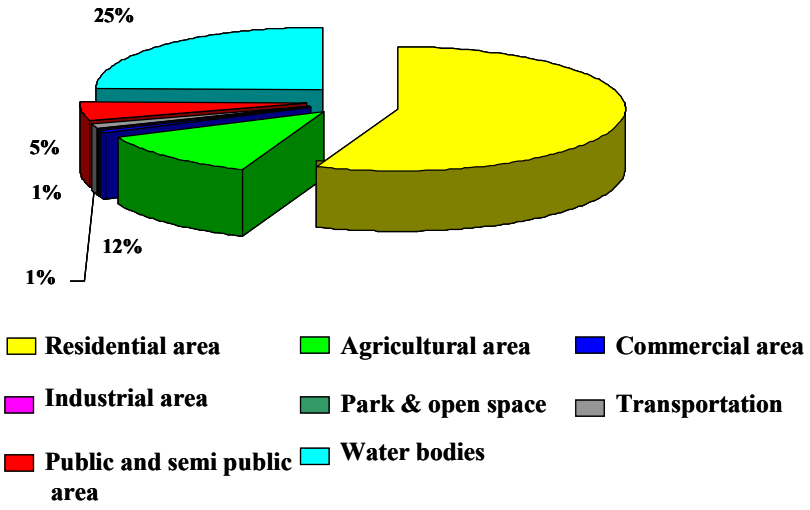


Figure 2.3 - Analysis of Land use

From table 2.1 and Figure 2.3 it can be seen that the major land use of Paravoor Municipality is residential with 56% of the total geographical area. The area under water body comes second, with 23.8% of the total geographical area. The two back waters of Paravoor, the T.S.Canal & Ponds within Municipal area constitute the water body area. The agricultural area in percentage of total geogrpahical area comes about 13.33%, which is in third position after land uses like residential and waterbody. The spatial distribution of agricultural area shows that it is concentrated in wards 3,4,5,6,7,11,12,13,19,20,24,25&26 (Table 2.2). These wards are located adjacent to the two back-waters, and adjacent to Ayiravally temple.

Table 2.2 Ward wise land use in Sq:Km

Ward No.	Residen-tial	Commerci-al	Industri-al	Public& se-mi public	Agriculture	Water body	Barren la-nd	Transport-ation
1	0.57	0.01	0.00	0.02	0.15	0.63	0.00	0.00
2	0.34	0.01	0.01	0.06	0.01	0.00	0.00	0.02
3	0.38	0.00	0.00	0.03	0.11	0.00	0.00	0.00
4	0.51	0.00	0.00	0.01	0.18	0.00	0.00	0.00
5	0.48	0.00	0.00	0.02	0.18	0.00	0.00	0.00
6	0.33	0.01	0.00	0.02	0.21	0.00	0.00	0.00
7	0.33	0.01	0.00	0.04	0.09	0.00	0.00	0.01
8	0.27	0.03	0.00	0.01	0.00	0.08	0.00	0.02
9	0.38	0.00	0.00	0.02	0.01	0.00	0.00	0.00
10	0.39	0.00	0.00	0.02	0.00	0.00	0.00	0.00
11	0.47	0.00	0.00	0.02	0.14	0.13	0.00	0.01
12	0.27	0.00	0.00	0.01	0.01	0.26	0.00	0.00
13	0.35	0.00	0.00	0.02	0.16	0.60	0.00	0.00
14	0.20	0.00	0.00	0.05	0.03	0.01	0.00	0.00
15	0.19	0.00	0.00	0.02	0.03	0.00	0.01	0.00
16	0.29	0.00	0.00	0.00	0.05	0.03	0.01	0.00
17	0.17	0.00	0.01	0.01	0.00	0.02	0.00	0.00
18	0.19	0.00	0.00	0.04	0.01	0.00	0.00	0.00
19	0.44	0.00	0.01	0.02	0.09	0.04	0.00	0.01
20	0.43	0.00	0.00	0.00	0.16	0.08	0.00	0.01
21	0.30	0.01	0.00	0.05	0.02	0.00	0.00	0.03
22	0.28	0.00	0.00	0.04	0.02	0.95	0.00	0.00
23	0.41	0.01	0.00	0.01	0.01	0.00	0.00	0.01
24	0.41	0.00	0.00	0.02	0.14	0.34	0.00	0.00
25	0.27	0.00	0.00	0.01	0.18	0.78	0.00	0.00
26	0.39	0.02	0.00	0.02	0.09	0.00	0.00	0.01

The analysis of the land use in all the 26 wards of the Paravoor Municipality shows that major land use in all the wards of the Municipality is residential.

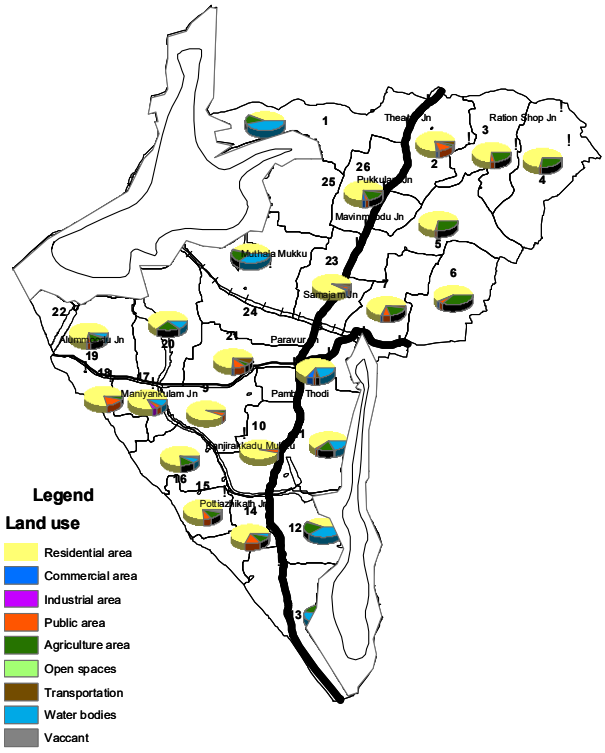


Figure 2.4 - Land use analysis of Paravoor Municipal Town - Ward wise details

Figure 2.4, shows the wardwise land use break up.

2.2 Concentration of different land uses

The concentration index quantifys the extent of concentration of a particular land use in a ward.

$$\text{The concentration index of a particular land use in a ward} = \frac{\text{Percentage of that particular land use in the ward}}{\text{Percentage of that particular land use in the local body area.}}$$

The value of Concentration Index (CI) can be one, less than one or greater than one. CI value, less than one indicates the absence of concentration of a particular land use in that ward. If the CI value is one or grater than one, it indicates the concentration of that particular land use in that ward.

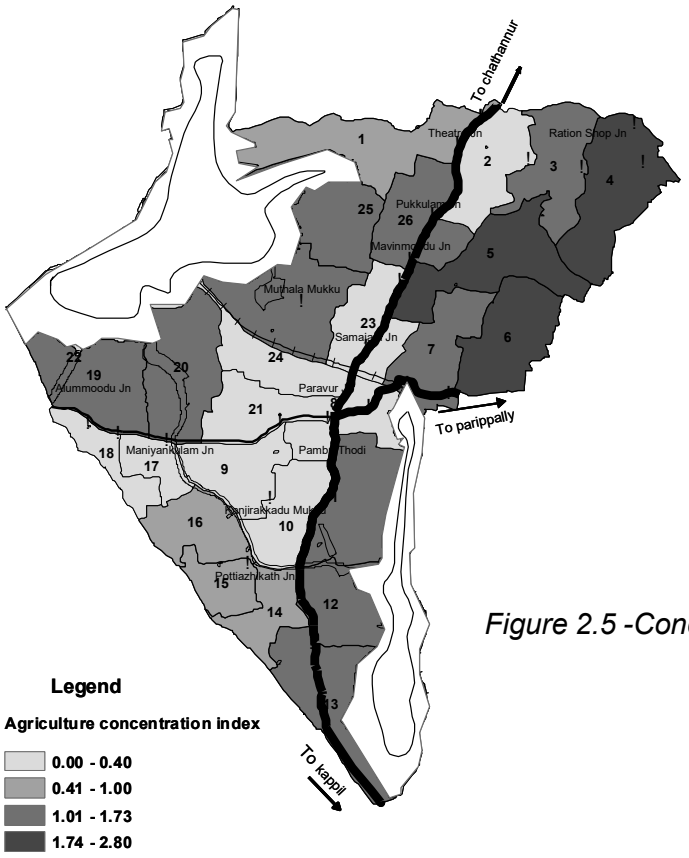


Figure 2.5 -Concentration of agricultural activity

The spatial concentration of agricultural use in Paravoor Municipality is shown in figure 2.5. From the figure it is seen that concentration of agricultural use is away from the important roads of Paravoor Municipality. It is concentrated in ward no:s 3,4,5,6,7,11,12,13,19,20, 24,25,26 of the Municipality.

The landuse under commercial use is 0.82% of the total area of the Municipality. The concentration of commercial area is in wards 26,8 and 1.

From the figure 2.6 it is seen that the commercial activity is concentrated in

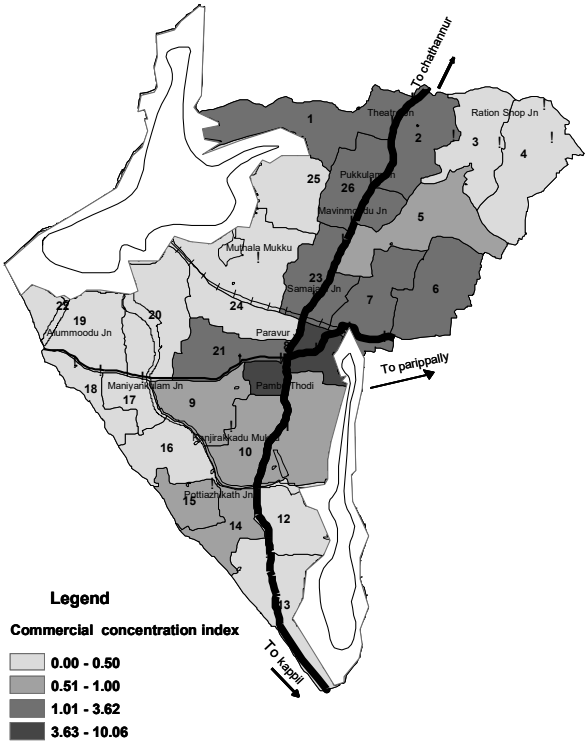


Figure 2.6 -Concentration of commercial activity

ward No.8 (Paravoor junction is in this ward). Ward 26 also have concentration of commercial activity. Commercial activity is seen concentrated along the sides of major roads especially Paravoor - Chathanoor, Paravoor-Kappil and Paravoor -Parippally roads.

2.3 Categorization of residential area.

The residential area in Kerala is generally in the category of mixed land use. Generally two types of mixed land use category is there in Kerala context.

Predominant land use will be agricultural but residences can also seen there. Predominant land use will be residential but agricultural activity also is seen there.

The residential area with dry crop cultivation can be divided in to four, based on the land holding size*.

1. *Pucca residential area*
   The extent of the holding here is less than 25 cents which makes the agricultural activity nearly impossible.

2. *Residential cum agricultural area.*
   In this catagory, the extent of the land holding is in between 25 cents and 50 cents. hence agricultural activity is also a source of income.

3. *Residential area with predominence in agricultural activity.*
   In this category the extent of land holding is between 50 to 70 cents. Agricultural activity is an important source of income.

4. *Residential area with fully agricul tural area.*
   In this catagory, the extent of land holding is above 70 cents. From this land a family can generate income for their livelyhood.

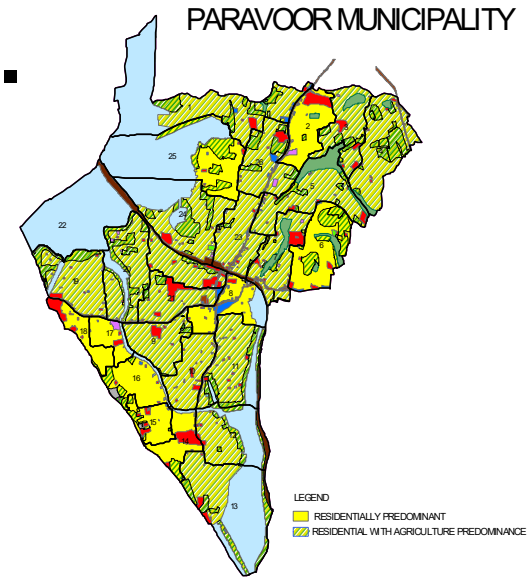


Figure 2.7 - Land use map of Paravoor Municipality (Residential area is catagorized as completely residential zone and residential zone with agricultural activity)

If we examine the residential land use of Paravoor Municipality, 79% of the residential land comes under the category of residential cum agricultural area. (This means that average land holding of this catagory of land uses is in between 25 to 50 cents) Balance residential area falls in pucca residential category (In this category the extent of land holding is below 25 cents). The spatial distribution is shown in figure 2.7 and its categorisation is shown in figure 2.8.

* For details please refer IDDP Report

From figure 2.7 and 2.8 it is seen that, in Paravoor Municipality the majority of the land is in residential cum agricultural use. This means that major portion of the land in Paravoor Municipality has potential for dry land cultivation.

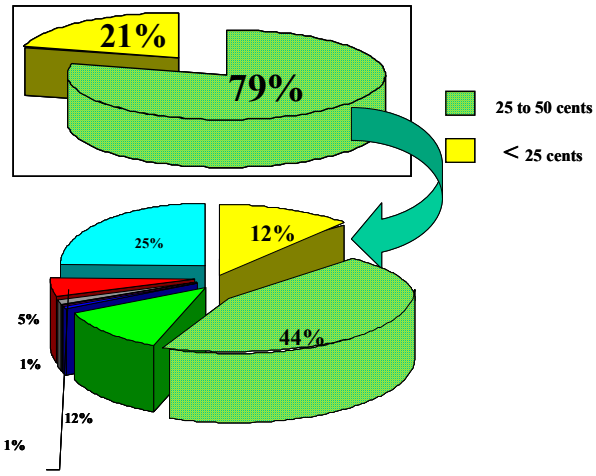


Figure 2.8 Land use map with catagorizaion of residential zone

2.4 Functional character

The settlement pattern in Kerala is scattered homesteds with rural-urban-continum. Residential buildings are seen in almost all areas except paddy fields, plantations, forests, backwaters etc.

The functional character of an area is determined by the economic activity which can be brought into that area, based on the average size of land holdings in the area.

Based on the percapita availabilty of land holdings the functional character of any settlement of Kerala can be classified into four, 1. Urban character, 2. Rural character, 3. Semi-Urban character, 4. Semi-Rural character (Table 2.3).

Table 2.3 - Functional Character based on average size of land holdings

Average size of land holdings in residential area	Categorisation of residential area	Functional character
Below 25 cents	Fully residential area	Urban character
25-50 Cents	Agriculture cum residential area	Semi urban character
50-70 Cents	Agricultural activity is predominent with residential area	Semi rural character
Above 70 Cents	Fully agricultural land with residential area.	Fully rural character

Functional charater of Paravoor Municipality

The functional character of Paravoor Municipality when analysed from District perspective is semi-urban (Figure 2.9). That means, urban activities and the agricultural activities are existing simultaneously in Paravoor Municipality. This indicates that the average plot size in the residential areas of Paravoor Municipality is in between 25 and 50 cents.

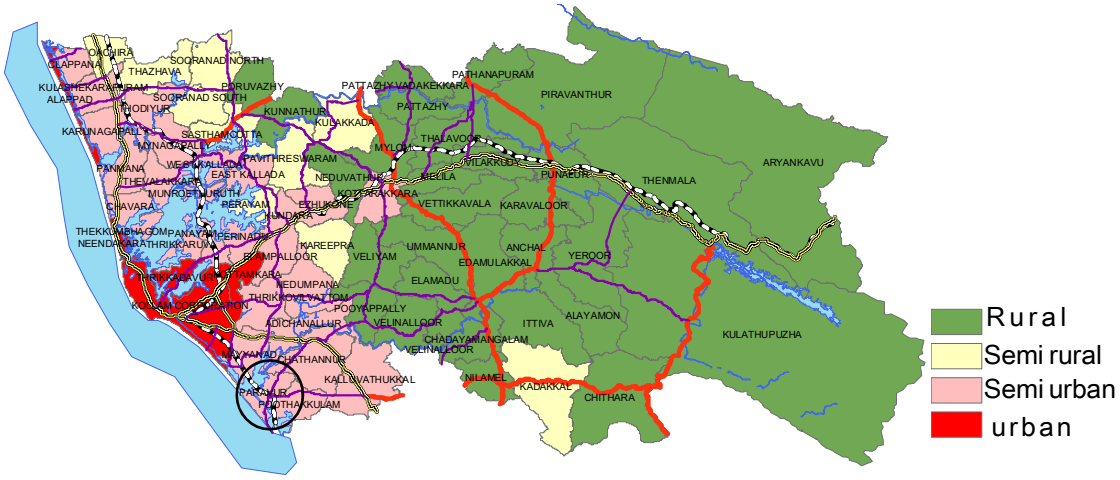


Figure 2.9 - Functional character of Paravoor Muncipality

The wardwise analysis of Paravoor Municipality shows that the residential area of most of the wards in Paravoor Municipality fall in the residential cum agricultural category.

The functional character of each ward is shown in figure 2.10. Eight wards show urban character, 12 wards show predominent urban character at the same time they show rural character (semi urban) and five wards show predominantly rural character, mixed with urban character (semi rural character).

The above observation shows that economic activity within Paravoor cannot be agricultural alone but is a mixture of animal husbandry, small scale industries along with agricultural activity.

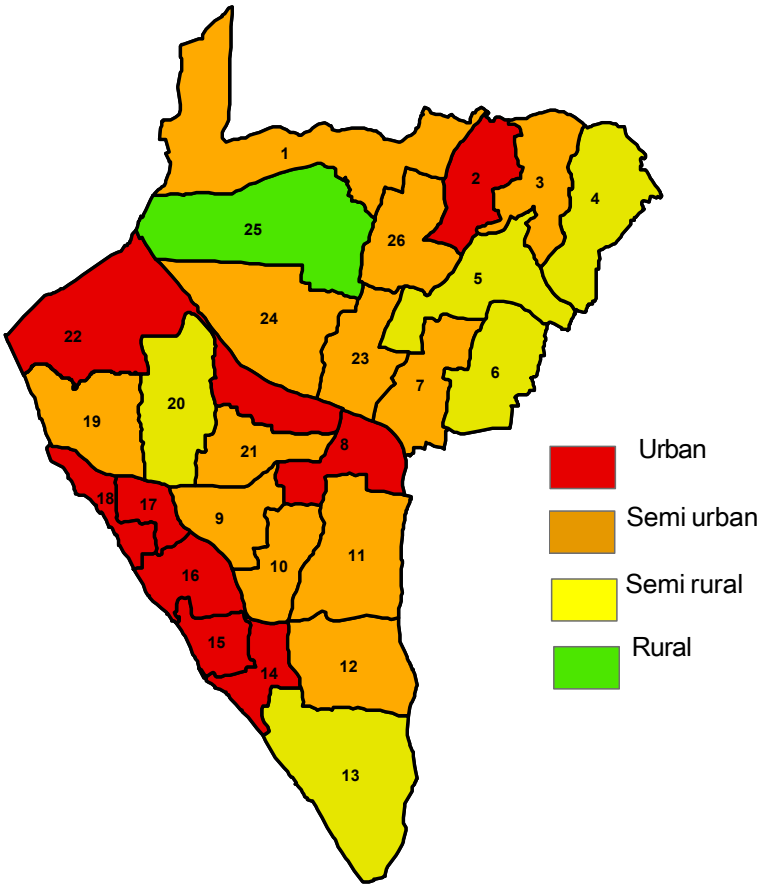


Figure 2.10 - Functional character of wards of Paravoor Municipal Town

2.5 Conclusion

From the land use analysis it is seen that Paravoor Municipality can be categorised as a semi-urban area. The Municipality has not attained the character of a fully grown urban centre. There is potential for household agricultural activities.

CHAPTER 3
Demography

In this chapter the population growth rate, and the spatial distribution of population of Paravoor Municipality are analysed.

3.1 Population

As per 2001 Census the population of Paravoor Municipality is 38652. This is 1.5% of the total population of Kollam District. The male population is 18,326 & the female population is 20,326. The total population of Paravoor Municipality during 1971,81,91 were 31651, 35562, 37185 respectively. The growth of population is shown in figure.3.1.

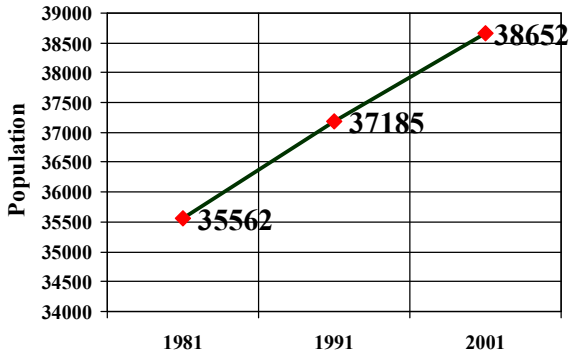


Figure 3.1 Population of Paravoor Muncipal Town in 1981 to 2001

3.2 Population growth rate

The decadal growth rate of population in 1991-2001 period is 3.95%. The population growth rate of Paravoor Municipality is low when compared with Kollam District. The decadal growth rate of population of Kollam District is 7.38%. The average decadal growth rate of urban centres of Kollam District is 4.1%. The decadal growth rate of Paravoor Municipality in 1971-81, 1981-91, 1991-2001 periods are shown in figure 3.2.

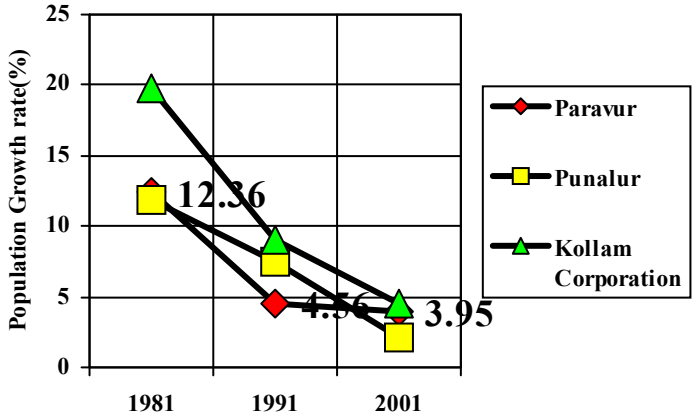


Figure 3.2 Comparison of growth rate of population of Urban areas in Kollam District from 1981 to 2001

The figure shows decreasing population growth rate in Paravoor Municipality. The comparison of decadal growth rate of population of the surrounding local bodies also shows a decreasing trend. The details are shown in table 3.1

Table 3.1 Decadal Growth Rate of Population.

Name of local body	Population 1991	Population 2001	Decadal growth rate(%)
Paravoor	37185	38652	3.95
Mayyanad	41011	47148	14.96
Bhoothakkulam	24610	28417	15.47
Chathanoor	46419	51679	11.33
Urban areas in Kollam District	429477	447447	4.1
Kollam District	2407408	2585064	7.38

Source : Census of India 2001

The Socio economic survey conducted by the Municipality and the Town and Country Planning Department shows that there is no migration towards the Paravoor Municipal area but out migration is considerable. The analyse of the household survey data shows that at least one person from 7.5% of house holds of the Municipal area is going outside.

3.3 Density of Population

The average density of population in urban area in Kollam district is 4139 persons per Sq:km (Table 3.2) which is 4 times the average density of population of the district. The extent of the Paravoor Municipality is 16.20 Sq:Km. The density of population of Paravoor Municipality is 2014 persons per Sq.km.

Table 3.2 Density of Urban centres in Kollam District- Comparative analysis.

Name of Local body	Density in Sq:km
Paravoor	***2014***
Mayyanadu	2683
Bhoothakkulam	1716
Chathanoor	1540
Punaloor	897
Kottarakkara	1711
Karunagappally	2505
Kollam Corporation	6307
Urban area in Kollam District	4139
Kollam District	1039

Source: Census of India

The comparative analysis of ward wise population density is given in Table 3.3 and Figure 3.3. The distribution of population density shows that population is concentrated along both sides of the major arterial roads as well as in the coastal areas. The density of population is more in wards 2,10,15,16,17.

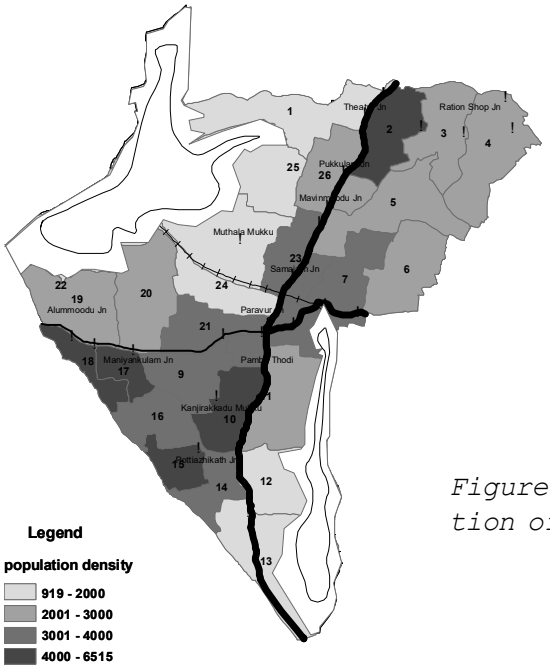


Figure 3.3 Ward wise distribution of population density

Table 3.3. The ward wise density of population in persons per Sq:Km

Ward No	Density of population	Ward No	Density
1	1252.82	14	3801.67
2	4020.63	15	5096.51
3	2648.64	16	3669.01
4	2379.28	17	6514.88
5	2390.93	18	6438.55
6	2820.28	19	2884.21
7	3123.66	20	2156.61
8	3361.03	21	3410.76
9	3451.34	22	919.19
10	4181.45	23	3131.22
11.	2024.70	24	1628.89
12	1848.50	25	1194.24
13	1234.44	26	1522.21

The observation from the Table 3.3 and fig.3.3 is that the density of populatin is higher in costal wards and in wards on the sides of major roads.

3.4 Sex Ratio

According to 2001 Census the sex ratio in Paravoor Municipality is 1109. This is more than the sex ratio of 1069 in Kollam.The sex ratio of other urban local bodies are given in Table 3.4

Table 3.4 The sex ratio of urban local bodies

	Paravoor	Kollam Corporation	Punalur	Kollam District
General	1109	1035	1058	1069
0-6 years	970	952	911	960

The sex ratio of people below the age of six in Paravoor Municipality is 970. The corresponding District figure is 960.

3.5 Population Distribution

The population distribution gives, the distribution of population ward wise, within Paravoor Municipality. From figure 3.4, it is clear that population of Paravoor Municipality is concentrated in the triangular portion bounded by sea shore, Paravoor-Pozhikkara & Paravoor-Kappil roads and along the sides of Chathanoor-Paravoor and Paripally-Chathanoor roads.

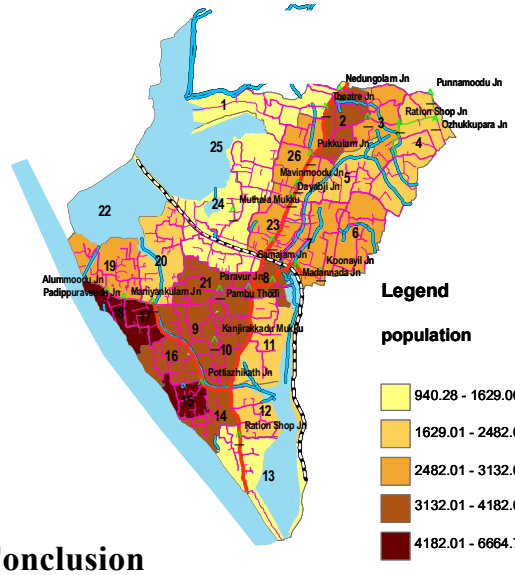


Figure 3.4- Wardwise distribution of population

3.6 Conclusion

A population growth rate expected normally for an urban area is not in Paravoor Municipality. Sufficient job opportunities to attract people to Paravoor are not created and this resulted in low population growth rate of Paravoor Municipality. In ancient time Paravoor was a first order market and a place known for coir industry but the importance of Paravoor Municipality declined due to the stopage of cargo movements through T.S. Canals. besides the regional setting of Paravoor is away from N.H 47. The above reasons are the impediments for development of the Municipality.

CHAPTER 4
Labour Force

In this chapter the work force in different occupations in Paravoor Municipality is analysed. 2001 census figures are taken for the analysis. The analysis reveals the existing occupational structure of the Municipality.

4.1 The workers in Paravoor Municipality

According to 2001 census the number of workers in Paravoor Municipality is 10058. This constitutes 26.02% of total population of the Municipality which is very low compared to the District figure of 32.05%. The deviation of the work participation rate during 1981-2001 period is shown in figure 4.1 and Table 4.1.

Table 4.1 Temperal variation of Number of workers and deviation in work participation rate in the Paravoor Municipality

Year	Population	Workers	Work participation rate (%)
1981	35562	8968	25.2
1991	37185	9826	26.4
2001	38652	10058	26.02

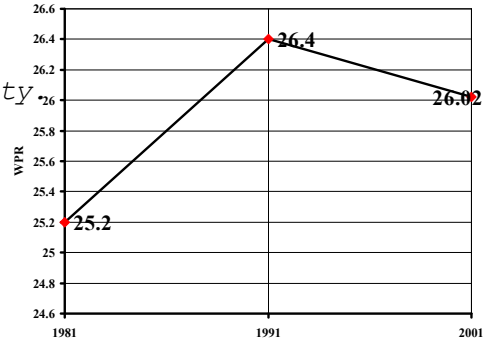


Figure 4.1 The deviation in work participation rate in different time period (1981-2001)

The work force participation rate shows a slight increase during 1981 to 2001, an increase from 25.20% to 26.02%. However during these decades, the workforce participation rate of Paravoor remains low. The total workers also shows a slight increase during the period 1981-2001.

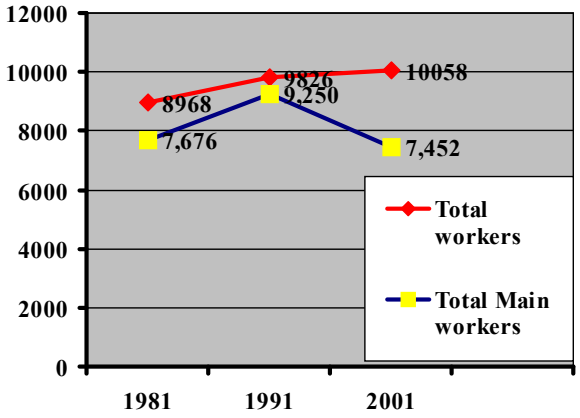


Figure 4.2 Variation in number of workers (1981-2001)

On analysis of the work force participation rate and number of workers during the period 1981-2001 it is seen that there is increase in number of workers but there is a decline in work participation rate. This shows that the job opportunities are not increasing in proportion to the increase in total population. The number of women workers are 2313 which is 22.90% of total workers. The total number male workers is 7745 which is 77.10% of total workers. The percentage of women workers is less than the District average of 27.02 %.

4.2 Occupational Structure

According to 2001 Census the workers are classified into two catagories, main workers and marginal workers. The total workers constitute 26.20% of the total population of Paravoor, of this 19.20% are main workers and 7% are marginal workers (Figure 4.3). The absolute figures of main workers and marginal workers are 7452 and 2606 respectively.

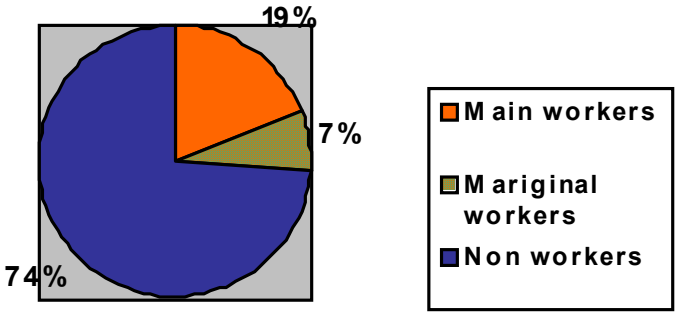


Figure 4.3 Main workers, marginal workers

The main workers are further classified into 4 catagory namely 1. Cultivators 2. Agricultural labourers 3. House hold industries and 4. Other workers. The details are shown in Table 4.2

Table 4.2 Number of workers

Category of workers	Number
Cultivators	95
Agricultural labourers	793
House hold industries	243
Other workers	6321

Source : Census 2001

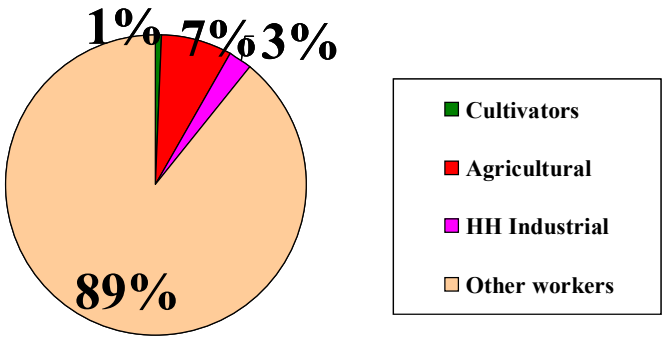


Figure 4.4 Catagorization of main workers

On examining the share of cultivators, agricultural labourers and household industrial workers in the workforce further, it can be understood that the cultivators constitute only 1% of the total workers and agricultural labourers constitute 7% of the total workers. The district averages of the above two categories of workers are 6.83% and 14.68% respectively. Household industrial workers in Paravur constitute 3% of the workforce, slightly high compared to the curresponding figure of 2.6%.

The socio economic survey analysis of Paravoor shows that 1000 workers are engaged in fisheries sector and 1500 workers in coir sector.

The spatial distributions of cultivators in Paravoor Municipality shows that they are concentrated in wards 2,3,7,15,16 and 26 (See fig 4.5). The agricultural workers are concentrated in wards 3,4,5,6,23 and 26 of the Municipality (fig 4.6). This indicates that the agricultural labours and cultivators are located either in the same wards or in adjacent wards. The concentration of both cultivators and agricultural labourers are seen in Nedungolam and Ayiravally areas of the Municipality.

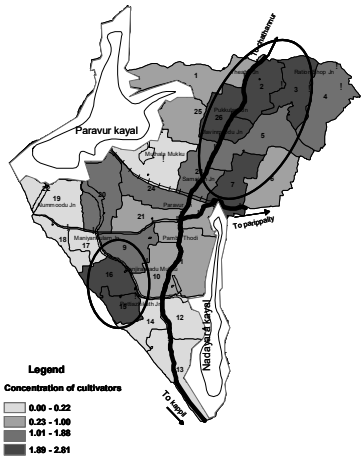


Figure 4.5 ward wise distribution of cultivators

The land use map shows that agricultural zone is also concentrated in these areas. There exists a match in between the distribution of the agricultural land use as well as agricultural labourers and cultivators.

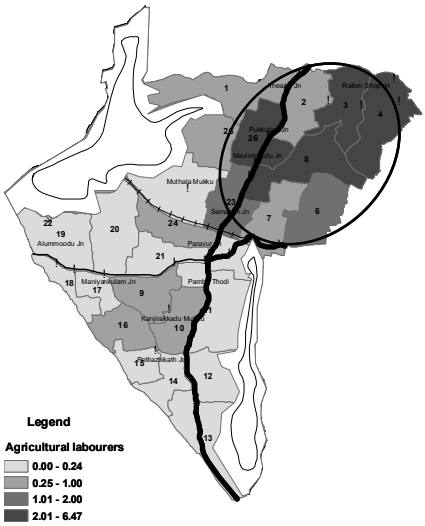


Figure 4.6 ward wise distribution of agricultural workers

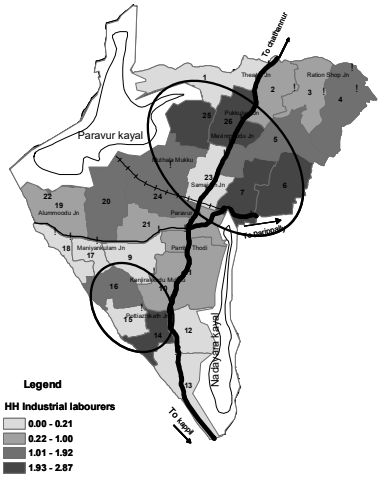


Figure 4.7 Ward wise distribution of house hold industrial workers

Conclusion

The workforce participation rate shows that the economic base of Paravur Municipality is very weak.The industrial sector is more dynamic than agricultural sector. This shows that Paravoor has potential in fisheries, diversification of agricultural activities, agrobased industries and coir industries.

CHAPTER 5

Agricultural Sector

Being an urban area, one cannot expect Paravoor to have more predominance in agricultural sector. Paravoor was an agricultural area in early times. The landuse of the Muncipality shows that agricultural activity is not declined totally paving way for urban activity. The analysis of agricultural sector shows the existing situation and the problems faced by the sector.

5.1 Agriculture : Past Scenario

The past development scenario of Paravoor indicate that both coir making and agricultural activities were predominent here. As per the development report prepared during 9th plan period three fourth of the total land area was under agricultural activities. Coconut was the major crop. It helped the coir industry in Paravoor. Paddy, Tapioca, Plantain, Tuber crops, pulses etc. were also cultivated. Paravoor was famous for Pepper cultivation. The black gold was stored in the warehouses constructed by the British during early days of independence. The total extent, production and productivity of different crops in Paravur during the period 1995 are given in Table 5.1.

Table 5.1 The total extent, production and productivity of major crops in Paravoor Municipality.

Crop	Extent in Hects	Production in Kg	Productivity in Kg/Hect
Paddy (first crop)	25	76500	3060
Paddy (Second crop)	25	84150	3366
Pulses	15	3000	200
Horticulture Products	5	10000	2000
Coconut	836	4389000	5250
Plantain	42	6300	15000
Tapioca	425	6375000	15000
Pepper	15	3300	220
Jack	3	30000	10000
Cashew	5	4000	800
Mango	2	5000	2500
Arrecunut	5	50000	10000

Source: Development report of Paravoor -1995

5.2 Agriculture : Existing Situation

The landuse map shows that 2 Sq:Kms of the area of the Municipality (Around 12% of the total area) is under pucca agricultural activity. 7 Sq:Kms (44%) of the area is under household agricultural activity. (Coconut, Pepper, Plantain, Tapioca). This shows that 56% of the total land is under agricultural activity. According to the development report of Paravur prepared in the 9th plan period, 75% of the total area was under cultivation.Now it is reduced to 56% (Figure 5.1).

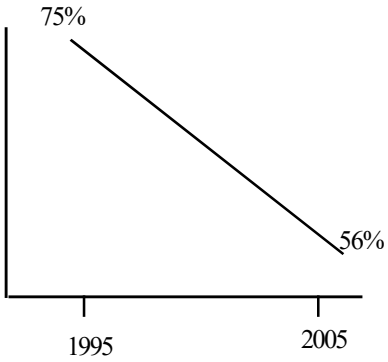


Figure 5.1 The deviation in extent of agricultural land during 1995-2005 period

The extent, production and productivity of crops in Paravoor during 2003 is given in Table 5.2

Table 5.2 Extent of crops and production 2003.

Crop	Extent in Hectors	Production in Kg	Productivity in Kg/Hect.
Paddy	25	82000	3280
Coconut	836	6000000	7177
Plantain	200	1800000	9000
Tapioca	105	1575000	15000
Pepper	15	20000	1333

Source : Integrated District Development Plan for Kollam District

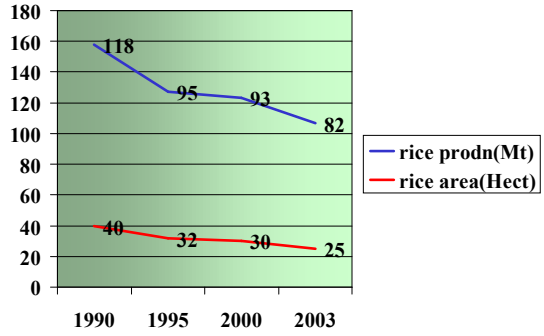


Figure 5.2 Production of paddy

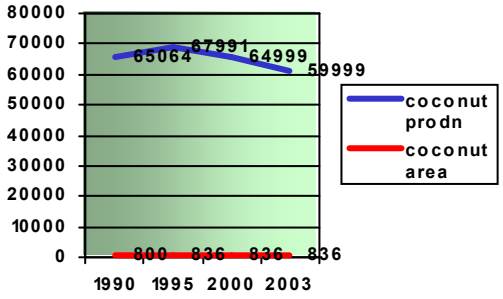


Figure 5.3 Production of Coconut

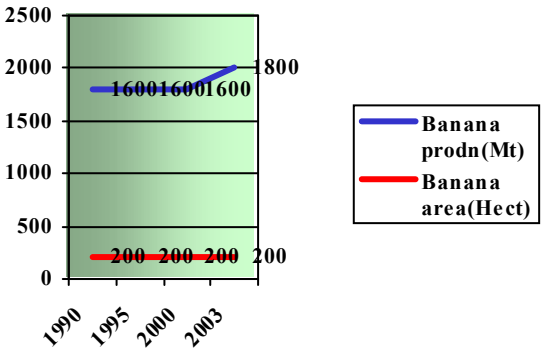


Figure 5.4 Production of Plantain

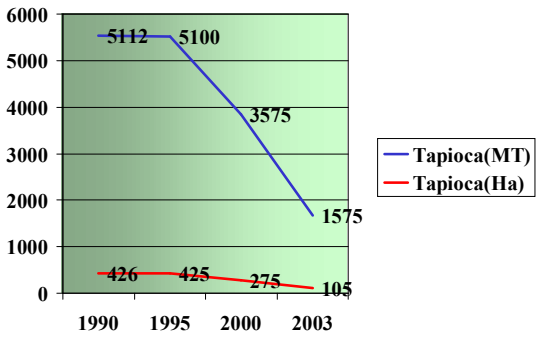


Figure 5.5 Production of Tapioca

The details of production of important crops in Paravoor Municipality based on the records of Krishibhavan are given in figure 5.2 to 5.5. The above figures show that the prodcution of agricultural crops is decreasing in Paravoor.

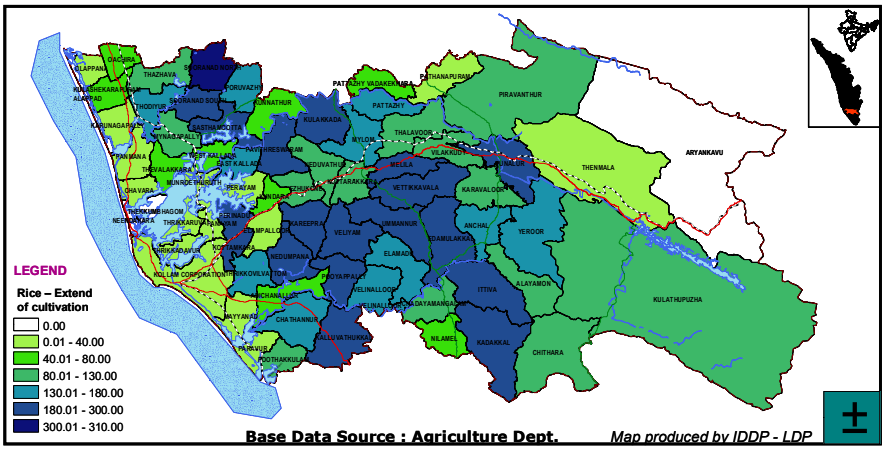


Figure 5.6 Comparison with the extent of cultivation of Paddy in other Local Self Government Institutions in Kollam District

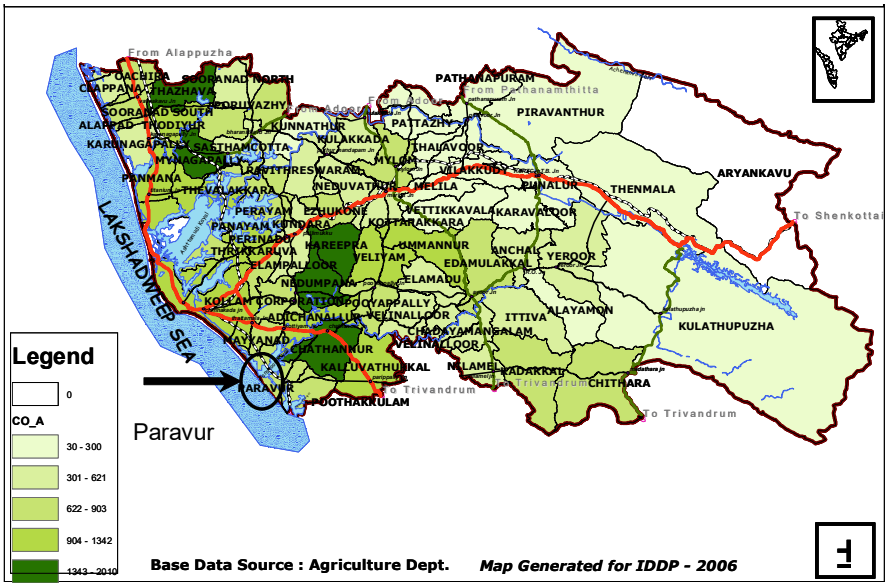


Figure 5.7 Comparison with the extent of cultivation of Coconut in other Local Self Government Institutions in Kollam District

The position of Paravoor Municipality in the production of major crops among other local bodies is shown in fig 5.6,5.7 and 5.8. Area wise data shows that paddy cultivation is only for name sake in Paravoor. However the extent of land under coconut & plantain is comparitively on higher side in Paravoor. In the case of coconut cultivation, Paravoor stands in the fourth position, where as it is the second position in the case of plantain cultivation among the LSGIs in Kollam district.

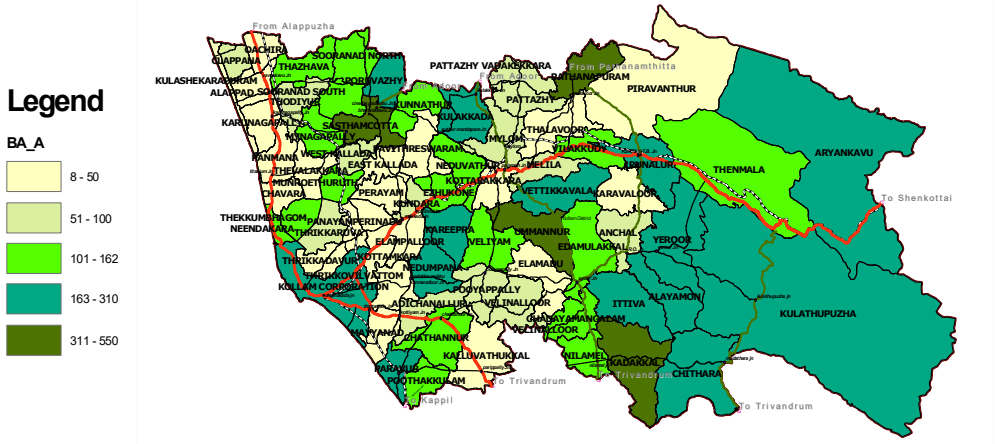
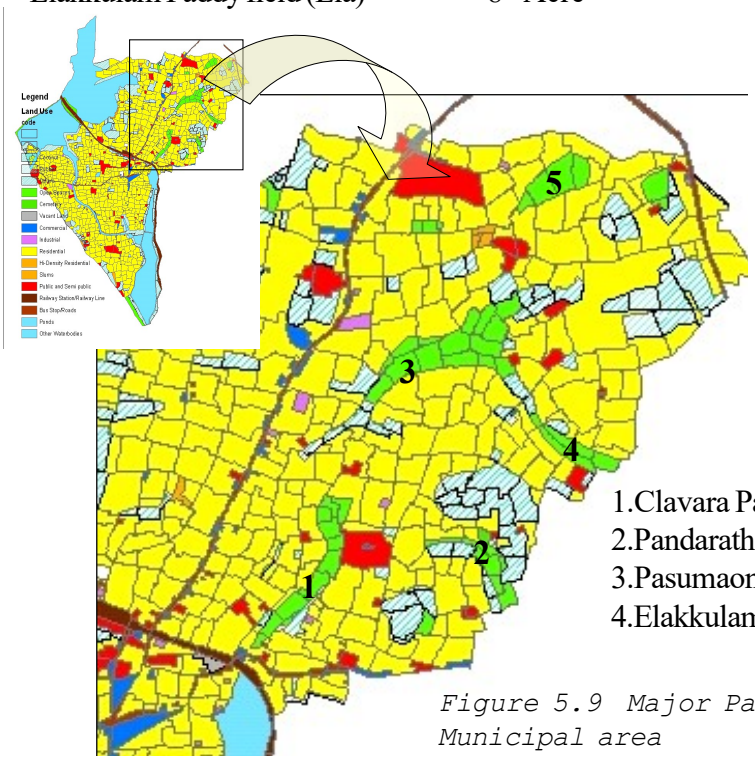


Figure 5.8 Comparison with .extent of cultivation of Plantain in other Local Self Government Institutions in Kollam District

Paddy cultivation in Paravoor is concentrated in five chains of paddy fields (Figure 5.9). They are

Clavara and Koonayil
Paddy field (Ela) - 15 Acre
Pandarathil Paddy field (Ela) - 7 Acre
Pasumon Paddy field (Ela) - 29 Acre
Elakkulam Paddy field (Ela) - 8 Acre



1.Clavara Paddy field, Koonayil paddy field
2.Pandarathil paddy field
3.Pasumaon paddy field
4.Elakkulam paddy field

Figure 5.9 Major Paddy fields in Paravoor Municipal area

Clavara, Koonayil, Pandarathil, Pasumon Elas still put for Paddy cultivation. Paddy is cultivated two times a year, and the two seasons fetch 82 tons of rice annually. Percolation ponds are seen near by the paddy fields but for cultivation the paddy growers are depending on rain.

Ward Nos.5,28 and 18 of Paravoor Municipality have coconut cultivation. Coconut cultivation as homested cultivation is seen all over the Municipality.

5.3 Irrigation facilities

The agricultural activity in Paravoor is mainly depending on rain. Percolation ponds existing in the paddy fields get dried up during summer. It is observed that the drainage canals near the paddy fields are not maintained properly.

Ponds:-

There are 28 ponds in Paravoor. Both temple ponds and paddy field ponds are included in the list. The details of the ponds are given in table 5.3 and 5.4

Table 5.3 Major ponds

Sl No.	Survey No	Name of Pond	Ward No	Place
1	154	Chirayilkulam	9	Koonayil
2	152	Thottathukulam	9	Koonayil
3	151	Malakkulam	9	Koonayil
4	332	Pannikkulam	10	Koonayil
5	62	Parakkulam	7	Koonayil
6	172	Yakkulam	13	Koonayil
7	57	Varuklam	1	Pozhikkara
8	58	Pozhikkara temple pond	1	Pozhikkara
9	380	Ayiravillykkulam	12	Koonayil
10	270	Pookkulam	6	Kurumandal

Table 5.4 Other Ponds

Sl.No	Name of Pond	Wards No	Place
1	Panthalikkulam	12	Koonayil
2	Mangadukulam	12	Koonayil
3	Punchirakkulam	11	Kurumandal
4	Muthalakkulam	8	Koonayil
5	Pottakkulam	12	Koonayil
6	Chirayil Kodikkulam	9	Koonayil
7	Karakambil kodikkulam	9	Koonayil
8	Thaneethum Vathukkal	22	Kongal
9	Korandikkulam	20	Kongal
10	Puthen Mukkalvattom	19	Kongal
11	Idatharakkulam	20	Kongal
12	Kamarakkulam	20	Kongal
13	Puthingal temple pond	13	Kurumandal
14	Puthiyidam temple pond	14	Kottappuram
15	Bhoothathan temple pond	14	Kottappuram
16	Kattakkulam	15	Kottappuram
17	Puthiyakavil temple pond	18	Thekkumbhagam
18	Chirayilkulam	21	Pozhikkara

Thodu (Small stream)

In Paravoor Municipality all the thodus are adjacent to the paddy fields. The thodu in Pasumon paddy area is 3 km in length. This is the biggest thodu in Paravoor. Most of the thodus are not suitable for irrigation purpose and are not maintained properly.

Back waters

The Paravoor back water in Paravoor Municipal area is one of the biggest back waters in Kerala. Ithikkara river joins this back water. This back water has connection with sea. To arrest intrusion of salt water from the sea, shutters are fixed where the back water joins the sea. Another back water is Idava-Nadayara backwater, it extents to the eastern side of Paravoor Municipality. This back water is connected to the Paravoor back water by Maniyamkulam thodu which was constructed in 1824 by Rani Gouri Parvathi Bhai.

Surface water sources

There is a peranial surface water source avaiable near Ayiravalley temple. The springs at eastern side of S.N.V. School Mundumthalakkal and at the eastern side of Perumpuzha Yakshikavu are also perennial in nature.

Ground water

In the elevated areas of Paravoor, ground water is available at a mean depth of 22.5 metres. In low land portions, ground water is available even at 3 metres depth. But most of the ground water sources are seasonal and get dried up during summer.

5.4 Marketing facilities for agricultural products

The Paravoor public market is the only major market in Paravoor. The market has no sufficient space for farmers to sell their products.

5.5 Consumption of agricultural products

The consumption of agricultural products within Paravoor Municipality derived from the survey conducted by N.S.S.O. is given in Table 5.5.

Table 5.5 Consumption of agricultural products – Paravoor.

Category	Per capita monthly consumption in Kg	Total Consumption in the Municipality /Month in Kg.
Rice	7.823	302383
Cereals	0.501	19346
Horticultural Products	2.629	101622
Fruits	2.662	102867
Edible oil	0.30	11935

Source :- Estimated based on National Sample Survey

Comparing tables 5.2 and 5.5 it can be seen that there is no scope for achieving self sufficency in paddy cultivation but there is scope for attaning self sufficiency in the case of coconut, plantain, tapioca etc. There is potential for horticulture also.

5.6 Major problems faced by agricultural sector.

1. Diseases:- The diseases which affect the coconut tree are (i) Coconut stem bleeding (ii) Coconut bud rot (iii) Root (wilt)disease. (iv) Root rot (v)Yellow leaf etc.
2. Pests:- The pests which are affecting paddy cultivation and Horticulture are (i)Race bug (ii)Leaf roller (iii) BCH etc.
3. Shortage of labour.
4. Inadiquate pricing system (eg. paddy is not getting adequate price and paddy cultivation is becoming non profitable).
5. Lack of irrigation facilities.

5.7 Conclusion

In Paravoor 56% of the area is under cultivation but cultiavation is decreasing year by year both crop wise and area wise. Analyses reveal that household horticultural activity may be intensified to make Paravoor self sufficient in horticultural products.

CHAPTER 6

Industries

As per the industrial sector of erstwhile Travancore area, Paravoor has a history of around 200 years. Traditional industries such as Handloom, Coir, Copra, Fishing etc were the economic base of Paravoor. The presence of back waters and sea, paved way for flourishing of coconut cultivation in Paravoor. This enhanced both coir yarn materials and copra trading in Paravoor. Paravoor was famous for coir sector. The copra of Paravoor was of first quality, and good for extracting oil. But there were no mechanization or concentration of copra industry in Paravoor. The unscientific method of coconut cultivation has reduced the yield of coconut and coconut cultivaion became non profitable. The existing industrial scenario of Paravoor Municipal area is explained in this chapter.

6.1 Industries : Existing situation

1. Coir Sector

Coir manufacturing as a cottage industry, flourished in Paravoor in olden days. The coir produced in Paravoor was used for manufacture of carpets due to its whiteness and quality. The coir carpets became very famous in olden days. The Western traders had constructed warehouses, fort etc in Anchuthengu of Chirayinkal Taluk. The coir products of Paravoor were collected and stored in Anchuthengu and Paravoor became one of the important coir manufacturing centre in Kerala. About 80 years ago a coir factory named Sreekrishnavilasam industrial works (present floor-co) was started in Maniyamkulam at Paravoor. Coir industrial school was also started along with this industrial unit. The water ways in Paravoor was a shot in the arm for the growth of coir industries in Paravoor.

Now also coir industry is present in Paravur, but at a less intensified stage. The husk collected from various places are immersed in the backwaters for retting and from the retted husk, coir is produced. The collection of husk and retting are almost at a stand still at Paravoor. Now a days the coir yarn are made from husk which are not decomposed by immersing in backwaters. Husk is now mainly imported from Tamil Nadu. The coir produced through this process do not have the strength and beauty which the coir produced through the conventional process of coir making possessed. The coir manufacturing process is concentrated at Kurumandal, Ollal, Pozhikkara and Kottamoola. Locations are given in figure 6.1

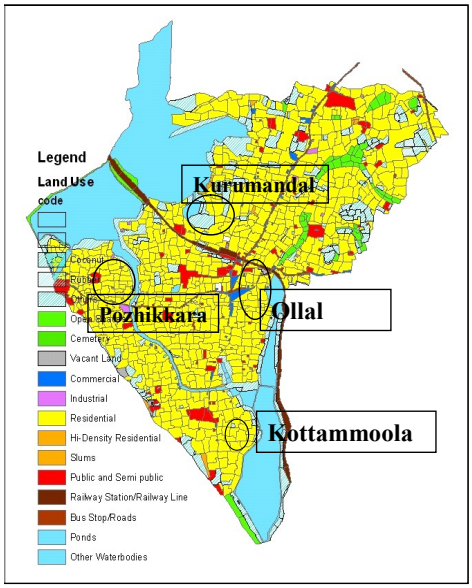


Figure 6.1 The areas where coir industries are concentrated in Paravoor Municipal Town

About 1500 workers are engaged in coir

manufacturing process in Paravoor. The ward wise distribution of coir workers is shown in Table 6.1. There are 3 coir industries, under co-operative sector in Paravoor (Table 6.2). These are not working properly now.

Table 6.1 The Ward wise distribution of coir workers

Ward No	Labourers in Coir Sector	Ward No	Labourers in Coir Sector
1	18	16	0
2	21	17	3
3	39	18	12
4	39	19	97
5	32	20	9
6	39	21	0
7	162	22	47
8	26	23	146
9	26	24	26
10	32	25	10
11	45	26	32
12	34	27	78
13	44	28	58
14	356	29	54
15	16	Total	1500

Though Coir yarn is produced in Paravoor, value added products out of coir yarn are not produced . The Coir yarn produced here is transported to Alappuzha for value addition. 'Floor co' is the only factory functionising for name-sake in Paravoor under coir sector.



Table 6.2 The coir co-operatives of Paravoor

Name	Year of registration
Registration No.3060 Paravoor Coir industries Co-operative Society	20-10-50
Registration No. 636 Koonayil Coir industries Co-operative Society	26-03-79
Registration No.Q 870. Paravoor Thekkumbhagam Coir industries Co-operative society	26-10-85

The consumption of coir products is increasing day by day both in internal and foreign markets. The products from coir and jute are alternative to plastic products. Because of the environmental concern of the plastic products, the demand of coir and jute products are increasing. The Centre and State policies are also to promote coir and jute products. So there is scope for coir and coir products in future also. In the case of Paravoor, the presence of Edava and Nadayara back waters are advantages for promoting coir industry.

The problems faced by Coir sector in Paravoor.

1. Very low wage for coir workers. The minimum wages of the employees of this sector is about 60 to 80 rupees a day only.
2. The inefficient collection of husk leads to shortage of raw materials for manufacture of coir products.
3. Paravoor depends near-by districts for value addition of coir. A significant amount is spent for transportation of coir yarn to these value addition centres.

2. Handloom Sector

In the past, handloom sector was very active in Paravoor. Vinayaka weavers industrial Co-operative Society was started as early as in 4-11-1958. In inception stage itself this society gave employment to 260 persons. But now the handloom sector is in a pathetic situation in Paravoor. The activity related to handloom sector, mainly cloth weaving, is taking place only in name sake in Paravoor. The once renouned Vinayaka handlom society (Figure 6.2) employs only 15 persons now.

The set backs face by handloom sector needs special attentions of the industries department.



Figure 6.2 Vinayakar Handloom Society in Paravoor.

3. Small Scale Industries Sector

There is no agglomeration of smallscale industrial units in Paravoor Municipal area.

The small scale industries existing in Paravoor are marginal. Their category and numbers are given below.

Flour Mills	10
Work shops	16
Printing Presses	4
Oil Mills	1
Curry powder units	1
Saw mills	2
Tyre re-treading units	2

6.2 Conclusion

The traditional industrial sectors namely, coir sector and handloom sector are in a deteriorating stage in Paravoor. But from the analysis it is seen that coir sector has potential for flourishing again by way of modernisation and diversification. Along with coir sector, there is scope for development of related small scale industrial units in Paravoor.

CHAPTER 7

Animal Husbandry and Fishing

The golden era of coir sector and fishing gave little time for the residents of Paravoor to engage in other sectors like Animal husbandry and they have not given any priority to develop the animal husbandry sector.The animal husbandrysector and fishing activities existing in Paravoor are detailed here.

7.1 Animal Husbandry Sector - Existing situation

The Integrated District Development Plan for Kollam, does not identify any notable achievements in Animal Husbandry sector in Paravur. The existing live stock population in Paravoor is given below in table 7.1.

Table. 7.1 Live stock population

Catagory	Nos.
Cow	1490
Buffellow	5
Goat	1284
Pig	4
Cock	3962
Duck	164

Source : IDDP Kollam 2006

The animal husbandry sector had played a vital role in Paravoor, mainly in production of milk, ploughing of paddy fields and for producing bio-fertilizer. In the context of the paddy fields getting filled up, fodder cultivation, cattlefeed etc are not available in the required quantity. So animal rearing became a burden to the farmers. At the same time milk and milk products, egg, mutton are having appreciable demand in the Municipal area.

In the area of milk production and its sales, there is no organized efforts in Paravoor. There are two milk producing co-operative societies, and two private milk collection centres in Paravoor. Normally 1150 litres of milk is collected through the societies and the private collection centres. Major portion of the milk so collected is utilised for internal consumption. Duck and hens are reared in a smaller scale in Paravoor Municipal area. The presence of backwaters make duck rearing a potential for development.

The bio-fertilizer requirements of agricultural activity is fulfilled through Animal Husbandry activities. The reduction of farms for cultivation of paddy has also reduced the Animal Husbandry activity in Paravoor Municipal area and this in turn affected the animal husbandry sector. Rabbit rearing is also seen in a small scale in Paravoor.

Sheep are reared for meat production and milk production. For low income people, sheep rearing is a main a source of income.

The meat production process adopted now in Paravoor is unhigenic and unscientific. This is mainly because of the absence of a slaughter house in the Municipality.



One Vetrinary Polyclinic is existing in Paravoor Municipal area. The diseases usually seen in animals in Paravoor are leg nail disease. One clinical lab is attached to the Vetrinary Poly clinic.

The Consumption pattern of Animal Husbandry products in Paravoor.

The national sample survey organization has conducted a survey in urban areas of Kerala and assesed the consumption pattern of animal husbandry products in Kerala. Based on the pattern, the likely consumption of Animal husbandry products in Paravoor are calculated and is given in table 7.2.

Table 7.2 Consumption of products in Animal husbandry sector

Catagory	Monthly Consumption of Animal Husbandry Products
Milk and milk products	119464 Litres
Egg	193245 Nos.
Meat	663 Kg

The Animal Husbandry sector in Paravoor is not capable of supplying the required quantities of animal husbandry products. Therefore there is immence potentials for improvement of Animal Husbandry sector in Paravoor.

The Problems of Animal Husbandry Sector.

1. The increase in price of cattle feeds.
2. Lack of fodder cultivation
3. Inadequate facilities for treatment of animals

4. Diseases among domestic animals
5. Lack of laboures
6. Inadequacy in the availability of feeds for layers
7. Lack of good variety of hens

7.2 Fisheries Sector

Paravoor, a costal town, is one of the major centres for fishing. The Lakshadweep Sea is located on the western side of the Paravoor. The coastal area of Paravoor (Figure 7.1) is located in 7 wards. Of these 7 wards, fisherman and fishing activities are concentrated in 5 wards. They are Thekkumbhagom, Thottukuzhi, Parakkida, Chillackal and Pozhikkara.



Figure 7.1 Coastal areas in Paravoor

The Present Scenario

Eventhough Paravoor has a history of centuries of fishing activity, modern mechanical means or technology is not adopted for fishing here.

There are about 2055 persons engaged in fishing activity. Approximately 500 households are depending on fishing as a source of income for their livelihood. About 1335 people are engaged in actual fish catching. Others are working on processing, sales and other anxilary sectors. The people who are engaged in fishing activity are residing in ward No.1 and wards14 to 22 .

Categories of fish in olden days and now a days.

Large fishes like Shark, Therandi, Poonthi, Neymeen formed part of catches of fishermen from Paravoor in yester years. Mechanized boats and yatches from other parts of the District use modern fishig nets for catching fish from these areas. Therefore the traditional fishermen in Paravoor are unable to get good fish catch from Paravoor costal seas. Mechanization in fishing have badly affected the fishing activity of traditional fisher men. This has affected exports of fish items from Paravoor.

Now adays the catches of fisherman include only small fishes like 'Mathy', 'Ayila', 'Netholi', 'Vala', 'Choora', 'Chala', 'Parava', 'Thada', 'Kutta', 'Chemmeen', 'Rala', 'Kanava' etc from the coastal seas of Paravoor. The seasonal variation in fish catch is given in Table 7.3.

Table 7.3 Seasonal variation in fish catch

January to March	Netholi, Ayila,Chala,Choora,Vala
April to May	Parava, Thada, Kutta
August to October	Chemmeen, Pala, Kanava
November to December	Netholi, Mathi, Ayila

Annual fish catch is given item wise in Table 7.4

Table 7.4 Annual Marine fish catch – Paravoor

Sl.No	**Item**	**Quantity in tonnes**
1	Anchovy	700
2	Mackral	100
3	Sardine	105
4	Tuna	1
5	Ribbon ship,White bait	10
6	White fish	90
7	Tardoor	80
8	Kutta	40
9	Shrimp	10
10	Rala	0.5
11	Squid	20
	Total	**1156.5**

Inland Fishing

The Inland fishing area of Paravoor is based on the 22 km length of back water (Figure 7.2)shores of the Municipality. People who are engaged in inland fishing activity is concentrated in ward Nos.24 and 25. Two landing centres, one at Oottukuzhy and the other at Mamoottil bridge are used for inland fishing activity. Approximately 500 persons are engaged in inland fishing activity. The details are given in table 7.5



Figure 7.2 Akathu backwater

Table 7.5 Employment in inland fishing activity .

Inland fishing	Male	Female	Total
Major occupation	255	-	320
Partially employed	90	-	90
Fish processing	10	-	10
Fish sales	80	55	135
Net repairing	10	-	10
Total Numbers	**445**	**55**	**565**

Source:Primary data collection

Compared to olden days more people are now engaged in inland fishing activity. Migrated christian families are engaged in inland fishing activity.

'Kanampu', 'Karimeen', 'Chemmeen' and 'Kakka', are the major fish items caught in inland fishing . The different category of fish available in different seasons are given in Table 7.6.

Table 7.6 different catagory of fish catch in different time period.

Months	Item
January to June	*Kanampu,Karimeen,Para*
August to December	*Chemmeen(Naram,Theli Therippan)Njandu,Kakka*



Figure 7.3 Soil silting in Pozhikkara spillway

The inland fishing activity is adversily affected by the delay in removing of silt from Pozhikkara and filling up of backwater areas for building activity.

Aiming at the development of fishing sector, two co-operative societies are functioning for over ten years, one at Chillakkal and other at Thekkumbhagam. But so far the functioning of these co-operative societies could not contribute much to the development of fisheries sector of Paravoor.

There is no proper access and vehicle facilities to all the five fish landing centres of Paravoor. Boat, net and other equipments are not kept very close to seashore. The sheds for keeping these equipments are constructed far away from the seaside. These sheds are in a damaged conditions. The public markets are very inadequate. Fish processing plants are not existing. These are adversily affecting the fish sales in this areas.

Even though in Thekkumbhagam area of Paravoor, foundation stone was laid in first April 1986 for a Mini fish landing centre, no further activities were so far carried out in this area. Construction of ice plants and cold storages were also envisaged in this fish landing centre. But the proposal has not materialised till date. Private ponds and public ponds totaling to around 28 numbers were existing in Paravoor. Some of the ponds were filled up for other purposes. But the following ponds which can be utilised for fish farming (Table 7.7).

Table 7.7 Ponds which can be utilised for fish farming.

Sl. No	Ward No	Name of Pond
1	9	Chirayilkkulam
2	6	Malayikkulam
3	24	Kottakkulam
4	13	Pampinthodikkulam
5	10	Pannikkulam
6	22	Panthalikkulam
7	9	Thottathilkkulam
8	10	Pulikkulam
9	1	Varukkulam

Source : Primary Data collection

Problems

1. Lack of awareness about modern fishing methods & modern facilities among the fishermen community.
2. Improper functioning of co-operative societies.
3. Inadequate road facilities and vehicle facilities to marine landings and inland fishing area.
4. Inadequate facility for keeping of fishing equipments.
5. Majority of the fisherman have no own houses. The seaside houses are made with thatch.
6. Deep sea fishing facilities are not available.
7. There is shortage of ice plants and cold storages.
8. Fish landing area and backwater area are not supplied with electricity and drinking water
9. There is no sanitation facilities in fishermen households and fishing centers.
10. The inland fish catch from Pozhikkara in Paravoor is affected by silting of soil. Ponds are filled up for dry land cultivation.
11. Majority of fishermen are not covered by insurance or welfare schemes

12. There is no exclusive transportation facilities for women fish vendors
13. There is no fish processing plants in this area.
14. The fish sales facilities are not adequate.
15. There is absence of equipments to ensure safe reach of the fisherman in the seaside landing area during night.
16. There is no connecting roads and transportation facilities between fish landing centres.
17. There is no offices of Fisheries Department in this area.

7.3 Conclusion

From the land use analysis of Paravoor Municipal area it is observed that the average per capita land holding here is 25 to 50 cents. This is helpful for house hold animal husbandry activities. The consumption pattern in animal husbandry sector shows that there is high potential for animal husbandry activities in Paravoor Municipal area. Similarly plenty of water bodies have high potential for Duck farms. The 7 Kilometer strech off sea-cost, Paravoor backwater, Edava-Nadayara backwater and many ponds provide potential for fish farming activity in Paravoor Municipal area. The significant number of fisherfolk enhances the potential of Paravoor in fisheries sector.

CHAPTER 8

Tourism

In Paravoor, tourism sector is in the initial stages of development. Presently Paravoor has not appeared in the tourism map of Kerala. The existing scenario of tourism sector in Paravoor and the potentials of Tourism Development here are detailed in this chapter.

8.1 Tourism, Existing Scenario.

At present very little tourism related activities are taking place in Paravoor. But Paravoor has immense potential for development of tourism due to its locational factors such as existence of sea coast (Figure 8.1), backwaters and canals (Figure 8.2) connecting the backwaters.



Figure 8.1 Water fronts of Paravoor



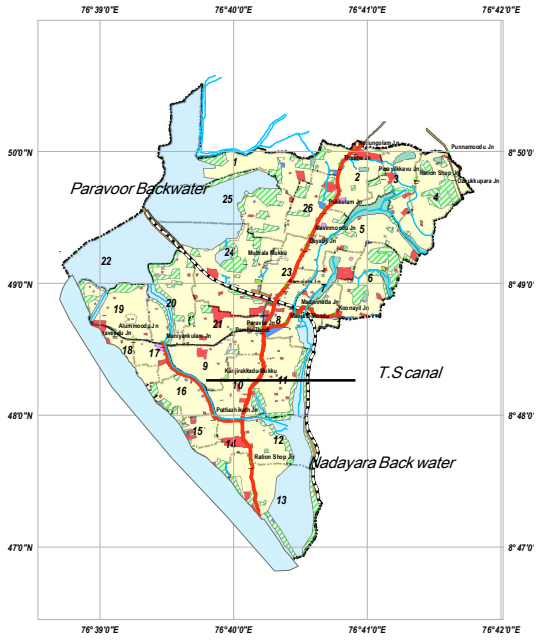


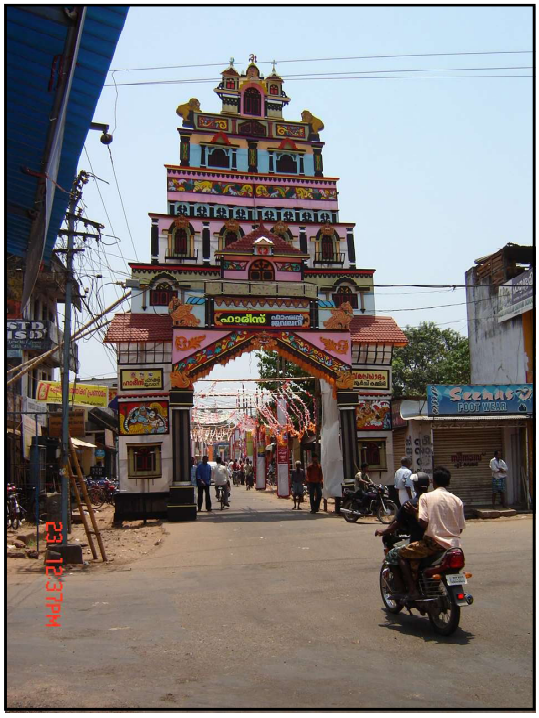
Figure 8.2 Back waters &Canals of Paravoor

The estuary where sea meets the backwater in Pozhikkara and Thekkumbhagam area are scenically beautiful places in Paravoor. The location of Paravoor between Varkala and Kollam Municipal Corporation, enhances its tourism potential as Varkala is a tourist destination which has found place in the world tourism map. The distance from Varkala to Paravoor is only 20 Kilometers. Paravoor is connected by roads with Varkala, and other tourist destination of the district namely, Ashtamudi and Thenmala. Now Paravoor has two tourist resorts namely Lake sagar and Acquaserinum. The infrastructure facilities to cater the demands of domestic and international tourists are inadequate here.

Ancient temples, well known for festivals are increasing the potential for tourism development in Paravoor. A list of the such temples and other places of worship of Paravoor is given in Table 8.1.

Table 8.1 Ancient temples / Places of worship in Paravoor Municipal area.

Sl.No:	Name of temple/ Places of Worship
1	Ayiravalley Temple
2	Chirayil Temple
3	Perumpuzha Temple
4	Panayil kavu Temple
5	Puthingal Devi Temple
6	Pozhikara Temple
7	Puthiyakavu Temple Thekumbhagam
8	Puthan Pally
9	Polinja Pally.





The sacred grove attached to the Ayiravalley Temple is a beautiful place in Paravoor. The evergreen sacred grove have lot of big trees which gives shelter to the bats. It is an interesting feature of this area. Therefore this area needs conservation. The fire works connected with the festival Paravoor Puttingal temple is an event that attracts large number of people.

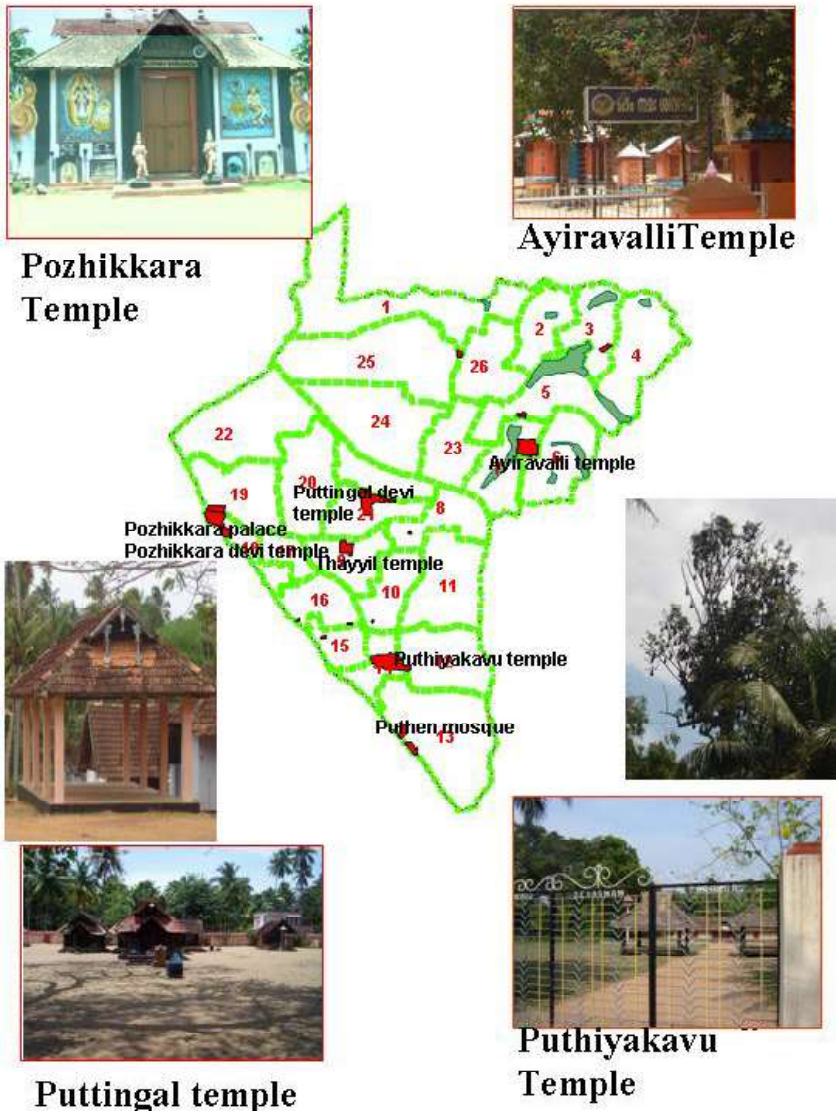


Figure 8.3 Major temples in Paravoor

8.2 Water ways - T.S Canal

TS Canal (Canal connecting Trivandrum and Shornur) is passing through Paravoor. The renovation of the T.S Canal as a part of national water way will increase the potential of tourism development in Paravoor.

8.3 Coastal Road

The coastal road connecting Paravoor with Kollam (Kollam- Mayyanadu - Paravoor - Kappil - Varkkala coastal road) is currently not used for transportation due to its inadequate maintanance. Once this road is made suitable for thorough traffic, the tourism potential of Paravoor will increase.

8.4 The heritage sites

Centuries old history is associated with the Pozhikkara devi temple and Puttingal devi temple. *'Pozhikkara Sasanam'* in Pozhikkara Devi temple is believed to be written in 12thCentury AD. This increases the heritage significance of the temple. The *'Pozhikkara Sasanam'* depicts the way of life of the people, the development of administration etc, that were existing at Paravoor during 12th century.

8.5 Conclusion.

The proximity of Paravoor with Varkkala, the world famous tourism destination and presence of scenically beautiful places,like backwater and sea coast and better connectivity (through road and rail) makes Paravoor suitable for tourism development. The famous festivals associated with ancient temples also increase the tourism potential of Paravoor.

CHAPTER 9
Transportation

Road, rail and waterways have an important role in the development of Paravoor. Majority of the people are depending on road and rail as their mode of transportation. In this chapter the existing transportation infrastructure and facilities of Paravoor are detailed.

9.1 Road Network

The road network in Paravoor Municipal area can be divided into two. The regional network that connect Paravoor with other centres and the local roads that connect different areas within Paravoor. The regional network (Figure 9.1) of roads include:

- Chathanoor- Paravoor road,
- Paravoor - Parippally road,
- Paravoor - Varkkala road,
- Coastal road.

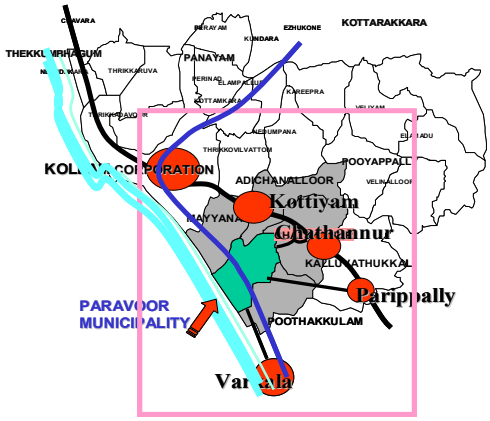


Figure 9.1 The regional road network of Paravoor

The regional road connects Paravoor with other commercial as well as developed centres in and around Paravoor.

The network of regional roads are shown in figure 9.1. The portion of the regional network of roads which passess through Paravoor are the Primary roads of Paravoor. These are:

- Nedungulam - Paravoor Junction road
- Paravoor Junction - Thekkumbhagam road
- Pozhikkara - Paravoor Junction road
- Paravoor Junction - Koonayil road
- Canal road (Kuttoor palam -Pozhikkara Jn)
- Paravoor Junction - Ollal road

The Primary road network of Paravoor are shown in figure 9.2. The details of existing Primary roads are given in table 9.1

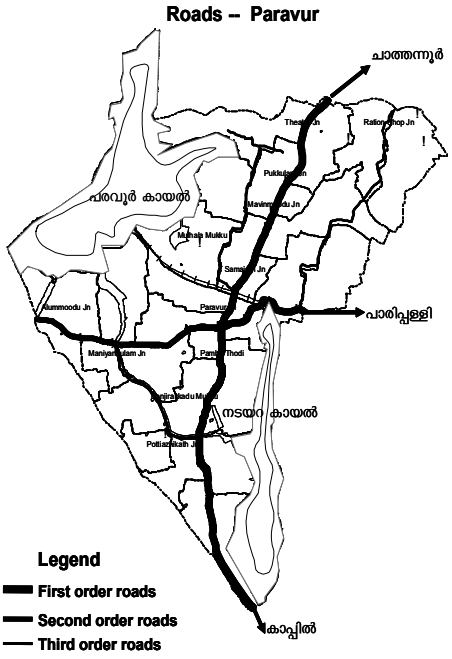


Figure 9.2 Road network, Paravoor Town

Table 9.1 Important roads in Paravoor Municipal area.

Sl No.	Road	Approximate Width in meters	Existing catagory (tarred and untarred)
1	Nedungulam - Paravoor Junction	12	Tar
2	Paravoor Junction-Thekkumbhagam	11	Tar
3	Pozhikkara - Paravoor Junction	8.5	Tar
4	Paravoor Junction - Koonayil	9	Tar
5	Kuttoor palam - Pozhikkara junction	11	Tar
6	Paravoor Junction -Ollal	8	Tar

The Secondary roads passing through Paravoor Municipal area are listed below.

- Vinayagar junction - Purayil kavu junction - Ration shop junction
- Koonayil junction - Ayiravally temple - Ration kad Junction road
- Dayabji junction - Parayil kavu temple - Ayiravally temple road.
- Theatre junction - ITC - Railway station road.
- Road passing through Municipal office and near Ayurveda hospital to Paravoor junction
- Manchadimoodu junction - Annapoorneswary temple junction road.

Table 9.2 Secondary roads of Paravoor Municipal area.

Sl No.	Road	Approximate Width in meters	Existing condition
1	Vinayakar junction - Parayil kavu junction- Ration shop junction road	8	Tar
2	Koonayil junction - Ayiravally temple Ration shop junction road	8	Tar
3	Deyabji junction - parayil kavu temple - Ayiravally temple road	6	Tar
4	Theatre junction - I.T.C - Railway station road	5	Tar
5.	Road passing through Municipal office and near Aurveda hospital to Paravoor junction	8	Tar
6	Manchadimoodu junction Annapoorneswary temple junction road	4.5	Tar

In Paravoor, the primary roads and secondary roads are not developed as a planned network. The width of the primary and secondary roads are not uniform. A well planned road network is required for Paravoor Municipal area.

9.2 Traffic volume

The number of vehicles passing through important roads at a particular point in a day (volume of traffic) is indicated in figure 9.3. This figure shows the traffic volume on important roads. Table 9.3 shows the volume capacity ratio of important roads.

Table 9.3 Volume capacity ratio of important roads in Paravoor.

Sl. No	Name of road stretch	Capacity (PCUs/day)	Volume (PCUs/day)	Volume capacity ratio V/C
1	Paravoor - Ollal Junction	4000	6853	1.71
2	Ollal Junction - Parippally	5000	6106	1.22
3	Paravoor -Railway station	8000	3680	0.46
4	RS road -Chathanoor	8000	3351	0.42
5	RS road - Paravoor	5000	6414	1.28
6	Paravoor-Thekkumbhagam	8000	2798	0.35
7	Thekkumbhagam -Varkala	8000	2245	0.28
8	Paravoor -Bus station	8000	8737	1.09
9	Bus station - Pozhikkara	8000	2185	0.27
10	Kuttoor - Maniyankulam	8000	645	0.08

Source: NATPAC traffic survey April 2000

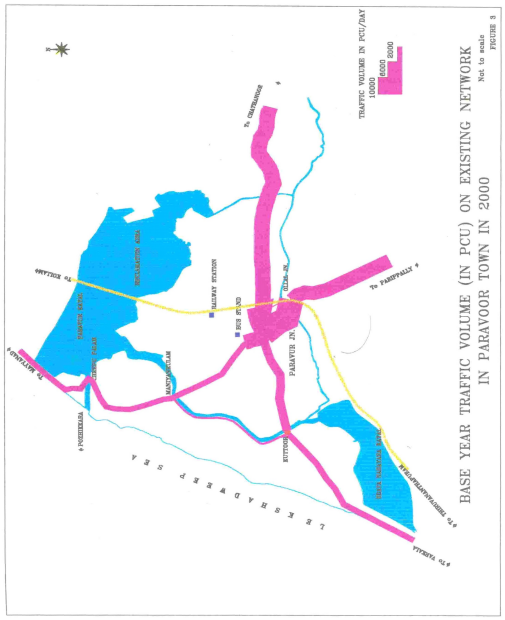
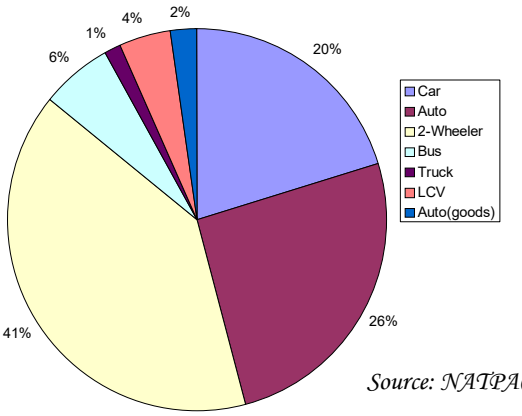


Figure 9.3 Volume capacity ratio for major road sections in Paravoor municipal Town in 2000

The figure and table show that majority of vehicles through Paravoor are passing through Chathanoor Paravoor road and Parippally - Paravoor road. Similarly the volume capacity ratios in the following roads Paravoor - Ollal junction road, Ollal junction- Parippally road, Paravoor bus station road andParavoor railway overbridge road, are greater than one. It shows that it is necessary to increase the width of these roads.

9.3 The category of vehicles

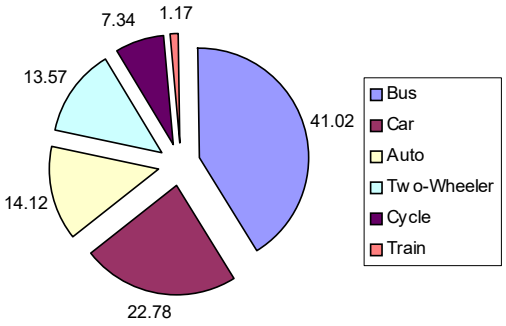
Buses operating in Paravoor consists of 15 KSRTC buses and 85 private buses, About 200 Auto rikshas and 60 taxis are conducting services with in the town. The traffic survey conducted by NATPAC in the year2000 categorises the vehicles passing through Paravoor Town as shown in figure 9.4.



Source: NATPAC Survey April 2000

Figure 9.4 Category of vehicle passing through Paravoor Town

Most of the vehicles (67%) passing through Paravoor are light motor vehicles (two wheelers or three wheelers); 6% of the vehicles are buses. Figure 9.5 gives the model split of vehicles used by the people for transportation purpose. From the figure it is clear that 41 % of people are using buses for their transportation purpose and 1.17% of people are depending railways.



Source: NATPAC Survey April 2000

Figure 9.5 Model split of vehicles - Paravoor

On examination of the origin and destination of vehicles passing through Paravoor (Figure 9.6) it is seen that 84% of the vehicles have their origin or destination point as Paravoor. This shows that only 16% of the vehicles are plying through Paravoor to reach other places.

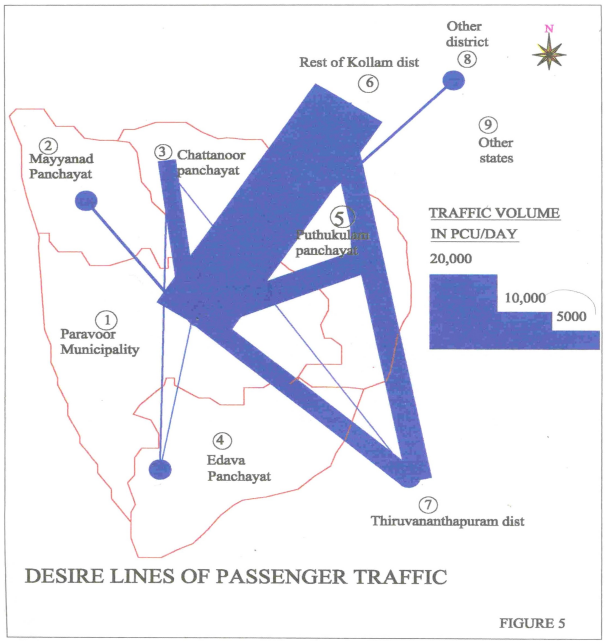


Figure 9.6 The analysis of origin and destination survey of vehicles which gives the desire line on important roads

It can be concluded from the origin and destination survey that the by-passable traffic is less in Paravoor.

9.4 Goods traffic

The survey conducted by NATPAC shows that vegetables and construction materials are the major incoming goods in Paravoor. 714 tonnes of goods are coming into Paravoor in a day. Half of which is (312 tons) vegetables& construction materials. The major portion of goods is rice. The rice reaching at Paravoor Railway Station is transported to different parts of the District.

9.5 Parking areas

In Paravoor junction there is no parking space for vehicles such as autoriksha, tourist taxi or mini lorry. It is a major traffic problem in Paravoor central area. Now these vehicles are parked in front of shops which create problems for pedastrains and other vehicles. The parking survey conducted (First development plan for Paravoor 2001) indicates that in peak time 118 vehicles (30 Autorikshas, 17 Bicycles, 27 Two wheelers, 15 Cars) are getting parked near major junctions.

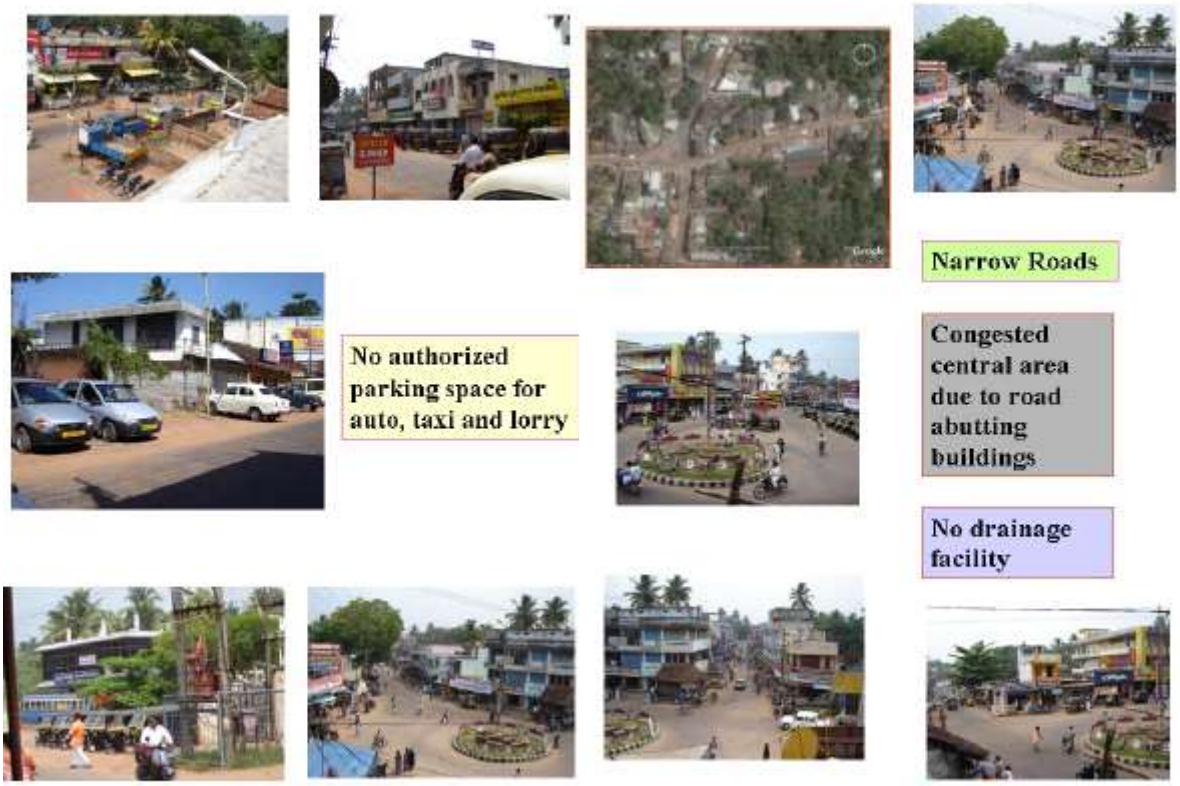


Figure 9.7 Town centre of Paravoor Municipality - Problems

This create traffic congestion in peak time.

9.6 Bus stand

One Municipal bus stand is there in Paravoor (50 meters west of Paravoor junction). This busstand have parking facilities for 7 to 8 buses at a time. Kottiyam, Chinnakkada, Parippally, Chathanoor, Varkala are places connected by bus service from this busstand. KSRTC is operating four bus services from Kollam bus stand to Paravoor Town.

9.7 Rail transportation

On completion of the Kollam - Thiruvananthapuram railway line in 1918 AD, a railway station was constructed at Kurumandal area of Paravoor.

There is not much improvements made to the Railway station since its inception about 75 years ago. About 5 kilometers of railway line is passing through Paravoor Municipal area. One railway gate is existing in Paravoor - Parippally road at Ollal. Nearly 5000 passengers are daily commuting from Paravoor railway station.

This is the only railway station (Figure 9.8)within the assembly constituancy of Chathanoor. The railway station of Paravoor gets more significance than ever, since Paravoor in designated as an emerging Tourist destination of the District.



Figure 9.8 Railway station in Paravoor Municipal Town

The express trains which have stops in Paravoor are:

1. Mangalapuram - Thiruvananthapuram - Mangalapuram (Malabar Express)
2. Intercity Express.
3. Bombay - Kanyakumari - Bombay Express
4. Bangaloor - Kanyakumary - Bangaloor Express
5. Shornoor - Thiruvananthapuram - Shornur Express
6. Mangalapuram - Thiruvananthapuram - Mangalapuram Express
7. Guruvayoor - Chennai - Guruvayoor Express

Passenger trains which has stop at Paravoor are:

1. Madhura - Kollam - Thiruvananthapuram
2. Thiruvananthapuram - Kottayam - Thiruvananthapuram
3. Thiruvananthapuram - Kollam- Thiruvananthapuram

9.8 Water Transportation

The goods transportation through T.S Canal in olden days was an impetus for the development of Paravoor Town. The T.S. Canal is connecting two back waters in Paravoor, but it is not utilised for goods traffic now a days. Since the State is giving much importance to water transportation, there is scope for improvement of the water way in Paravoor.

9.9 The Problems faced by transportation sector include;

- ⇨ Traffic congestion at Paravoor junction
- ⇨ Absence of planned parking spaces for Autoriksha, taxi car, lorries, etc.
- ⇨ Near by Panchayat of Mayyanad is not connected directly with Paravoor Town.
- ⇨ Inadequate width of existing roads based on volume capacity ratio.
- ⇨ People of Paravoor depend on Kollam Corporation for higher level educational, hospital & commercial facilities. The damaged situation of the coastal road is a hurdle for the people to reach Chinnakkada(Kollam Corporation) . Now the people of Paravoor have to travel 28 kilometre to reach Chinnakkada meanwhile the coastal road reduces the distance between Paravoor and Chinnakkada to 13 kilometre.
- ⇨ There is no efficient road network in Paravoor Town and surroundings.

9.10 Conclusion

Paravoor lies at the south west boundary of Kollam District. Paravoor is connected by road to other places in Kollam District. The railway station is an impetus for transportation of people and goods. The lack of coastal road between Mayyanad and Paravoor is an impediment to reach the CBD of Kollam Corporation namely Chinnakkada. Paravoor junction is facing acute traffic and transportation problem. The major roads of Paravoor Municipal Town are having inadequate width and capacity to handle the present volume of traffic.

CHAPTER 10

Education

In this chapter, the educational status and the infrastructural facilities available in education sector in Paravoor are detailed. The problems faced by educational sector are also analysed in this chapter.

10.1 Education status

Literacy rate of Paravoor is 89.36%. (No.of literates 30465). When compared with the Distict figure of 91.4%, the literacy rate of Paravoor is less. The female literacy rate of Paravoor, 87.06% is also less than the corresponding District figure. A comparative study of the Literacy rate of Paravoor is shown in figure. 10.1

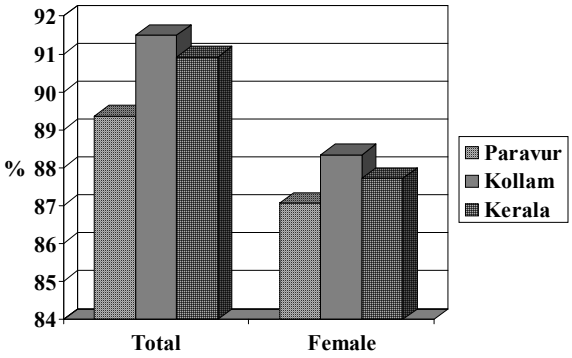


Figure 10.1 Literacy rate o of Paravur in comparison with that of the district and the state

The percentage share of people possessing different educational qualification in Paravoor is shown in figure 10.2

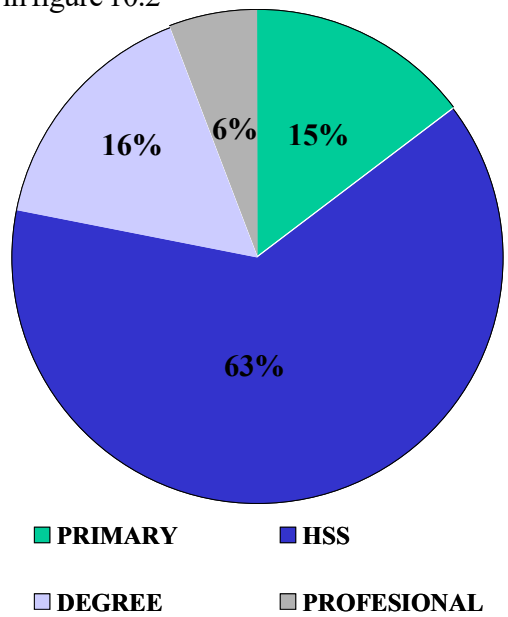


Figure 10.2 Educational status of Paravur

Source: Social economic survey

From the figure it is seen that professionally educated people areonly 6% in Paravoor. But it is equal to the District figure. Of the total educated people of Paravoor, 63 % have passed High school or Higher secondary. People who have primary education only is around 15 % (District figure is 10%). 16% of the educated people have Degree level education.

10.2 The Category of Educational institutions and their numbers

The categorywise number of educational institutions in Paravoor is given in Table 10.1

Table 10.1. The categorywise number of educational institutions.

Sl No.	Category	Numbers
1	Anganavadi	21
2	Lower Primary School	4
3	Upper Primary School	3
4	High School	2
5	Higher secondary school	1

The location of educational institutions is shown in figure 10.3

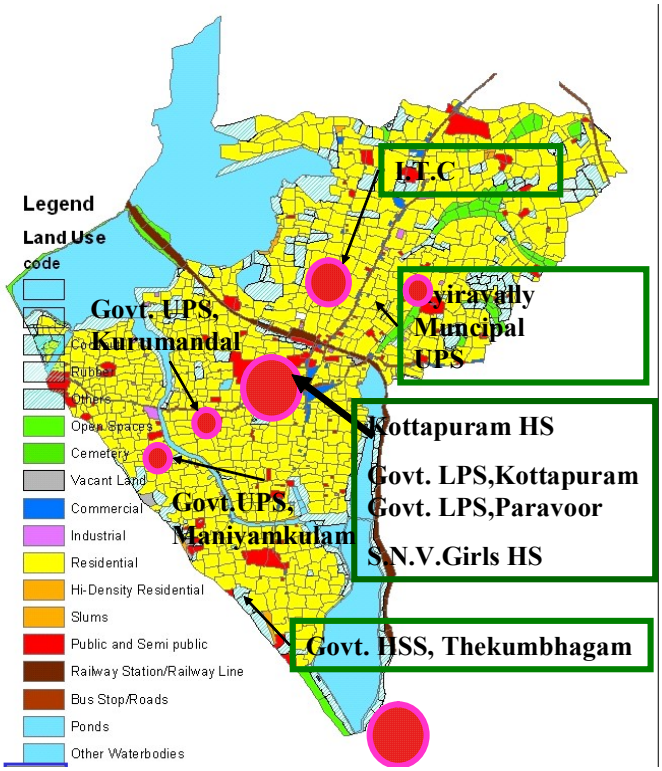


Figure 10.3 Location of educational institutions in Paravoor Municipal area

10.3 Existing Situation

There are 10 govt./aided schools in Paravoor. About 4832 pupils are studying in all these educational institutions and 160 teachers are there. Detailed information is given in Table 10.2. Of the 10 Educational Institutions, 2 are in Private sector.

Table 10.2. Details Of the 10 Educational Institutions.

Sl.No	Name of School	Number of Pupils	Number of Teachers
1	S.N.V. Girls High school	1294	45
2	K.H.S Paravoor	817	32
3	Govt.H.S.S Thekkumbhagam	756	23
4	Govt. U.P.S. Maniyamkulam	496	12
5	Govt. U.P.S Kurumandal	428	16
6	Municipal U.P.S Ayiravally	106	4
7	Govt. L.P.S Koonayil	271	6
8	Kottappuram Govt. L.P.S	300	9
9	Girls Govt. L.P.S Paravoor	101	6
10	Govt L.P.S Ozhukupara	233	7
	Total	**4802**	**160**

In Paravoor Municipal area 21 Anganavadies are there. The Higher secondary school in Paravoor is government owned. Of the three Upper primary schools, one is owned by Municipality (Ayira vally Municipal UPS) and the other two are government owned. All the Lower primary schools are government owned. In Kottappuram L.P.S& Maniyamkulam U.P.S, there are preprimary sections conducted by PTA. There are 6 primary schools in private sector.These have pre primary sections also. Apart from the above facilities in Paravoor, people sent their children to unaided schools out side Paravoor.



Figure 10.4 Paravoor H.S.S

Total number of pupils studying in schools of different category is given in table 10.3.

Table 10.3 Number of students in different categories of schools

Sl.No	Category of schools	Numbers of pupils
1	Lower Primary schools	905
2	Upper Primary schools	1030
3	High school schools	1573
4	Higher secondary schools	180

During the 2006-07 academic year, there were 905 pupils studying in Lower Primary section. There were 1030 students in Upper primary section. In High school section 1573 students and in Higher secondary school section 180 students were studying during the period. As per the records from Schools, the number of students in approved (aided and Govt) schools are decreasing year by year.

Facilities in schools

The infrastructures available at the schools are not at all satisfactory. The details of physical environment are given in Table 10.4. For drinking water, most of the schools are depending on wells. This create hard ships to the pupils. Four schools did not have compound walls (fully or partially). In Government welfare school, the side walls of schools are not to the full height (Figure 10.5) and in rainy season classess are affected due to rain. Of the 21 Anganvadis only 12 have own buildings.



Figure 10.5 K.H.S. Paravoor

Table 10.4 Betterments needed in Physical environment

Sl. No	Name of school	Needs
1	Govt. L.P.S Paravoor	Computer room, Furniture, maintanance of building.
2	Govt. L.P.S Koonayil	Library facility and Compound wall.
3	Govt W.L.P.S. Ozhukupara	Compound wall, Library, Computer room
4	Govt. L.P.S. Kottappuram	Library, Compound wall
5	Govt. U.P.S Kurumandal	Library, Computer room, Laboratary, Furniture
6	Govt. U.P.S. Paravoor	Play ground, Library, Laboratory, Furniture
7.	Ayiravally U.P.S Koonayil	Compound wall, Library, Computer room
8.	Govt. Higher Secondary school Paravoor, Thekkumbhagam	Toilet facility, Roof for existing toilet, Computer.
9.	S.N.V.G.H.S.S Paravoor	Computer
10	K.H.S Paravoor	Construction of new building.

10.4 Higher Education Facility

Apart from the educational facility available up to Higher Secondary level in Paravoor, the Sivaraja Pillai memorial ITC is worth mentioning. In this institution around 600 students are studying in different trades. Other higher educational facilities are not available in the municipal area. The students have to go outside the Municipal area for all sorts of higher education. Paravoor does not have a library owned by the Municipality.

10.5 Educational facilities - Comparative study with planning standards.

The educational facilities required as per planning standards is given in Table 10.5

Table 10.5 Planning standards in Educational sector

Sl.No	Catagory	Number of students	Planning standard
1	High school	700 students	1 H.S for 13000 Ppn
2	Higher secondary school	440 students	1 H.S.S with 8 divisions for 13000 Ppn
3	Arts &Science college	500 Students	1 Arts &Science college for 80000 Ppn
4	Technical education college	250 students	1 Professional college for 2,50,000 Ppn
5	Polytechnic college	150 students	1 Polytechnic for 36000 Ppn
6	ITC/ITI	300 students	1 ITI/ITC for 35000 Ppn
7.	T.T.C	120 students	1 TTC for 120000 Ppn

Source :Integrated district devlopment plan,Kollam

It is observed from the table that basic educational facilities availabe in the Municipal area are sufficient in quantitative terms. But in qualitative terms the facilities are below standard. In higher secondary levels the number of seats are less than what is required as per planning standards. In order to have an Arts and science college there should be at least 80,000 population (the threshold population to support this facility is 80,000).Considering the population growth in Paravoor Municipal area alone, the starting up of an Arts and science college here is not feasible. However considering the fact that population in the surrounding areas of Paravoor depends on Paravoor for higher order facilities, locating an Arts and Science college in Paravoor Municipal area is a viable proposal.

10.6 Conclusion

When the basic educational facilities available in the Paravoor Municipal Town are compared with the population standards, it is seen that the facilities are sufficient in number and the level of educational facilities availalbe in the Municipal town are found satisfactory. It is seen that the infrastructural facilities available needs improvements further.

CHAPTER 11

Health Facilities

In this chapter the health facilities available in Paravoor are detailed out.

11.1 Health facilities: Existing scenario

The health facilities available in Government sector in Paravoor Municipal area are Nedungolam Government Ramarao Hospital, Pozhikkara Primary health centre and eight sub centres working under this Primary health centre, Government Ayurveda hospital & Government Homoeo dispensary. Six private hospitals are also functioning in the Municipal area.

Government Ramarao Hospital

The Government Ramarao hospital (Figure 11.1) was established in 1893 AD by the Divan of Travancore. Neyyoor medical mission maintained by London Mission Society (LMS) was directed to impart medical treatment on free of cost, to the residents of Paravoor. From that time on wards free treatment was given to the weaker sections of the society.



Figure -11.1 Ramarao Hospital

On 18.4.1971 Government have taken possession of this mission hospital. Presently this is the major government sector hospital in Paravoor. But the hospital lack basic infrastructural facilities, even to give primary care to cardiac patients. This is the only gynacology hospital to give free treatment to the women patients in this area. But the facilities available in the gynacology department of the hospital are not adequate for treatment of women and children. About 80,000 people, residing in Paravoor Municipal area and surrounding Panchayats like Bhoothakkulam, Kalluvathukkal and Chathanoor will be benefitted if it is provided with adequate facilities. This hospital is located at Nedungolam, by the side of Paravoor - Chathanoor road, in an extent of 4.5 hectares of land.

Table 11.1 Details of the staff in the Ramarao hospital

Sl.No	Name of Post	Sanctioned strength	Existing strength
1	Medical Officer	3	3
2	Nursing Supereintendent grade - II	1	0
3	Head Nurse	2	1
4	Staff Nurse	7	7
5	Pharmascist	1	1
6	Lab technition	1	1
7	Clerk	1	1
8	Peon	1	1
9	Nursing assistant	5	2
10	Hospital attenders grade - II	5	4
11	Hospital attenders grade - I	1	0
12	Non medical supervisor	1	1
13	Treatment organizer	1	1

Source: Secondary Data collection

Rama Rao hospital is a 55 bedded hospital with the services of three doctors(Table 11.1). There is no facilities for lab, X ray, ECG, Scanning etc.

Mini Primary health centre at Pozhikkara

Pozhikkara Primary health centre was started on 1.1.1988. This health centre is giving basic medical care facilities to the people of Pozhikkara. The health centre is functioning in a new building. Family welfare centres are functioning at Perumpuzha, Karumandal, Pozhikkara, Kongal, Thekkumbhagam,Kottappuram, Koonayil and Parayilkavu. Three family welfare centres have own building and land. One Doctor is there in the Primary health centre. The particulars of the Staff in PHC Pozhikkara is given in Table 11.2.



Figure 11.2Ayurveda Hospital

Table 11.2 Particulars of Staff - PHC Pozhikkara.

Sl.No	Name of Post	Sanctioned staff strength
1	Medical Officer	1
2	Clerk	1
3	Pharmascist	1
4	Peon	1
5	Nursing assistant	1
6	Health inspector	1
7	Junior health inspector	4
8	L.H.I	1
9	Junior public health nurse	8
10	Hospital attenders	0
11	Sweeper	0

In Paravoor Municipal area 21 Anganvadies are functioning. Childrens from 1 year to 5 years and breast feeding mothers are given primary medical care. Paravoor government ayurveda hospital (Figure 11.2) was started in 1989. One doctor and 14 employees are there in the hospital. Lack of physical infrastructure is affecting the smooth functioning of the hospital.

Paravoor Homoeo dispensary

A government homoes dispensary was started in Paravoor Municipality in 1980. One Medical officer and three employees are there in this hospital. There is no building of its own for this hospital. Own land and building for the above hospital is an urgent need.

Private hospitals

There are six hospitals functioning in Paravoor under private sector. The details are given in the Table 11.3.

Table 11.3 private hospitals in Paravoor Municipal areas.

Sl.No	Name of hospital	Number of doctors	Number of other staff	Facilities		No: of Beds
1	Karunakara memorial	1	3	IP	O.P	0
2	Naveen	1	8	Yes	Yes	10
3	Shifa nursing home	1	3	Yes	Yes	5
4	Dayabji	1	7	Yes	Yes	10
5	B.R. Hospital	1	4	Yes	Yes	5
6	Paravoor hospital	1	7	Yes	Yes	4

11.2 Medical facilities in comparison with Planning standards.

As per the planning standards, one Primary health centre is required for 25,000 population. One block primary health centre is required for one lakh population. The details of planning standards for medical facilities are given in table 11.4.

Table 11.4 Planning stand - medical facilities

1	PHC	One PHC for a population of 20000 to 25000	4 beds per 10000 population (No beds as per Health Dept)
2	Block Primary health centre	One block PHC for a population of 1 lakh	44 beds per 1 lakh population (50 beds as per health dept)
3	Taluk hospital	One hospital in a taluk	50 beds per 1 lakh population
4	District hospital	One district level hospital for a population of 11 lakh	60 beds for 1 lakh population

According to planning standards it is proposed to upgrade the mini primary helath centre to a Primary health centre and to upgrade the Ramarao hospital to a Block primary health centre.

11.3 Conclusion

On analysis of the medical facilities available at Paravoor, it is seen that the basic health care facilities are sufficient. In the private sector 6 hospitals are functioning. It is essential to develop a modern hospital in the government sector with required number of beds. The infrastructure facilities are to be upgraded in the hospital for Ayurveda and Homoeopathy systems.

CHAPTER 12
Drinking Water and Solid Waste Disposal

The primary pre requisite for healthy living is pure drinking water. Drinking water and its distribution gains importance as it is an essential commodity for the existence of human life. In this chapter, availability of safe drinking water, the sources of drinking water, the existing distribution system etc.are detailed out. The waste disposal system including liquid waste disposal system are also detailed here.

12.1 Drinking water - Existing scenario

1. Drinking water sources

Private wells are the major sources of drinking water in Paravoor Municipal area. The socio economic survey conducted in the Municipality shows that 93% of the people are depending on well water & only 7% of the people are depending on piped water. However the sand mining from back waters and paddy fields, filling up of the ponds & paddy fields etc. cause the depletion of ground water table which in turn created shortage of drinking water.2/3 of the Municipal area is covered by public water supply system. Even then continous distribution of drinking water is not there in many parts.

For water distribution in Paravoor, Kerala water authority is using one open well &7 tube wells. The details of sources are given below.

1. Tube well existing near by Municipal Busstand
2. Tube well near by railway overbridge.
3. The tube well near by Kanjirakkulam (water from this tube well in partially pumped to over head tank near by Kottappuram LP School).
4. Tube well in the compound of Rama Rao hospital.
5. Tube well near by Pozhikkara reading room
6. Tube well near by Koonayil Panayilkavu temple.
7. Tube well in Poonkulam area.

2. Water distribution

Of the above mentioned sources, water is pumped from the first five tube wells directly to the pipe line, with out storing in overhead water tank. As per the details supplied by the water authority, daily 12 hours of pumping is done. Water from the tube well near Koonayil

Panayilkavu temple is stored in the overhead tank at Boothakulam Panchayat boundary and from this overhead tank, water is distributed through pipe line. The water from Poonkulam area tube well is collected in overhead tank situated in Moolavattom (Capacity1.5 lakh litres) and is distributed through pipe line.

There are only three overhead tanks in Paravoor. The over head tank in the premises of Kottappuram government L.P School is having a capacity of 2.5 lakh litres. Water tank at Poothakkulam Panchayath is having a capacity of 2.15 litres. Moolavattom over head tank is having a capacity of 1.5 lakh litres. The location of over head tanks and tube wells are shown in figure 12.1



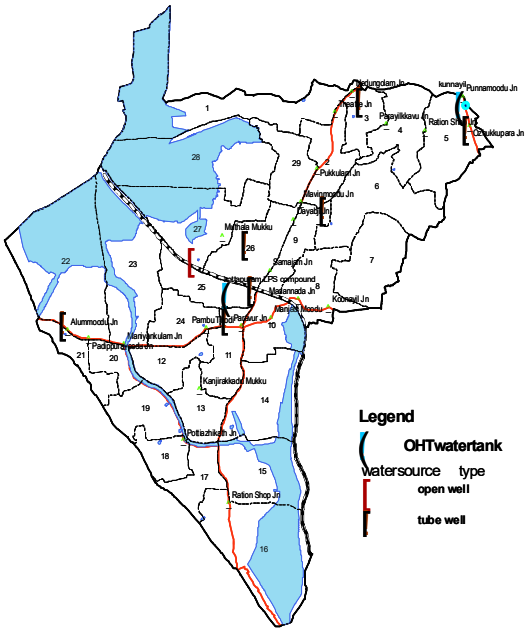


Figure 12-1 Location of Overhead water tanks and Tube wells in Paravoor Municipal Town

3. A Comparative study of planning standards for the distribution of water.

From the seven tube wells approximately 25 lakh litres of water is pumped to Paravoor Municipal area daily. Considering the existence of the private wells in Paravoor Municipal area for all purpose (commerce, trade, industry, residential and other general purposes), the requirement of water per person per day is limited to 125 litres. The present population of 38,652 requires approximately 48 lakh litres of water to be pumped to the Municipal area. At present the pumbing is only 25 lakh litres of water. There is water shortage for four months from February to May except in places such as Karumandal and Kottappuram. This shows that eventhough there is abundance of private wells in Paravoor, another source of drinking water is required for the Municipal area. A good water supply network system is also required for the Municipal area.

4. The problems in drinking water sector

1. The sand mining from the paddy fields and backwaters and filling up of paddy fields and ponds are the main reasons for lowering of ground water table. This is a main reason for

water shortage in Paravoor .

2. The distribution of water by the Water Authority is inadequate. The network system is not sufficient.

3. Except for Kurumandal and Kottappuram wards, all other wards are facing water shortage for four months from February to May .

12.2 The Existing scenario of waste disposal

1. Liquid waste

The socio economic survey indicates that approximately 82% houses are using septic tanks. The balance 16% people are using pit latrine. The remaining 2% people do not have either septic tank or pit latrine. This 2% constitutes people living in slums of Paravoor Municipal area.

For drainage of surface water in Paravoor junction, drains are constructed but this is not based on any pre-determined plan. In certain places there is no continuity for the drains. The hotels and other traders are using the drains for liquid waste disposal. There is no plants for treating this liquid waste in Paravoor Municipal town.

2. Solid waste

Major portion of the solid waste are generated from the central area of the Town and it is disposed with out treatment. There is one lorry in the Municipality for transportation of solid waste. The solid waste collection is not running efficiently. There is no processing plant for the solid waste in Paravoor Municipal town. There is a proposal in UIDSSMT scheme to start a solid waste treatment plant in Paravoor Municipal Town. The Municipality has taken over the land for this purpose.

12.3 Conclusion

The analysis shows that water supplied by water authority is not sufficient to cater to the demand. The main sources of water in Paravoor are private wells. There is water shortage for 3-4 months from February to May in certain wards. In the remaining 8 to 9 months well water available in Paravoor Municipal area. But the waste disposal system is inadequate in the town.

CHAPTER 15

Housing and Slum Areas

The urbanization and industrial development of an area are the main causes for formation of slum. The settlements which are characterised by sub standard housing and environmentally not higenic for a healthy living is called a slum area. Lack of open space, no proper light and ventilation, inadequate supply of drinking water, congestion, lack of sanitation facilities are the pecularities of a slum. The above conditions lead to unhealthy environment, spread of contagious disease, and lack of public health . In Kerala, compared to other States the condition of slum areas are moderate. The Town and Country Planning Department, based on certain criteria, list certain areas as slums. Based on the above criteria in Paravoor Municipality the number of declared slums are five. They are Mala kayal, Koonayil Laksham veedu, Clavarathodiyil, Parayilkavu and Varukulam. The other backward housing areas are eleven in number. The details about them are explained in this chapter.

15.1 Housing

The socio economic survey conducted in the Paravoor Municipal area shows that 98% of the people have their own houses. 2% people do not have own houses. Of the people who have own houses 11% are living in katcha houses. Approximately880 houses are Katcha houses. These are seen in the areas where fisherman are living or in the colonies of fisherman.

15.2 Slums, human settlements - Basic informations

The listed slums in Paravoor Municipality are given in Table 15.1

Table 15.1 Listed slums

Sl.No	Name of slum	Area in hectare	Number of house holds				Population			
			SC	ST	Others	Total	SC	ST	Others	Total
1	Malakayal	1.00	18	0	20	38	67	0	94	161
2	Koonayil Leksham veedu	0.4	5	0	7	12	20	0	31	51
3	Clavarathodiyil	0.15	18	0	0	18	91	0	0	91
4	Parayilkavu	0.45	27	0	36	63	129	0	158	287
5	Varakulam	0.61	11	0	11	22	50	0	53	103
	Total	2.61	79	0	74	153	357	0	336	693

Source : Urban slums in Kerala 1995-1996 Town and Country Planning Department

The backward human settlements in Paravoor Municipal Town are shown in Figure 15.1.

Table 15.2 Settlements which are backward but not a listed slum.

Sl.No	Name of settlement	Number of households	Population
1	Punchirakkulam	28	125
2	Charuvila - 1	35	140
3	Charuvila-2	38	152
4	Vettikkunnuvila	23	95
5	Yakshikkavu (Viyatnam)	74	370
6	Parakulam	127	648
7	Pandarath vadakkethodi	22	144
8	Muthalakkulam	30	90
9	Pulikkulam	25	55
10	Peralthodi	20	102
11	Pannikkulam	25	100

15.3 Category of backward human settle ments and slums

The housing colonies are catagorised into three, based on following criteria namely availability of drinking water, accesibility and sanitation facilities. The most deteriorated condition is graded as "C". The moderate condition is graded as "B". Better than moderate is graded as "A". In Paravoor Municipal area the backward human settlements and slums are catagorized and given in Table 15.3. Based on the above there are five C grade, four B grade and six A grade settlements in the municipality.

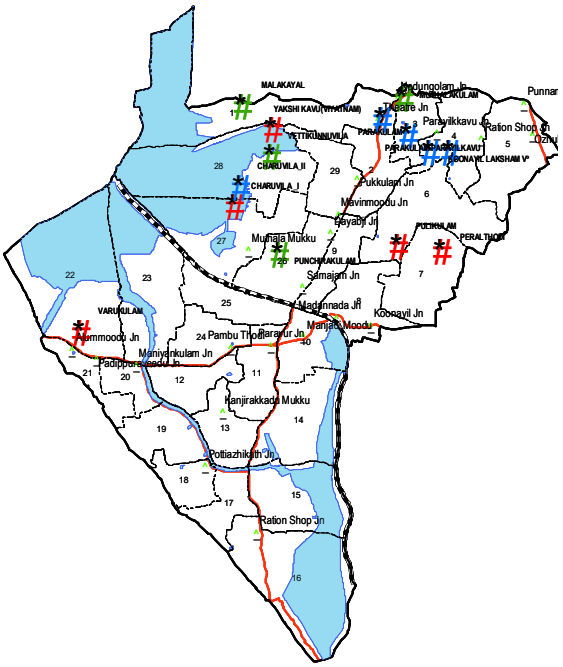


Figure 15.1 The backward settlements in Paravoor Municipal Town

The settlements which are in C grade	Varukkulam, Charuvila, Yakshikkavu Pulikkulam, Peralthodi
The settlements which are in B grade	Punchirakkulam, Vettikkunnuvila, Mala kayal Muthalakkulam
Thesettlements which are in A grade	Charuvila, Parakkulam, Parakkulam, Parayilkavu, Koonayil Laksham veedu, Pandarath Vadakkethodi

Table 15.3 Slums and backward human settlements

Sl No	Name	Structural condition	Drinking water	Access	Sanitation	Mark	Grade
1	Varukulam	-	0	+	-	9	C
2	Punchirakulam	0	+	+	0	6	B
3	Charuvila -1	-	0	+	-	9	C
4	Charuvila-2	+	0	+	+	5	A
5	Vettikkunnuvila	-	0	+	+	7	B
6	Yakshikkavu(Viyatnam)	-	0	0	-	10	C
7	Malakayal	0	0	+	+	6	B
8	Parakulam	+	0	+	+	5	A
9	Parakkulam Parayilkavu	+	0	+	+	5	A
10	Koonayil Laksham veedu	+	0	+	+	5	A
11	Pandarath Vadakkethodi	0	+	+	+	5	A
12	Muthalakkulam	+	-	+	+	6	B
13	Pulikkulam	0	0	-	0	9	C
14	Peralthodi	+	0	-	0	8	C
15	Pannikkulam	+	0	+	+	5	A

'O' - Worst condition, '-'-Bad condition, '+'- Satisfactory condition

In B,C, grade settlements the condition of the houses is very deplorable. Drinking water is not available in most of the colonies. Another problem is lack of sanitation facilities. The roads are available up to the colonies, but most of the interior of the colonies have no road access.

In C grade Varukulam colony (Figure 15.2) the major problems include sub-standard houses, lack of sanitation facilities & lack of latrine facilities .

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Figure 15.2
Varukulam colony

In C grade Charuvila -1 colony (Figure 15.3), poor house's condition & sanitation facilities are the problems.

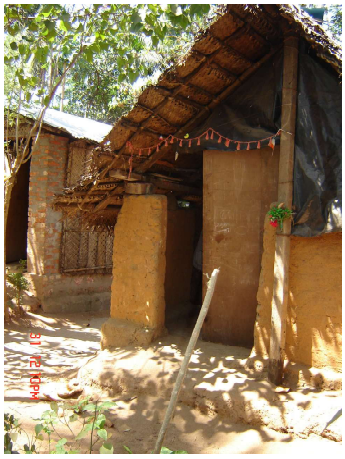


Figure 15.3
Charuvila colony

In C grade Yakshikkavu (Viyatnam) colony (Figure 15.4) sub standard houses, sanitation facilities and lack of internal roads are the major problems.



Figure 15.4
Yakshikkavu colony

In C grade Pulikkulam colony (Figure 15.5) the existing pond is not maintained properly. If it is maintained properly the water shortage can be reduced to some extent. The condition of the houses is very deplorable in this area.





Figure 15.5 Pulikkulam colony

In the C grade Peralthodi colony (Figure 15.6) there is no internal roads and also lack of drinking water facilities.



Figure 15.6 Peralthodi Colony

In the B grade Punchirakkulam, Vettikkunnuvila colonies the condition of houses, sanitation facilities, drinking water facility etc are not satisfactory. In Punchirakkulam colony the pond may be deepened and protected for irrigation facilities.

15.4 Conclusion

In Paravoor Municipal area the housing sector as such do not have any serious problems. But in slums and other backward settlements, lack of infrastructural facilities is very acute. There are 15 backward settlements including listed slums in Paravoor. In all the above human settlements 246 families are residing. The poor condition of the houses, lack of drinking water facilities and lack of *sanitation facilities are major problems.*

Note:

Inticator of backwardness	***Level of facilities required.***
A. Basic facilities which are not adequate	
1. Lack of latrine	*One laterine for 20 persons*
2. Lack of waste water drains	
3. Lack of accessability through road	
4. Lack of water distribution system	*One water tap for 100 persons*
5. Lack of street lights	*Street light at 30 metre interval*
B. Density	*100 persons per acre*
C. SC/ST population	*Above 30%*
D. The structural condition of the house	*50% or more than 50% are Katcha*

CHAPTER 16

Environment and Heritage Areas.

The sea coast, Back waters, Paddy fields, Thodu, Pond and Sacred groves attached to the temples are environmentally important areas in Paravoor. Centuries old temples are existing in Paravoor. The above temples are of heritage significance. In this chapter environmentally important places are detailed below.

16.1 Environmentally important areas

Sea Coast:- Paravoor Municipal area has seven kilometres long sea coast ((Figure 16.1). Along the sea coast fish landing centres and fishermen settlements are seen. The sea coast are included in the costal regulation zone (CRZ). In ward number 19 due to coastal erosion land slide is seen in this area.

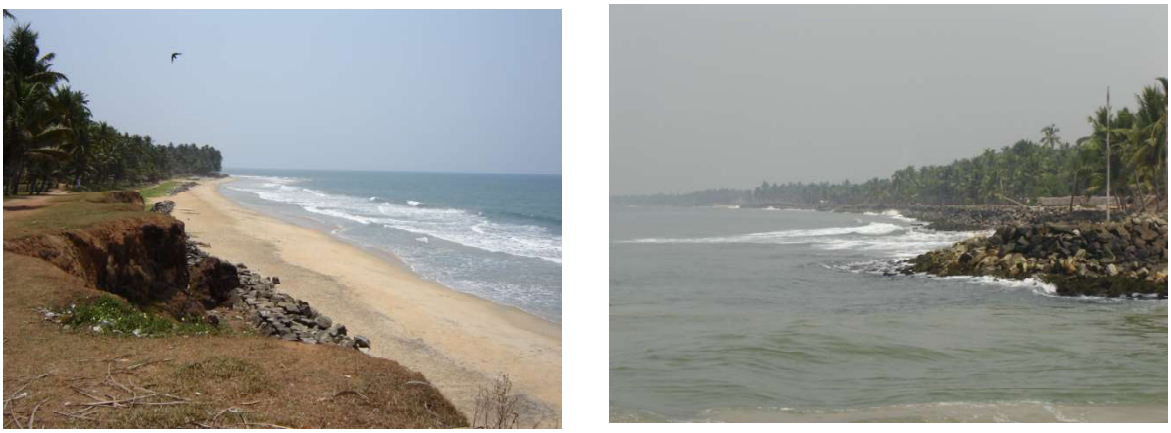


Figure 16.1 Coastal area

Back waters:- Paravoor Back water and Nadayara backwater are two important backwaters (Figure 16.2) in Paravoor Municipal area. The shore of this areas are prone to encroachments. These backwaters are also included in CRZ. Taking into account the environmental importance of back water, it is required to demarcate the boundaries of back waters and steps taken to stop encroachments.

Akathu Kayal:- Akathu kayal (Figure 16.3) is a water body within the Municipal area. Approximately 3.82 hectres of land is bounded by Akathu kayal . It is connected by Paravoor backwater through a small canal. This may be converted in to future water source for this area. Due to sand mining, and encrochments of the back water this waterbody is facing problems.



Figure 16.2 Backwater



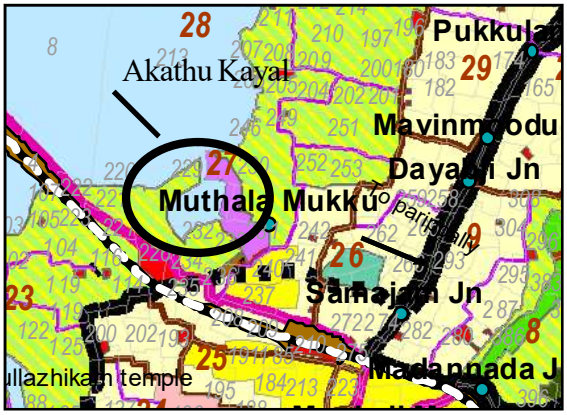


Figure 16.3 Akathu Kayal

Sacred groves:- The sacred grove attached to the Ayiravally temple (Figure 16.4) is worth mentioning. In this evergreem sacred grove birds are seen. The extent of the sacred grove have reduced. Considering the environmental aspects this sacred groove may be protected as it is.



Figure 16.4 Ayiravally temple

Paddy fields:- Paddy fields (Figure 16.5) in Paravoor Municipal area are lying in a lower level than the surrounding area. So these areas are acting as re-charging basin and hence gets importance from the point of view of Environment. In Paravoor major paddy fields are Clavara paddy field, Koonayil paddy field, Pandarathil paddy field, Pasuman paddy field, Elakkulam paddy field etc.



Figure 16.5 Paddy fields

16.2 Heritage areas

Ancient temples and famous festivals are there in Paravoor. The historically important temple of Pozhikkara Devi has heritage significance. Considering the heritage importance this temple may be conserved. Similarly another heritage important building, the Pozhikkara palace which is now under the ownership of PWD also need conservation. The important temples and environmentally important places in Paravoor are shown in Figure 16.6 and 16.7 respectively.

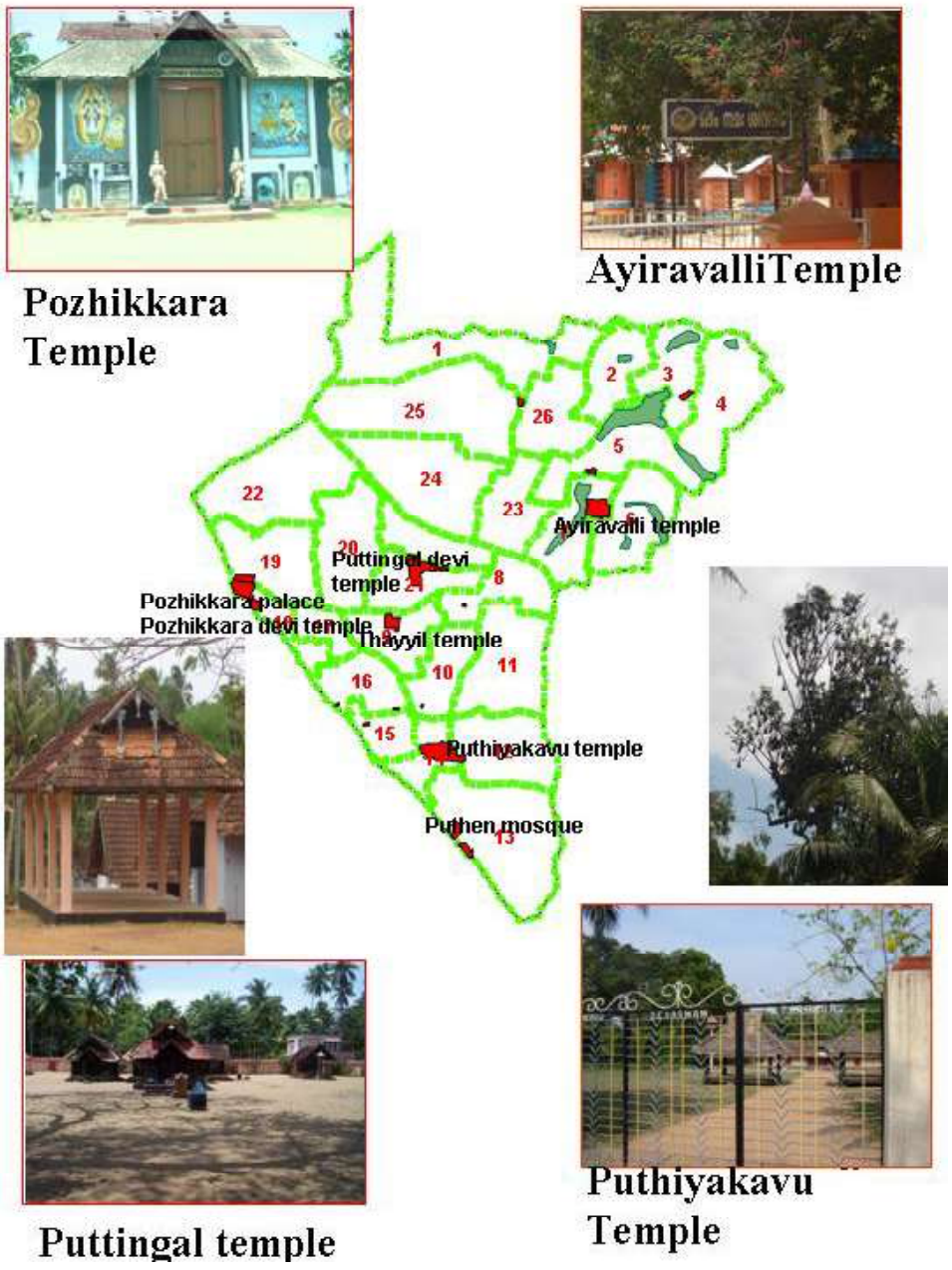


Figure 16.6 Important temples in Paravoor Municipal Town

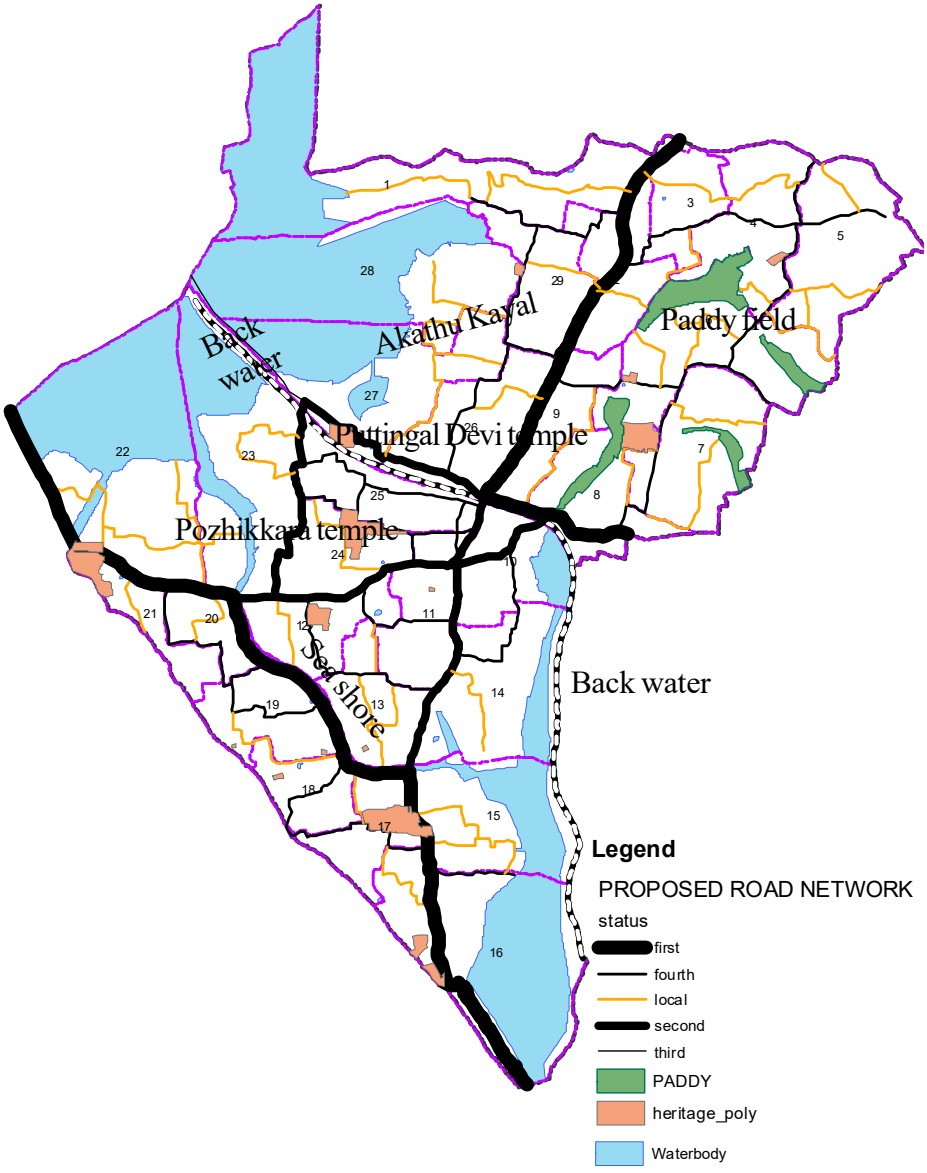


Figure 16.7 Environmentaly important places

16.3 Conclusion

The Paravoor Municipal area is surrounded by backwaters and sea. There are paddy fields, sacred groves and other environmentally sensitive areas in the town. Therefore this eco-system may be protected from any harmful development.

CHAPTER 17

Development Administration and Finance

The role of different departments in development works in Paravoor and the resource mobilisation and expenditure incured for development works are detailed in this chapter.

17.1 Development Administration

1. Paravoor Municipality

Paravoor Municipality is the major agency implementing development works in Paravoor. The development works under the responsibility of Paravoor Municipal Council are detailed below.

1. The construction of Municipal roads and their maintenance.
2. Public health - Primary health centre, Community health centre.
3. Solid waste disposal.
4. Construction of public market and their maintanance.
5. Public cremation ground and its construction procedures.
6. Open spaces, parks and their construction works.
7. Providing infrastructure in slums.
8. Protection of common ponds.
9. The institutions transfered to the Municipal Council are Schools, Hospitals and other institutions

2. Kerala Water Authority

In Paravoor Municipal area the water supply distribution is dealt by Kerala Water Authority. Identification of water source, water distribution network etc are handled by Kerala Water Authority.

3. Kerala State Electricity Board.

The Electricity distribution system is maintained by the Kerala State Electricity Board . The Assistant Engineer's office of the Kerala State Electricity Board is functioning in Paravoor Municipal area.

4. The Kerala State Public Works Department (Roads)

Major roads in Paravoor are constructed and maintained by public works department (those roads not owned by the Municipal Council).

5. Telephone Exchange

The telephone exchange is functioning near Paravoor Municipal busstand.

6. The Institutions functioning in the Paravoor Municipal area

1. Village office (Kottappuram & Paravoor)
2. Sub treasury
3. Employment office
4. Coir inspector's office
5. Sub registrar office
6. Police circle office
7. Judicial Majistrate court
8. Agriculture office
9. Vetrinary poly clinic
10. Post office.

7. The condition of various Public office buildings

In Table 17.1. The ownerships status and maintanance condition of office buildings of various public offices are given.

Table 17.1 The condition of public office buildings

Sl.No.	Office	Ownership of the building	Whether renovation is required or not
1	Municipal office	Own	Nil
2	Village office(Kottappuram)	Own	Yes
3	Village office (Paravoor)	Own	Yes
4	Sub treasury	Rented	
5	Employment office	Rented	
6.	Coir inspector's office	Rented	
7	PWD Office	Not existing	
8	KSEB office	Own	Yes
9.	Water authority office	Not existing	
10.	Sub registrar office.	Rented	

It is seen that most of the offices are functioning in rented building. The buildings owned by the Government departments requires renovation. It shows that an office complex is an urgent need to accomadate government offices.

Paravoor municipality 2007-08 item of income detailed income and expenditure.			
Account details	Income in Rupees (Head of account) A revenue account	Account details (Head of accounts)	Expenditure in Rupees
Opening balance	5000000.00		
1. Municipal taxes and rates	4429000.00	1. Establishment and collection of tax	5705800.00
2. Other income through municipal law	379000.00	2. Public works	5302550.00
3. Income from assets of the muncipality	2441850.00	3. Town planning	369500.00
4. Municipal offices	771250.00	4. Education	316300.00
5. Grand from government and financial aid	9651850.00	5. Water supply and drainage	82000.00
6. For running the transfered institutions by government to local body amount for running the above institutions(Non plan items only)	3676520.00	6. Public Health	2926900.00
7. Miscellanious income	83500.00	7. Lighting of street light	1050000.00
		8. Assets of municipality	61000.00
		9. For running the transfered institutions to local body by government expenditure (Non plan)	3397100.00
		10. Extra ordinary expenditure	220000.00
Total	**21432970.00**	**Total**	**19431150.00**

B.Capital account

Opening balance	**600000.00**		
1. Government grand in aid	33200000.00	1. Administration and management	4220000.00
2. Government loan		2. Public works	54827000.00
3. Loan from financial institution	20000000.00	3. Education	52000.00
4. Refund of deposit		4. Water supply and drainage	1500000.00
5. Endovements		5. Public health	
6. Plan grant to programs of the institutions transfered by the government to the local body	220000.00	6. Street lighting	
7. Grant for Kerala Development	21173200.00	7. Endovements	
8. Income from other items		8. Deposits	
9. Income transfered from revenue account		9. Poverty irradication works	200000.00
		10. Plan expenditure on the institutions transfered by government to the local body	128000.00
		11. Kerala development plan project expenditure	19428220.00
Total	**74593200.00**	**Total**	**80355220.00**
1. Municipal development works	5800000.00		
2. Income for poverty irradication programe implementation	200000.00	Clossing balance	837980.00
Total	80593200.00		
Opening balance in the starting of the financial year total	81193200.00	Total including closing balance	81193200.00

The above table shows that Municipal Council set apart 80 lakh rupees from own fund and 1 crore 95 lakhs for Project implementation taken under Kerala Development Plan.

CHAPTER 18
Findings and Conclusions

In this chapter the major findings of the sectoral analysis are consolidated.

18.1 Findings as per Integrated District Development Plan of Kollam

1. According to the Integragted District Development Plan for Kollam, Paravoor Municipality is a 3rd order settlement. Similarly Paravoor is identified as a tourism potential area and area suitable for IT, BT based industries.

2. As per Integrated District Development Plan for Kollam, Paravoor Municipal area is identified to have semi urban character. This is a positive factor for improvement of homestead cultivation in Paravoor.

3. Paravoor Municipal area is included in the Aqua bio reserve zone of Kollam. This shows that the conservation of water bodies in Paravoor requires higher priority.

18.2 Population and landuse - Paravoor Municipality

4. The population growth rate is comparitively low. This indicates the weak economic base of Paravoor.

5. The low population growth rate and work force participation rate reiterates the bad shape of the economic base of Paravoor.

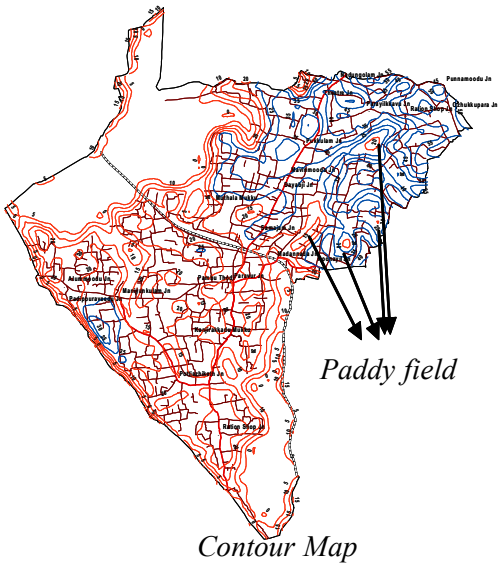


Work participation rate in Paravoor Municipal Town - Temporal variation

6. The occupational structure of Paravoor shows that majority of the workers are employed. in coir and fishing sector

7. The landuse analysis of Paravoor shows that major portions of the land are put into mixed use. The average plot size in 44% area of Paravoor is in between 25 cents and 50 cents. This shows that home stead cultivation can be a major economic base of the area.

8. The concentration of people and agriculture activity are seen in mutually exclusive areas. The agricultural zone is concentrated away from important roads. This makes it possible to locate the development activities without having any impact on agricultural sector.



Paddy field

Contour Map

18.3 Agricultural sector

9. The consumption pattern shows that milk products, egg, mutton and vegetables are used in a moderate way in Paravoor. This indicates the importance to be given to this sector in Paravoor.

10. The paddy fields which are lying at a lower level are acting as ground water recharge basins. So these may be protected.

11. Sectoral analysis by the sub group of Sp. TAC of IDDP for agricultural sector reveals that Paravoor is an important place for dry agriculture and also productivity of coconut and plantain are comparitively higher in Paravoor.

12. The major problem in Paravoor is lack of agricultural labourers. Based on 2001 census only 356 agricultural labourers are there in Paravoor.

18.4 Industrial sector

13. The coir sector is in a declining stage in Paravoor. The shortage of husk is one of the major reasons for this.

14. The two backwaters in Paravoor are potentials for the improvement of coir industry in Paravoor. 1500 laboures are working in the coir sector. This shows the need of improving the coir sector in Paravoor.



Paravoor Junction

15. Handloom and cashew industries are not seen in Paravoor.

18.5 Tourism Sector

16. Paravoor is a coastal local body. This increases the potential for tourism industry in Paravoor.

17. The backwaters, sea coast, canals, ancient temples and the important festivals are favourable factors for Tourism Development in Paravoor.

18.6 Animal husbandry and Fishing

18. The backwaters, ponds and sea coast are factors favourable for fishing sector.

19. Infrastructure facilities in fishing sector are not available to the desired level in Paravoor Some of the needed facilities in fishing sector are light house, fish landing centres, store rooms, internal roads, ice factory etc.

18.7 Environment

20. Backwaters, Canals, Sacred groves, ponds, paddy fields, etc are the environmentally important places in Paravoor.

21. The coastal areas also fall under environmentally sensitive areas.

18.8 Transportation sector

22. From the analysis it is seen that Paravoor Municipal area needs a well planned traffic network.
23. The volume capacity ratio of most of the roads in Paravoor Municipal area is greater than one which shows that the width of roads need to be increased.
24. The water transportation facilities are not suitable for inland navigation. Considering the importance of water transportation, more attention need to be given to this sector.

18.9 Commercial sector

25. The first order commercial centre of Paravoor is Paravoor junction and second order commercial centres are Pozhikkara, Thekkumbhagam and Nedungulam.
26. The first order commercial centre (the CBD of Paravoor) is Paravoor junction. It is a highly congested area having no sufficient parking space. There is no proper system for collection of solid waste and its processing. There is no adequate drainage facility also. This indicates that the preparation of a detailed town planning scheme for this area, is urgent.

18.10 Public and Semi public Zone

27. The majority of the public offices are functioning in rented buildings. Those functioning in own land, have buildings in a poor condition.
28. There is no public cremation ground, solid waste processing unit and sewerage treatment plant in Paravoor. Municipal Town hall, library and stadium are the urgent needs of Paravoor. The number of seats up to high school level is satisfactory as per requirement.

But they lack in infrastructural facilities.

18.11 Drinking water

29. 93 % of the people of Paravroor are depending on wells for water. Considering the future requirements identification of new water sources and efficient water supply network are the needs of the hour.

30. Akathu kayal in Paravoor may be considered as a new source for potable water.



Akathu Kayal

18.12 Educational sector

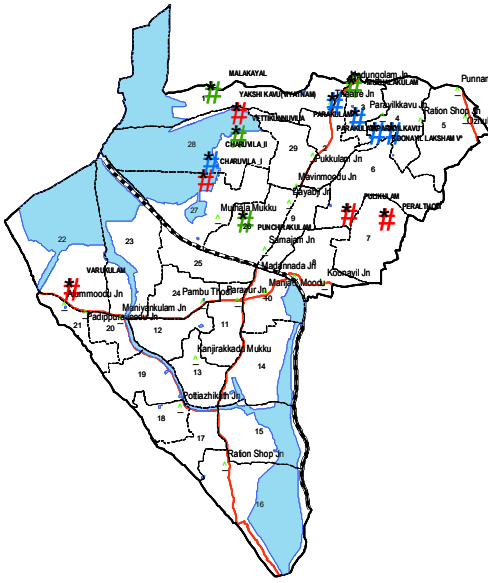
31. There is only one Higher secondary school in Paravoor. According to the planning standards, more than one higher secondary school is required in Paravur. The number of seats upto High School level are satisfactory. But infrastructural facilities are not as per the required standard.

18.13 Health Sector

32. The Health sector in Paravoor is very weak. For super speciality medical facility the people of Paravoor are depending on other places. According to the Planning standards a 100 bed Block PHC level Alopathy hospital is required for Paravoor. The Ramarao hospital compound with an extent of 4.5 acres can be utilised for this purpose.

18.14 Social backwardness

33. Socially and economically backward people are seen concentrated in northern area of Paravoor, living in sub standard houses. Lack of drinking water and lack of sanitation facilities are major problems here.



Substandared housing area

CHAPTER 19

Development Goals and Objectives

In this chapter, Development goals and objectives to be achieved during the plan period are detailed.

19.1 Development Goals

The observations and recomendations emerged from the analyses are used for shaping the development goals. The analyses shows that at present Paravoor has no noticable economic base. At the same time Paravoor has resources (natural and man-made) for development but it is either unutilised or under-utilised. So to utilize the natural resources in an appropriate way is one of the goals. Environmentally sensitive areas like backwaters, canals, sacred grooves, ponds, paddy field etc are existing in Paravoor. Conservation of these natural features is an important need. In the Integrated District Development Plan for Kollam, Paravoor is included in the aqua bio reserve zone. This necessitates the conservation of the environmentally important area as one of the goals of Development Plan for Paravoor. In order to have minimum impact of development activities on human settlements and environmentally sensitive areas, it is necessary to promote complementary activities and discourage the non conforming activities. For this proper land use planning is necessary. This also is taken as one of the goals of the Development Plan.

The integrated development plan indicates that Paravoor is a third order settlement of the District and hence to develop Paravoor as a service centre of the surrounding panchayats is another goal of the development plan.

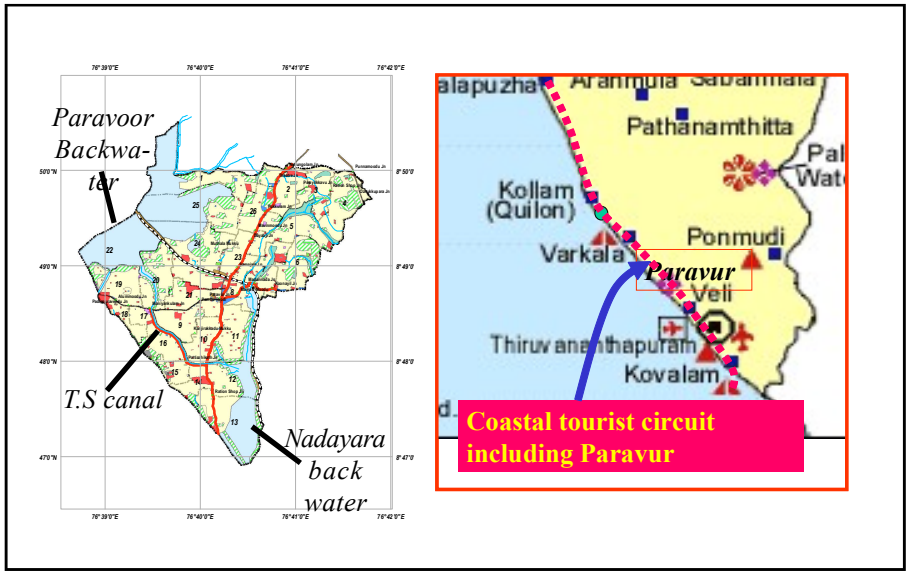
Development aims of Paravoor are summarised as follows.

- ❖ To have optimum utilization of the resources available in Paravoor.
- ❖ To conserve the environmentally important areas.
- ❖ To have proper land use planning.
- ❖ To make Paravur a service centre for the surrounding Grama Panchayats.

19.2 Development objectives

The optimum utilisation of the resources create new economic base for Paravur. Development based on the resources of Paravoor is an action towards achieving the development goal. The 7 kilometers of costal area, back waters and the scenically beautiful places are existing potentials for the development of Paravoor. The location of Paravoor in between Ashtamudi Kayal, the tourist destination in Kollam and Varkala, a tourist destination in the world map of tourism, makes Paravoor as a place of tourism potential. In addition to this, availability of railway facility to reach Paravoor, location adjacent to sea coast, well known

festivals, ancient temples, marine resources all add up to the tourism potential of Paravoor. If the infrastructure facilities are provided to the desired level Paravoor can be raised to the status of an important tourism centre. Paravoor can also be included in the tourism circuit connecting Kovalam - Veli-Varkala-Kollam-Alappuzha.



Coastal area tourism circut

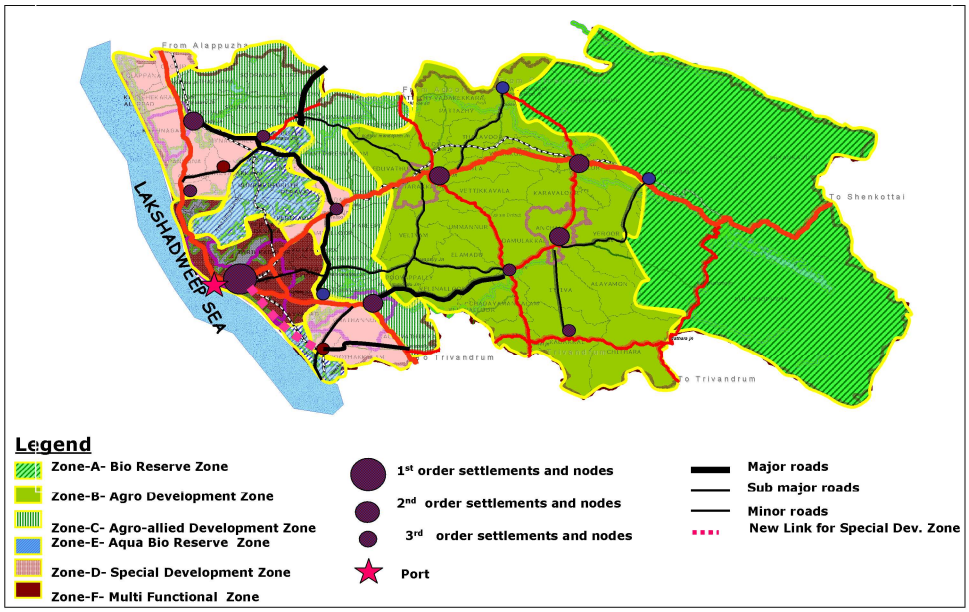
According to the statistics available, approximately 1500 persons are employed in coir sector. Paravoor is known as one of the most important coir industries centres of the district in ancient time. Now the coir industry is in a declining stage. Even then coir retting is done in various places. Considering the widespread protest against the use of plastic as a material harmful to environment, coir, being a natural material, has scope for development in the future. The renovation of coir sector is a declared policy of the State. Because of all these reasons, though coir sector is facing hardships now, there is scope for development of coir sector in future. It can be presumed that,the proposed coastal road & Kollam-Kottappuram National water way will be a 'shot in the arm' for the coir industry in Paravoor. Coir industry is considered as a future economic base of Paravoor. The presence of approximately 7 kilometers of coastal stretch, two backwaters, 500 fishermen families, increase the scope for fishing activity in Paravoor. The fishing activity can be considered as another economic base for Paravoor.



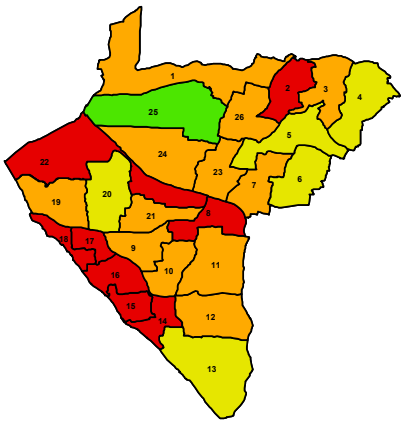
Fishing activity in Paravur

As per the Integrated District Development Plan for Kollam, Paravoor also belong to the special development zone. This indicates that there is scope for development of IT, BT based industries within Paravoor. The presence of railway station and the advantage arising out of being a place enroute the proposed coastal road makes Paravoor suitable for IT based industries. The fact that Paravoor is a Municipal area with the tranquility of a village also makes Paravoor suitable for IT based industries.

Development concept of IDDP



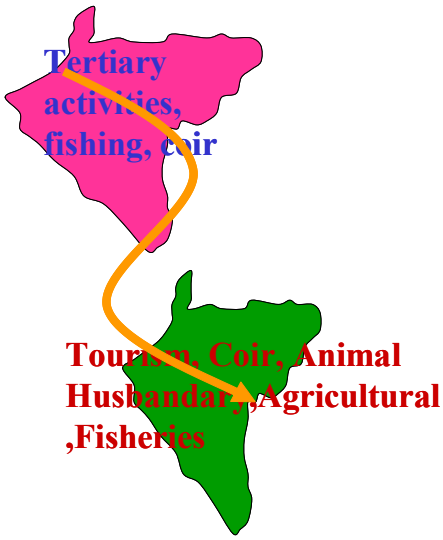
There is all possibility to provide infrastructure facilities like telecommunication essential for IT based industries in Paravoor. All these show that IT based industries can be another economic base of Paravoor. The study on the functional character of various local bodies of Kollam shows that Paravoor has semiurban character (This means that though Paravoor is a Municipality, there is scope for development of agriculture sector in Paravoor). Wardwise functional character of Paravoor shows that most of the wards are of semiurban character. A few number of wards show semirural character which indicates that along with residential activity, there is scope for agriculture and allied activities in Paravoor. The low population growth rate in Paravoor shows that the entry of residential activity into the agricultural area can be controlled and the agriculture sector can be protected through deliberate intervention.



Functional character of different wards

Based on the average consumption pattern in urban areas of Kerala, it is estimated that about 1.9 lakhs of eggs, 107 tons of meat and 1 lakh kilograms of vegetables are consumed in a month in Paravoor. This in monetary terms comes around 73 lakhs of rupees. The functional character of the different wards of Paravoor being semiurban and semi rural, it is quite possible to produce at least half of what is required in Paravoor through homestead cultivation (The development of Tourism sector further enhaces the demand of local food products). Hence homestead cultivation is taken as a future economic base of Paravoor. To put in a nut shell, the economic base of Paravoor will be shifted from the coir industry, fishing and agriculture in a limited manner to tourism, Homestead cultivation, intensive coir making, IT and fisheries.

Development of a strong economic base needs a good network of roads. The prime requirement to have an improved road network is the study on the necessity of bye pass roads. The origin and destination study shows that, of the total vehicles, 84% have their origin or destination as Paravoor itself. This means by-passable traffic to Paravoor is only 16%. At the same time the CBD area of Paravoor is congested with inappropriate width of roads, lack of parking space etc As per the regional road alignment proposed in Integrated District Development Plan of Kollam, Thankassery port is connected to Trivandrum and eastern part of Kollam District through the coastal road and its continuation to Chathanoor through Paravoor. Due to the congestion experiencing at the Paravoor Junction, alignment of this road has to be decided excluding Paravoor Junction. This necessitates a link road connecting the coastal road and Paravoor-Chathanoor road.



Shift in the economic base of Paravur

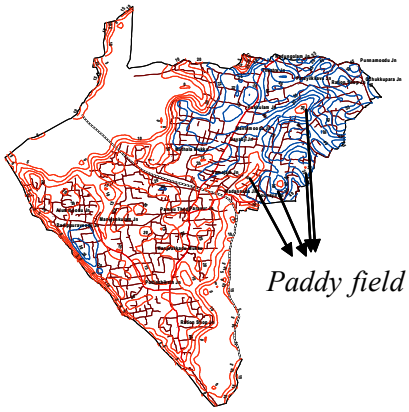
One of the goals of the Development plan for Paravoor Municipal area is development promoting environmental protection. The analysis shows that the low lying paddy fields in Paravoor are acting as ground water recharge basins. So these paddy fields may be protected from land development. Other environmentally important places in Paravoor are water bodies and temples. The ancient temples in Paravoor may be considered as of heritage importance so these temples may be protected. Developments may be restricted in these areas also. In the IDDP for Kollam, Paravoor municipal area is also coming under aqua bio- reserve zone. Therefore the water bodies in Paravoor may be protected from land development. Thus both environmentally important places and heritage important places of Paravoor are to be protected.

Paravoor Municipal area is enriched with coastal area, backwaters, ponds, sacred groves, paddy fields etc. Here the physical developments may be regulated so as not to disturbe the natural beauty and the location of development projects may be planned in such a way that the environmentally important and heritage areas are not affected. Therefore the future land use of the Municipality may be planned keeping in mind the above factors.

The Paravoor Municipal area is ranked as a third order settlement and hence should act as a higher order service centre which have to serve the surrounding panchayats as envisaged in the development plan for Paravoor. Town hall, stadium, park, solid waste, disposal unit, burial ground etc. are the facilities ought to be provided in a Municipal area, which are not available in Paravoor.

One higher secondary school is present in Paravoor. Based on planning standards, facilities may be increased to cater to more number of students in Higher secondary schools. The facilities up to High school level are sufficient in Paravoor. The infrastructure facilities of the existing schools are not up to the mark.

The health facilities available in Paravoor are not up to the standard. For modern health care facilities the people of Paravoor depend on near by places. According to planning standards a 100 bed block Primary health centre is required for Paravoor.



Contour map

Most of the public offices are functioning in rented buildings. Land and building are required for the above offices. All these show that Paravoor municipal area may be provided with facilities for a 3rd order urban settlement. A 3rd order urban settlement should have facilities for serving the surrounding Grama panchayats. This shows that Paravoor may be provided with hospital with modern facilities, Town hall, office complex, educational facilities and other infrastructural facilities to serve surrounding Grama panchayat.

The economically and socially backward areas are where the people live in colonies. The diversification of the economic base of the municipal area may provide employment to the people who are living in colonies. But the facilities available in colonies have to be improved.

The development objectives of Paravoor Municipal Town are summed up as follows.

1. The economic base of Paravoor may be diversified with the following activities like, Information technology, tourism sector, homestead cultivation, coir industry, fishing etc.
2. In the IDDP for Kollam, Paravoor is identified as a 3rd order settlement and hence has to be provided with infrastructure facilities which a 3rd order settlement ought to have.
3. Along with ease of congestion in the CBD area of Paravoor, a planned road net work of roads as per IDDP may be developed in Paravoor.
4. Rationalisation of land use in Paravoor for an effective planned development of the Municipal area.
5. Environmentally important areas, heritage areas and scenic areas are to be protected through planned intervention.
6. Socially and economically backward areas may be provided with adequate infrastructural facilities.

CHAPTER 20

Development Concept

The Development Concept is evolved based on the development objectives formulated, based on the problems and potentials existing in the area. The conclusions and recommendations of the sectoral studies are required for the formulation of the development concept . The development concept of Paravoor is detailed out here.

It is made clear in the objectives that the economic base of Paravoor will shift from the sectors like coir, fishing and agriculture to tourism, home stead cultivation, anciliary activities, coir, IT and fishing sectors.

In the IDDP for Kollam, Paravoor is included both in the Aqua –bio reserve zone and in the Special Development Zone. So the strategy of development should be to conserve environment and aqua-bio reserves. Similarly the development of IT sector and tourism sector should be made ecofriendly. Big hotel complexes, commercial complexes as part of tourism development may be discouraged.

While formulating the development concept, all the above factors have to be considered. Concept of Paravoor is to develop Paravoor as a third order settlement with emphasis on Tourism sector and IT sector in such a way that development impulses of these sectors will flourish traditional sectors as well, with due regard to environmental sensitiveness of the area.

The development concept is elaborated taking into account the spatial structure of Paravoor.

20.1 Development Concept

The formulation of development concept is based on the proposed spatial structure of the area. The spatial structure is decided by the geography of the area, the existing spatial distribution of activity, network of roads and spatial distribution of environmentally sensitive areas.

1. Geographical aspects

The development activities in an area are decided by the geography of the area. The slope of the area is an indicator of the

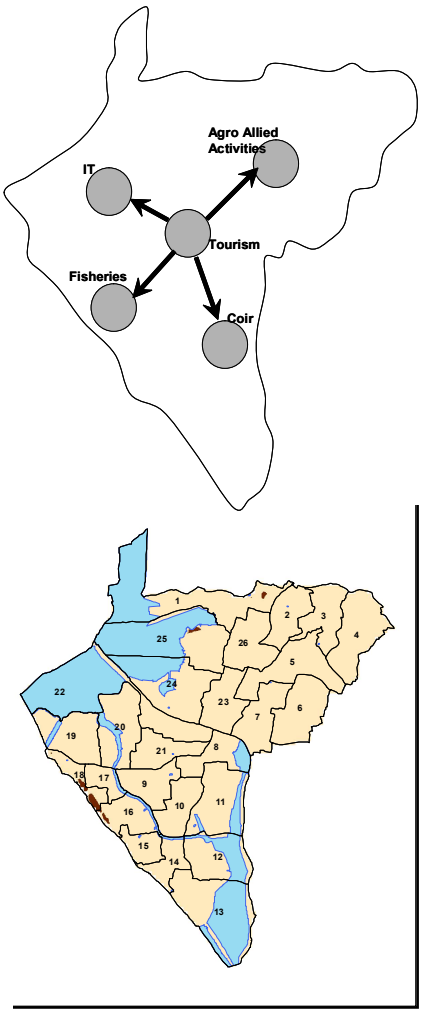


Figure 20.1 Slope of Paravoor Municipal area

geography of the area. The likely activities that may come in an area based on the slope there, is given in figure 20.1.

A slope between 0^0 to 15^0 is suitable for human settlements, between 15^0 to 30^0 is suitable for agriculture activities and between 30^0 to 50^0 is suitable for horticultural activity. Above 50^0 is forest land.

The major portion of the Municipality is in the slope of 0^0 to 15^0 which is a suitable slope for human settlements and other development activities. Hence the slope of the area is suitable for normal urban development activity and semi urban activity.

2. Spatial distribution of Existing development

In Paravoor Municipal area the agricultural activities and human settlements activities are seen separated spatially. Similarly the agriculture sector and commercial sector are spatially separated.The residential area and commercial area are concentrated along the sides of major roads of Paravoor, whereas the agriculture sector is concentrated away from the major roads (Figure 20.2).

The people engaged in fishing activity are concentrated in coastal wards. The coir sector is concentrated in Ollal, Kottamoola and Pozhikkara. Spatial distribution of existing activities, influences the future economic base and its locational aspects.

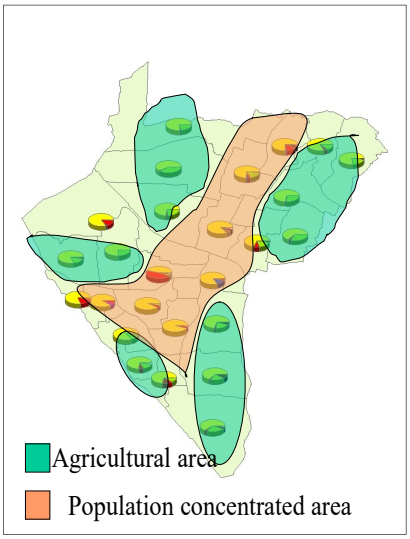


Figure 20.2 Existing development and its spatial distribution

3. Environmentally sensitive areas and heritage sites.

In Paravoor the paddy fields, water bodies and the ancient temples are the environmentally sensitive areas. The ancient temples may be conserved as heritage sites. The environmentally sensitive areas and heritage sites in Paravur are shown in figure 20.3

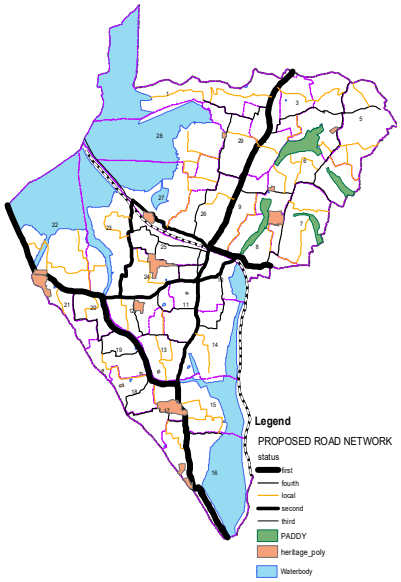


Figure 20.3 Environmentally sensitive area.

4. Spatial distribution of population

The population of Paravoor is 38649 as per 2001 Census. The population is concentrated in a triangular shaped area bounded by Paravoor-Pozhikkara, Paravoor-Kappil & Paravoor Parippally roads and the coastal stretch. This is shown in figure 20.4.

5. The proposed major road net work

The proposed developments and distribution of population are decisive criteria for the proposed road network of an area. The regional road network proposals of the Integrated District Development Plan for Kollam is also to be considered while deciding road net work of a local area. The road network for Paravoor is planned in such a way to by-pass CBD area. The alignment of first order road network within Paravoor is detailed below.

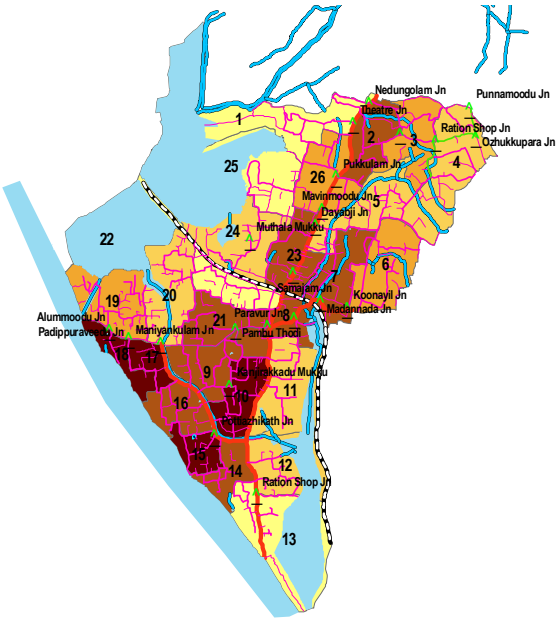


Figure 20-4 Spatial distribution of population, ward -wise

According to Integrated District Development Plan for Kollam, Thankassery port is connected to the eastern part of the District by the coastal road, through Paravoor. The alignment of this road has to be away from the congested CBD area of Paravoor. So this road is proposed to take a deviation from Maniyamkulam bridge and join Paravoor-Chathanoor road at Samajam junction. Chathanoor-Paravoor-Paripally road is having heaviest volume of traffic in Paravoor. The alignment of this road is to be modified to exclude the CBD area. Hence this road is proposed to take a deviation at Railway overbridge junction and reach the Paripally road at Ollal level cross. When Paravoor is included in the coastal tourist circuit, volume of traffic through Varkala-Kappil -Pozhikkara-Kollam route will increase considerably. Considering this, Kappil-Paravoor road is proposed to take a deviation at Kuttoor palam and join coastal road at Maniyamkulam bridge. The proposed road net work is shown figure 20.5.

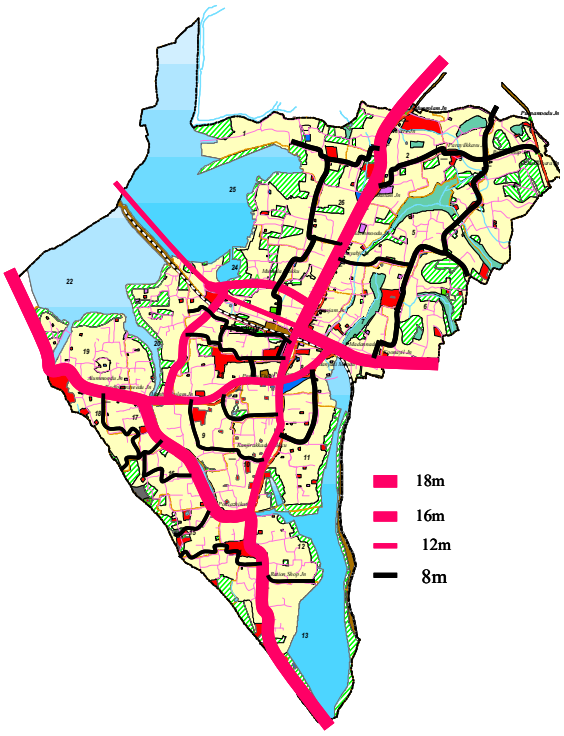


Figure 20.5 The proposed road net work

6. Spatial structure.

Evolution of the spatial structure after integrating all the above factors is shown in figure 20.6.

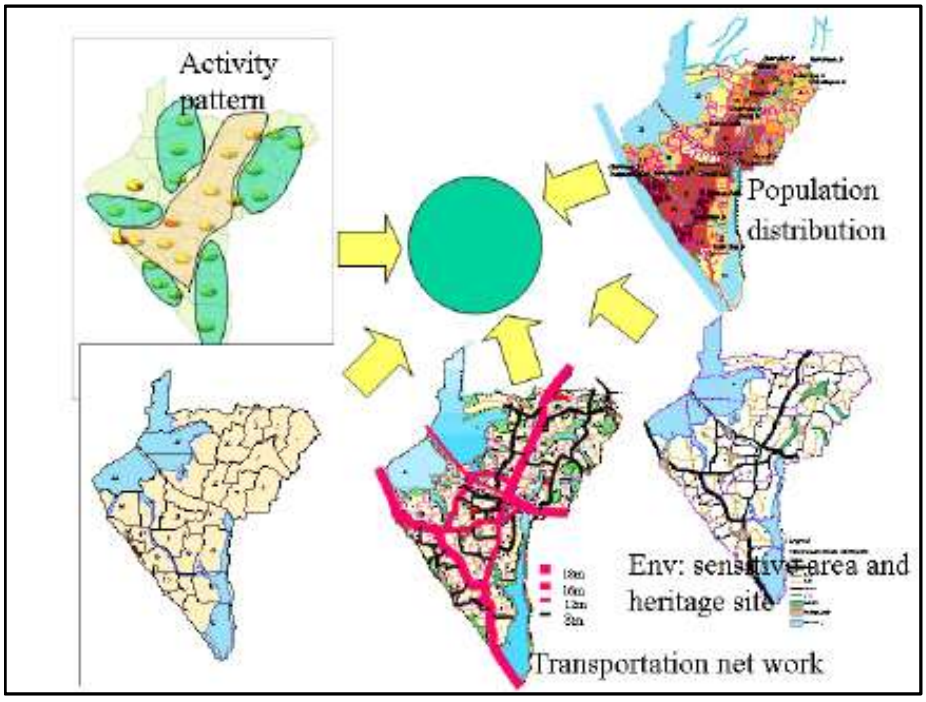


Figure 20.6 Spatial structure of Paravoor Municpal area

The activity pattern of Paravoor indicates that the agricultural sector is concentrated in ward numbers 3,4,5,6 and 7 (the wards in between Paravoor - Chathanoor road and Paravoor - Parippally road), in wards 1,25and 23 (wards in between Paravoor - Chathanoor road, Paravoor -Pozhikkara road), the wards near to Nadayara back water (11,12,13) and the wards in Pozhikkara (19,20). At the same time the concentration of people are seen along the sides of Chathanoor-Paravoor, Paravoor –Pozhikkara, Paravoor-Kappil, Paravoor-Parippaly roads and in coastal (wards 21,8,9,10,18,17,16,15,14). It can be observed from the above that in wards 5 and 7 the concentration of both population and agricultural activities are seen. The ward number 5 is near to Chathanoor – Paravoor road, ward number 7 is near to Paravoor - Parippally road. The area of these wards adjacent to road are marked as population concentration area and the area beyond the road side, agricultural concentration area. Ward numbers 6,4,7and 8 in which paddy fields are seen (Clavara-Koonayil paddy field, Pandarathil paddy field, Pasuman paddy field, Elamkulam paddy field) are classified as areas to be conserved. Taking into account the proposed major road net work through Paravoor those area bounded by Kuttor bridge-Maniyamkulam bridge-Sastha temple-Samajam junction, coastal wards and wards adjacent to Paravoor - Chathanoor are marked as area suitable for non agricultural activities.

The spatial structure of Paravoor (in new wards) is shown in figure 20.7

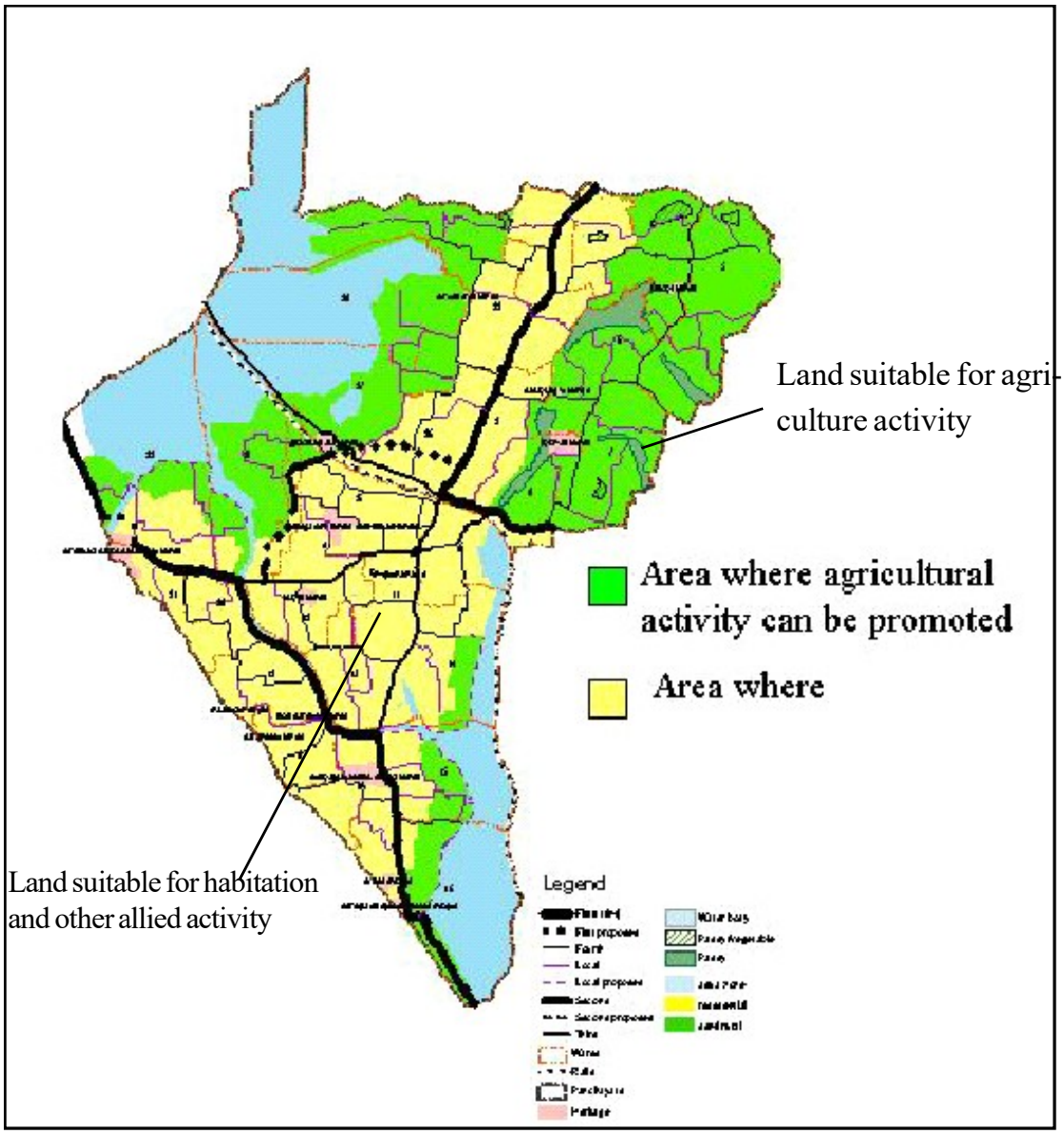


Figure 20.7 Spatial Structure in Paravoor

The spatial structure of an area is helpful for the location of the economic base rationally. At the same time the spatial structure spell out regional road net work and area to be compared.

7. Development concept

Along with spatial structure of an area, those development sectors which have significant influence in the formulation of development concept are to be considered for finalising the

development concept. The development concept is influenced by the development sectors like tourism, fishing, coir and IT. The ancillary development sectors like commercial sector, small scale industrials sector, power sector are also be considered for finalising the development concept. The tourism sector in Paravoor is depending on the sea coast and back waters. Paravoor is included in the coastal tourism circuit of Kovalam -Varkala, Kollam - Alappuzha. Therefore the development of tourism sector in Paravoor will be along the coastal area andthe Paravoor- Nadayara back water area. The figure 20.8 shows the area which are suitable for development of tourism sector activities in Paravoor.

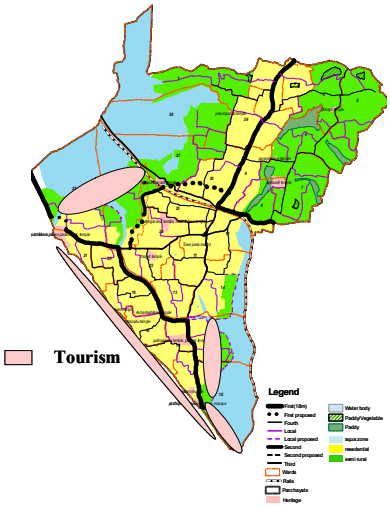


Figure 20.8 Tourism sector

Marine fisheries and inland fishing activities (Figure 20.9) in the back waters and ponds of Paravoor will be taken as one of the economic bases of Paravoor. Except high density fishermen settlements all most all the area of Paravoor are suitable for homestead cultivation.

Instead of concentrating in save pockets the coir making in Paravoor is turning out to be a household industry, still it can be persumed that existing coir sector (Kurumandal Kottapp uram, Ollal) will be retained as such in future. It is shown in figure 20.10

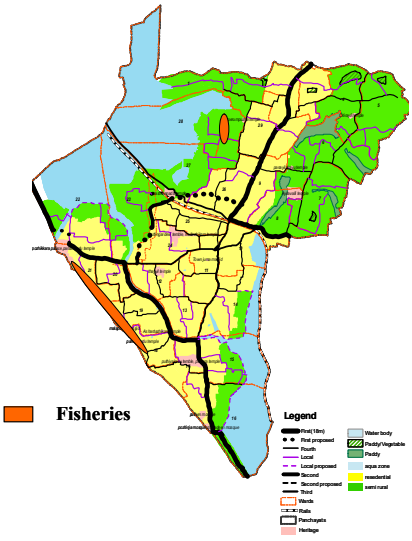


Figure 20.9 Fishing sector

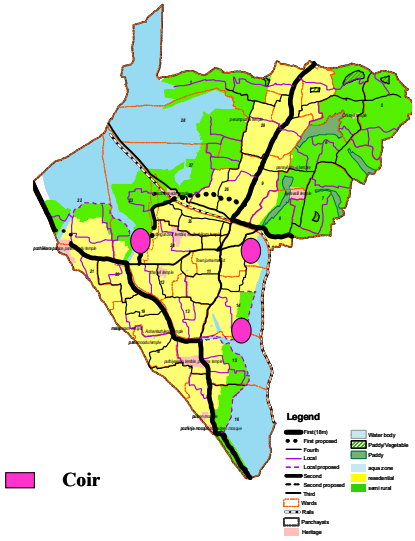


Figure 20-10 Coir sector

Paravoor have potential for small scale IT sector development in areas adjacent to major roads through Paravoor. At the same time sufficient vacant land should be available. The vacant land near to Sasthanada which is close to railway station and adjacent to the proposed bypass road are suitable area for IT sector development in Paravoor (Figure 20.11).

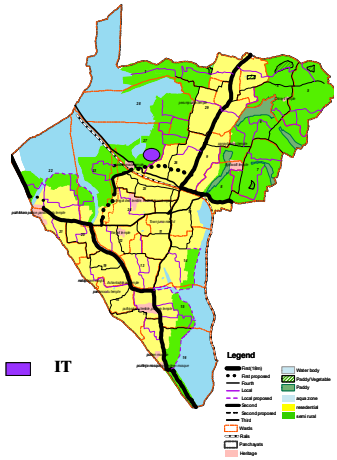


Figure 20.11 IT sector

The ancillary activities which are necessary in Paravoor for the above developments are given in table 20.1. From the table it is clear that commerce sector, small scale industrial sector and electricity sector are the ancillary sectors which are to be developed in Paravoor.

Table 20.1 Linkages between important development sectors and ancillary development sectors

Ancillary	Electricity	Commerce industry	Small scale
Tourism sector	+	+	
Coir sector	+	+	+
Agriculture/allied activity	+	+	+
Fishing sector		+	+
IT sector	+	+	+

The location of most of the proposed economic activities are away from Paravoor junction. This will generate new commercial centres. The commercial centre is concentrated now in Paravoor junction (the commercial sector naturally develop along the junction of roads). Considering the above fact, second order commercial centres are proposed in Nedungulam, Maniyakkulam and Thekkumbhagam as shown in figure 20.12.

- First Order Commercial Centre – Paravoor Junction
- Second Order Commercial Centres – Nedungolam, Thekkumbhagom
- Third Order Commercial Centre – Pozheekkara Junction

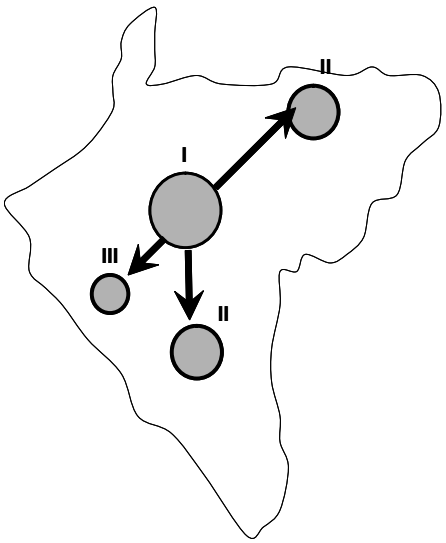


Figure 20.12 Decentralisation of commercial sector

It is necessary to propose small scale industries producing equipments for agricultural sector, fishing activity and coir sector. Considering the land availability and transportation facility, a small scale industrial unit is proposed in weavers co-operative society in Chathanoor - Paravoor road.

Electricity:

Electricity is required for the development of IT Park, small scale industrial unit etc. For this a sub-station is envisaged in the area proposed for small scale industrial sector.

The proposed spatial location of above development sectors as per spatial structure is shown in figure 20.13. This is actually the manifestation of the development concept in physical dimension.

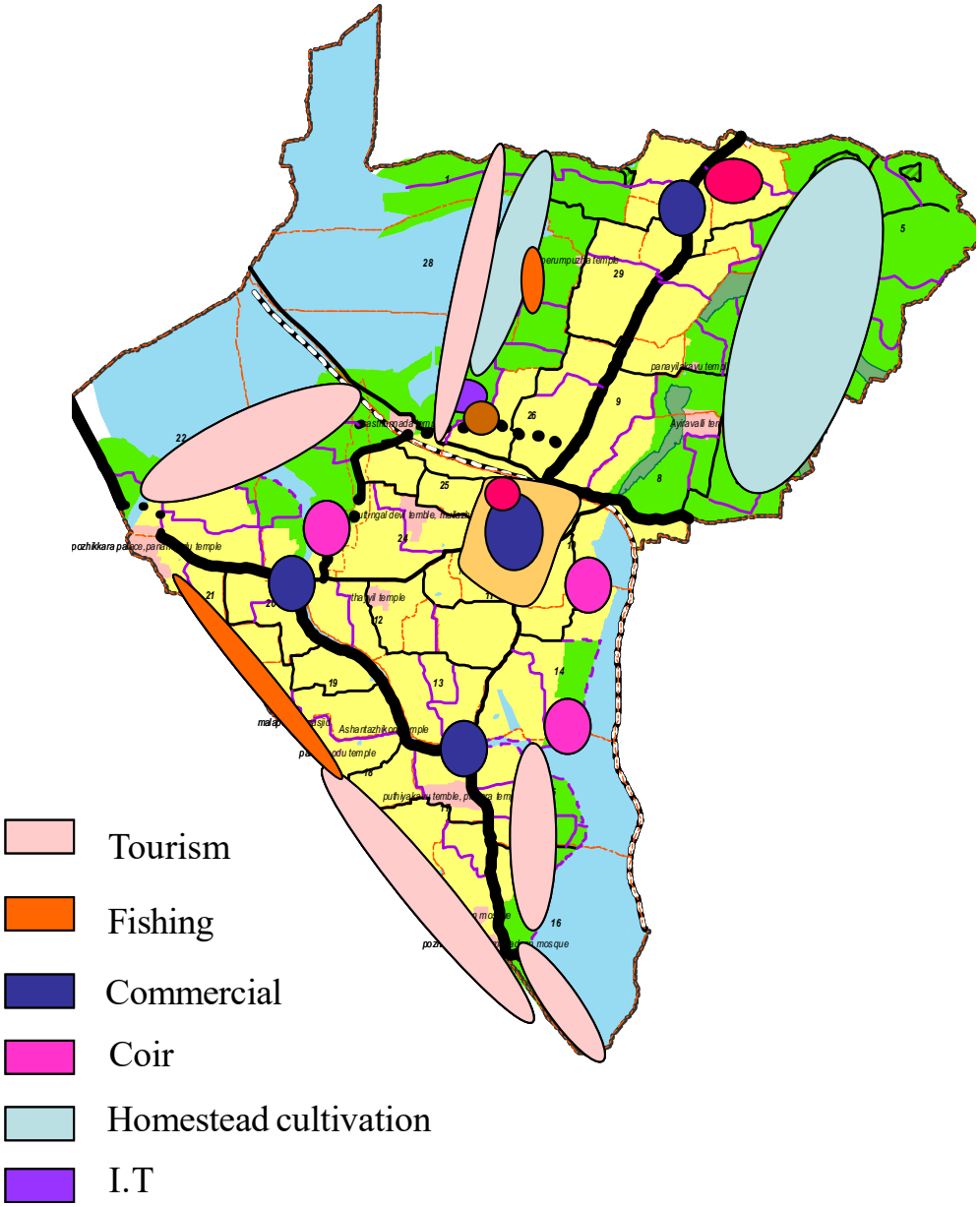


Figure 20.13 Development concept Paravoor Municipal area

CHAPTER 21

Development Policies and strategies

The development policies and strategies evolved for the implementation of the development concept formulated, for a period of 20 years is detailed in this chapter.

21.1 General development policy

Develop Paravoor as a tourist destination, IT hub and small scale industrial location. At the same thrust should be given to the development of traditional sectors -coir and fisheries. Effort should be made to link these traditional sector with Tourism sector. Efforts should be made to achieve maximum self sufficiency in agricultural and animal husbandry sectors.

21.2 Sectoral policies and strategies

Tourism sector

The functional character of Paravoor indicates that it is a semi urban area. The sea coast, back waters, ponds, water bodies, etc. increases the natural beauty of Paravoor. Paravoor Municipal area has not attained the character of a well developed urban area but shows rural character also. By conserving the natural beauty of Paravoor, the development of tourism sector may be improved. For the tourist the needy infrastructure may be provided and Paravoor may be made part of the tourist circuit of Kovalam -Varkala - Alappuzha. This is the policy needed for the tourism sector .

The development strategy for the tourism sector is detailed below.

- Awareness may be created among the tourists.
- Local facilities may be made available to tourists.
- The cultural-heritage environment may be protected and the activities to be designed to enhance the tourism potential of Paravoor.

Industrial sector

Small scale enterprises may be developed as a major sector in Paravoor. To diversify the traditional industries and to mechanise for increasing the production in the industrial sector is the main policy. Utilising back waters for retting of coconut husk pollutes back water and hence mechanised extraction of fibre from the coconut husk is encouraged in Paravoor.

The strategies for the industrial sector are as follows.

- For starting up of IT industries and its growth, high quality infrastructural facilities (Road electricity, tele-communication) be developed.
- An appropriate collection method developed for collection of coconut husk.
- Mechanization developed for extracting coconut fiber in coir sector.
- Develop small scale industrial sector to provide facilities required for coir and other related sectors.
- To give encouragement to cottage industries.
- For the tourism industry, coir sector products be developed.

Agriculture and allied activities

As stated in the previous chapters, home stead cultivation have immense potential in Paravoor. This is concentrated in certain particular areas. For making the homestead cultivation profitable it may be integrated with animal husbandry sector. Utilising the potential of agriculture and animal husbandry sector in Paravoor, an integrated strategy may be adopted to make Paravoor self sufficient in agriculture and animal husbandry sector to a certain level. This is the policy for agriculture and allied activity sector. The production in agricultural sector by utilising bio fertilizer, animal husbandry products may be sold on a profitable basis to the tourists who are visiting Paravoor.

Agriculture – allied sector development strategy.

- Integration of homestead cultivation and animal husbandry sector.
- As a part of promoting bio fertilizer agricultural activity, the solid waste may be converted into bio fertilizer. Solid waste disposal process may be given prime importance.
- Cultivators, municipal council and the concerned department have to function jointly for integrated development of the activities of Krishibhavan, veterinary hospital etc.
- The existing potential of KIP canal, water courses and ponds may be utilized fully for formulating viable irrigation projects.
- Utilising the water courses, inland fishing may be improved.

Transportation Secctor

Paravoor should have a transportation network which connects the existing activity area and the proposed activity area. The existing transportation problem may be solved and a planned traffic net work may be developed in Paravoor.

The development strategy in the use of transportation sector

- Design a heirarchical road net work.

- A traffic network bypassing the CBD area of Paravoor which is highly congested may be planned.
- The coastal area, IT centre, hospital complex, commercial centre, industrial estate which are the future economic base of Paravoor are to be connected by a planned network.
- The first order roads may be 21 metres wide, 2nd order roads may be 18 metres wide 3rd order road may be 12 metres wide based on the proposal of the District Development Plan for Kollam.

Commercial Sector

The commercial sub centres at Nedungolom, Thekkumbhagam and Pozhikkara may be developed to decentralise the congested commercial activity of Paravoor. The existing problems in the CBD area may be solved and this centre may be made more efficient.

The development strategies are as follows.

- The land use may be rationalised to promote development of commercial activities at Nedungolam, Pozhikkara and Thekkumbhagam.
- For making efficient CBD in Paravoor the following proposal may be implemented.
    - Parking areas may be identified.
    - Drainage facilities to be made available.
    - Junction improvement scheme may be implemented.
    - Development of market.
    - Appropriate steps may be taken to process and collect solid waste.

Health Sector

Ayurveda and Homoeopathy are fast developing health care systems in Kerala. Necessary infrastructure is to be developed in Paravoor for Ayurveda and homeopathy systems of medicine such that it can be utilised by the people of nearby local bodies also.

Educational Sector

Basic educational facilities up to higher secondary school level should be provided at Paravoor.

CHAPTER 22

Future Population and Occupational Structure

The developments envisaged as per the development concept will increase job opportunities, and population in Paravoor. This chapter elaborates the likely changes expected in population & occupational structure during the plan period.

22.1 Changes expected in occupational structure.

The occupational structure of an area may be projected based on the future economic base of the area. There are approximately 650 homesteads available for homestead cultivation in Paravoor. This is calculated from existing land use and number of houses. If 100 persons are attracted for homestead cultivation, the surplus cultivators are calculated as 100. As per the Economic review 2003 a homestead cultivation in an area of 0.25 hectars/will create one man day of job opportunity. Based on this, it can be calculated that atleast 700 persons will be employed in the agricultural & animal husbandry sector.

Number of cultivators	-	100
Number of cultivators proposed in 2021	-	100
Total cultivators in 2021	-	200

It can be presumed that tourism & IT sector, will increase the job opportunities in service sector by 40%.

People who are catagorised as other sectors at present	- 8952
Number of workers in coir and fishing sector	- 2000
Number of workers in other sectors after deducting the workers in fisheries sector & coir sector	- 6952
The workers in other sectors (2021)	6952 x 1.4+2000 = 11732

It is expected to increase the household industrial workers by 50%

People who are working in household industries at present	- 302
The proposed workers in household industries 2021	- 302 x 1.5 = 453

The expected changes in occupational structure in 2021 is given in table 22.1

It is assumed that the existing employment opportunities in coir and fisheries will continue as such, the likely increase in the number of other worker catagory as per census classification is shown below.

Table 22.1 Estimation of occupational structure.

No	Catagory	2001	2021
1.	Cultivators	100	200
2.	Agricultural labours	704	1404
3.	Household industrial workers	302	453
4.	Other workers	8952	11732
	Total	**10058**	**13789**

The change in occupational structure is shown in figure 22.1

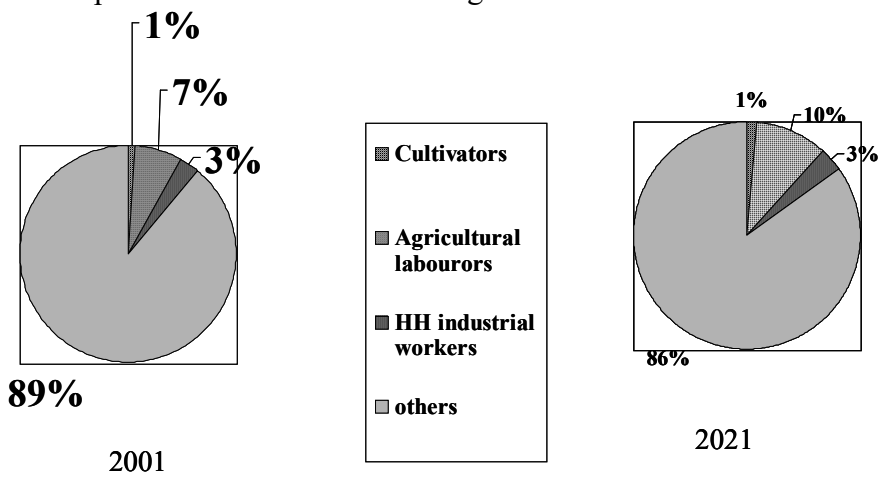


Figure 22.1 Change in occupational structure

The work participation rate in Paravoor is 26.02% .As per UDPFI guidelines, for a Municipal area the work participation rate shall be 33% . Based on this the work participation rate for 2021 of Paravoor municipal area is projected as 32% (Figure 22.2).

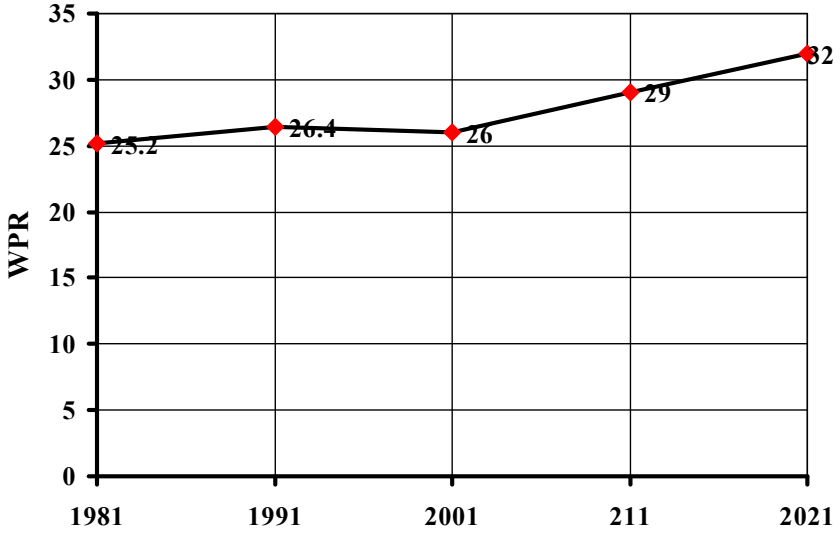


Figure 22.2 Work participation rate in 2021

22.2 Changes expected in population

The increase in population is directly related to the economic base of the area. Strengthening of the economic base of an area will increases the employment opportunities there. This in turn will enhance the migration of labourers and their families to the planning area. This will add up the population in addition to the natural growth there. The work force participation rate is an important criteria in ascertaining the future population of an area.

The work participation rate in Paravoor in 2021	-	32%
The labour force expected in 2021 in Paravoor	-	13695
The population expected in 2021 in Paravoor urban area	-	13695 ÷ 0.32 = 42797

The increase in population is shown in Figure 22.3

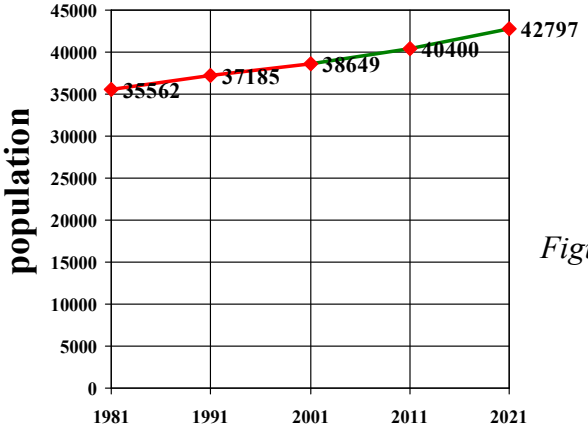


Figure 22.3 Population growth

The deviation and increase in population growth rate are given in figure 22.4

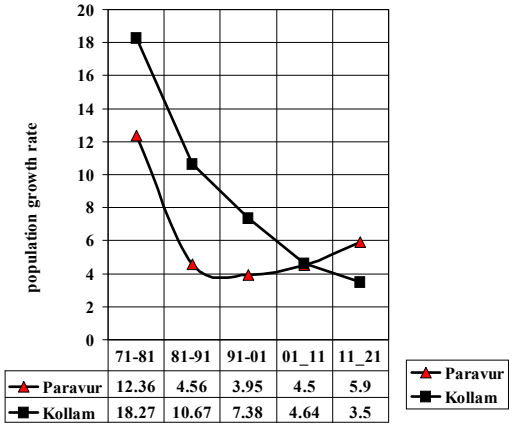


Figure 22.4 Comparison of population growth rate in Kollam District and Paravoor Municiapal area

The population growth rate of Paravoor will be equal to that of Kollam District by 2011 and will increase further by 2021.

The wardwise distribution of population in 2021 is assumed to be of same pattern of population distribution as in 2001.

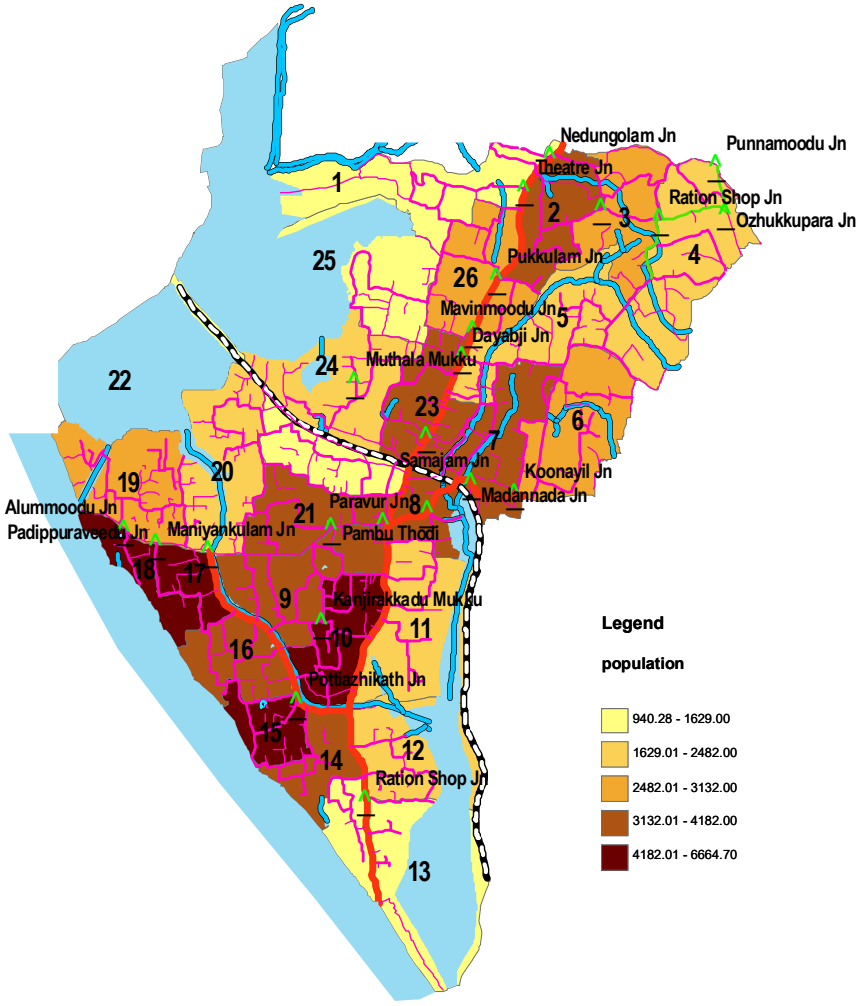


Figure 22.5 Population distribution - ward wise

The figure 22.5, shows the population concentration pattern in Paravoor. Majority of the people of Paravoor is seen concentrated in a triangular portion bounded by sea coast, Paravoor-Kappil road and Paravoor - Pozhikkara road. Population concentration is expected in wards adjacent to Paravoor - Parippaly road.

CHAPTER 23

Land Use Plan

In this chapter the extent of land required for various uses are calculated and its location are determined according to the development concept. The land use plan is prepared in cadastral map.

23.1 Land use

1. Residential area

According to the development concept for 2021 the areas suitable for residential purpose are identified along the coastal wards, the wards on both sides of Paravoor-Chathanoor road, the wards on both sides of Kappil road and in those wards bounded by canal road, proposed link road and Paravoor - Kappil road. The residential area, are divided into two. Completely residential area and residential area mixed with other activities identified as residential mixed area. The wards which include Paravoor junction and those surrounding Paravoor junction are classified as residential mixed area (Figure 23.1).

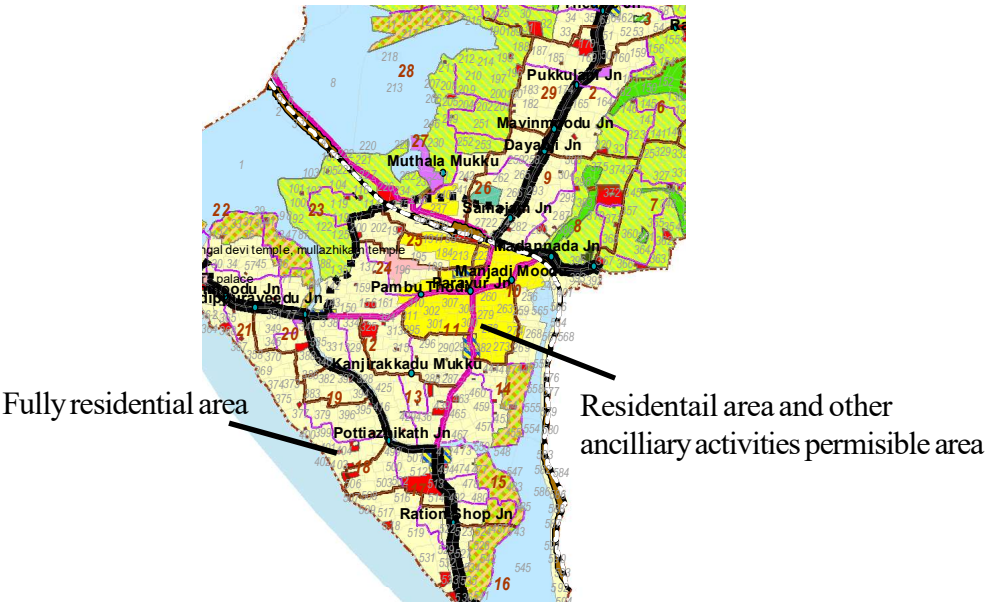


Figure 23.1 Residential area

Similarly area near Sastham nada is identified as area suitable for three types of development activities (IT Park, Link road, bus stand) Hence the area in ward number 27 is partially included as residential mixed area.

2. Commercial Area

According to the development concept four areas are identified as commercial zone. (Paravoor junction, Nedungolam,Thekkumbhagam and Pozhikkara) Paravoor junction has been already developed as a commercial centre. At the same time Nedungolam, Thekkumbhagom andPozhikkara are proposed to be developed as commercial centres as per the development concept. Paravoor junction is identified as a fully grown commercial centre, but Nedungolam,Thekkumbhagam and Pozhikkara commercial areas are identified as mixedcentres (commercial zone, residential zone) (Figure 23.2).

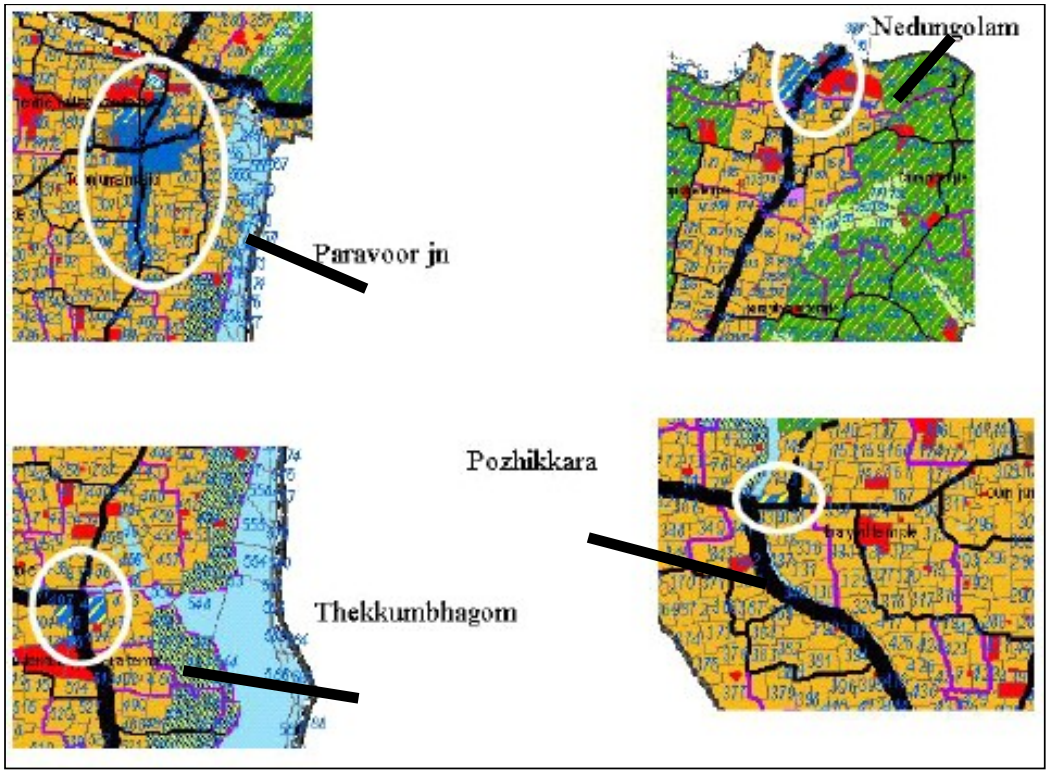


Figure 23.2 Commercial centres in Paravur

As per the development plan for Paravoor the land required for commercial zone is calculated as 0.5 hectare per person. Thus the commercial area in 2021 is calculated as 21 hectares. The existing extent of commercial area in Paravoor is 13.3. hectares. Future distribution of commercial area is made as follows.

CBD area of Paravoor	-	14 hectares
Nedungolam	-	3 hectares
Thekkumbhagam	-	3 hectares
Pozhikkara	-	1 hectares

Nedungolam , Thekkumbhagam and Pozhikkara are envisaged as mixed zone. 0.4 hectares of land near the existing market area is also included for the development of market.

Note: In order to utilise the potentials of important roads (21 meter or 18 meter width), land adjacent to these roads for a depth of 50 meter is zoned as residential cum commercial zone.

3. Industrial sector

1. ***Coir sector:-*** The coir industry is considered as a cottage industry, so land for the above purpose is not proposed additionally. The existing coir industrial area is to be retained. The private sector floor co industry area (Figure 23.3 and 23.4) is retained in the coir industrial zone.

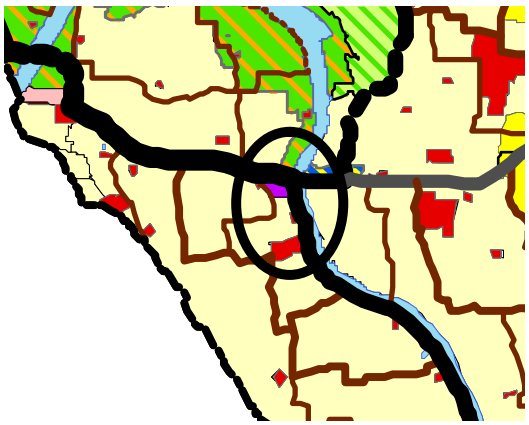


Figure 23.3 Floorco

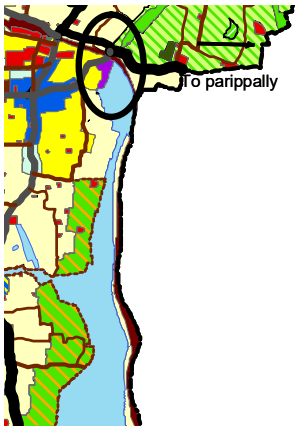


Figure 23.4 Ollal coir sector

2. Fishing sector:- The fishing sector is connected with back waters and sea coast, so separate area is not identified for this sector.

3. IT Sector:- For a small scale IT park 12 acres of land is identified according to the development concept near Akathu Kayal (Figure 23.5). From this 70% is set apart for IT park, 30% for ancillary infrastructure facilities like hotel, residential flats, commercial centres, recreational facility etc.

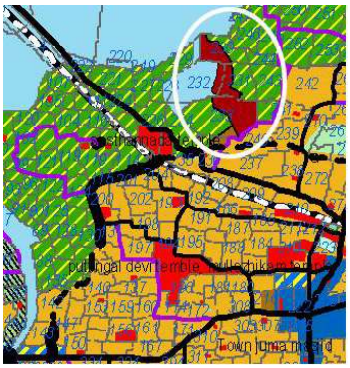


Figure 23–5 IT Park

4. Small scale industrial sector:- Nearly 3.5 acres of land owned by coir weavers co- operative society, is proposed as small scale industrial sector (Figure 23.6).



Figure 23.6 Small scale industries zone

4. Tourism sector

It is estimated that about 13000 lakh tourists will be reaching Paravoor and its surroundings in a year. From this 10% is assumed to stay in Paravoor for one year. According to the above estimate 1300 persons require accommodation for staying in Paravoor. Home stay facilities in around 25 to 30 houses in Paravoor Municipal area is required. Recreational facilities, hotels and other commercial centres are required for tourists. The land near sea coast and back waters are identified as suitable places for providing facilities for the tourists. Land near Kappil bridge, Paravoor Kappil road-the land which separates sea and back water are included in the tourism area (Figure 23.7). These areas are identified as potential land for agricultural sector, residential sector and tourism sector also in the development concept. So this area is zoned as mixed zone.



Figure 23.7 Tourism sector

5. Agriculture and allied activities sector

The areas which are not dense and put to agricultural use, having an extent of at least 25 cents or more are identified as area suitable for agriculture and allied activities (Figure 23.8). A centre for development of agriculture and allied activities is proposed near Ollal railway cross. In this area approximately 2 acres of land is proposed for agricultural office, Veterinary hospital, Seed distribution centre, Agriculture product collection and distribution centre and a modern slaughter house.Figure 23.9 shows the agriculture and allied activity areas in Paravoor Minicipality.



Figure 23.8 Agriculture and ancillary activity development centre



Figure 23.9 Agriculture and allied activities sector

6. Public and semi public zone

1. Health sector:- It is proposed to develop the existing Ramarao hospital area of approximately 4.5 hectares as a hospital complex (Figure 23.10) which includes Alopathy, Ayurveda and Homoepathy sections.

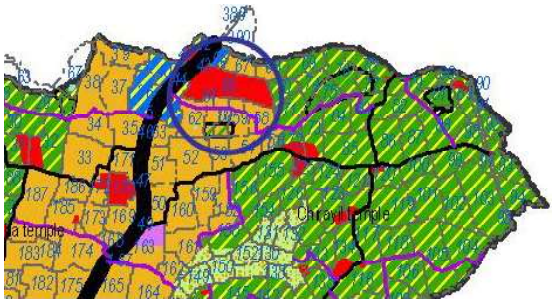


Figure 23.10 Hospital complex

2. Office complex:- The government offices , quasi government offices which are functioning in rented buildings may be brought under one umbrella. For this an office complex is proposed to be constructed in the hospital compound (Ayurvedam). This complex may be named 'Janabhavan'(Figure 23.11).

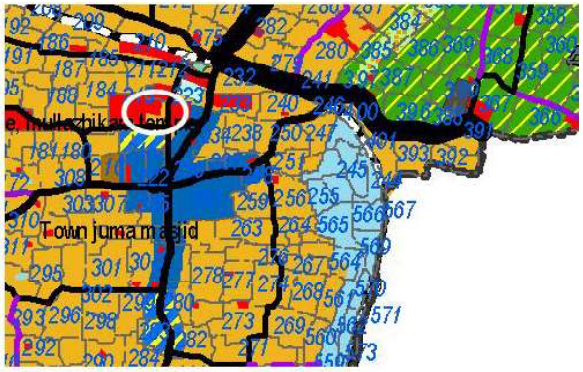


Figure 23.11 Janabhavan

The offices which can be accommodated in the proposed building are given below.

1. Village office(Paravoor, Kottappuram)
2. Tourist information centre
3. Janabhavan
4. P.W.D. office
5. Water Authority office
6. Sub treasury
7. Sub registrar office
8. Employment office
9. Coir inspector office

3. Community hall:- The land existing in the southern side of Municipal office with an extent of 0.32 hector is set apart for the proposed community hall.

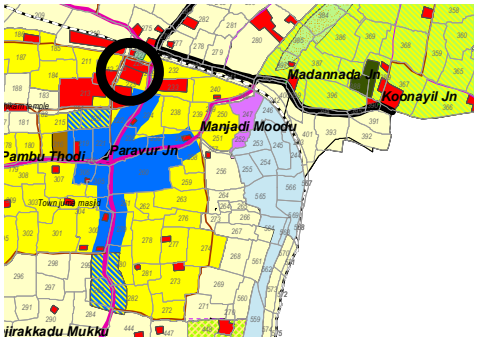


Figure 23.12 Location of Community hall

4. Cremation ground:- Land with an extent of 0.22 hectore is set apart for cremation ground figure 23.13 shows the location of cremation ground

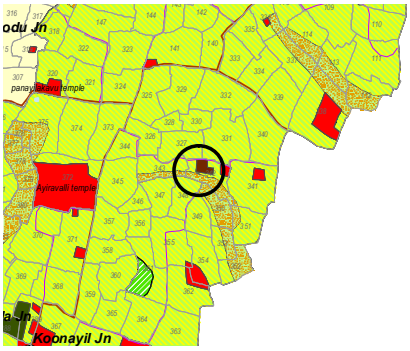


Figure 23.13 Cremation ground

5.*Solid waste disposal:-* For a modern solid waste disposal plant an area of 0.11 hector is proposed for this figure 23.14 shows the location of solid waste disposal plant

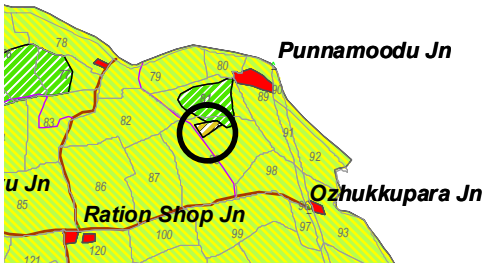


Figure 23.14 Solid waste disposal

7. Transportation sector

The road network in Paravoor is envisaged to by-pass the commercial centre of Paravoor, Roads in three heirarchy are proposed for Paravoor Municipal area.

The land use for roads and railway line are included in transportation sector.

Railway line and railway station	-	21.7 hectare
Roads	-	26.32 hectare
Bus stand	-	1.4 hectare

8. Open ground and park

The park located infront of Municipal office is the only one park in Paravoor now. The land existing on the northern side of Paravoor –Nadayara road near to backwater with an extent of 0.5 hecter is proposed for a park. Land near link road with an extent of 3.5 hectare is proposed for a stadium and open ground (Figure 23.15).

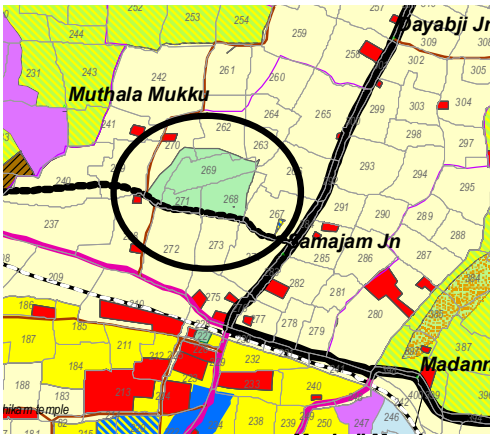


Figure 23.15 Open ground and Park

9. Environmentally important and heritage significant areas

The paddy fields, backwaters, water courses, the kavu adjacent to Ayiravally temple and the sacred groves are identified as environmentally important areas. Centuries old Pozhikkara Devi temple and Puttingal Devi temple are considered as heritage important sites.

23.2 Land use map

The land in Paravoor Municipal area is divided in to 13 major land use zones.

1. Residential zone
2. Residential mixed use zone
3. Commercial zone
4. Commercial cum residential mixed zone
5. Dry agricultural zone.
6. Tourism mixed zone.

7. Public and semi public zone.
8. Water bodies
9. Industrial zone.
10. Traffic and transportation zone.
11. Park and open spaces zone
12. Paddy fields.
13. Special use zone

The activities which are permissible in different use zone are explained in the zoning regulation. This is shown in annexure -2. In certain sectors the land use is included in the special use zone. These are the areas identified as of environmental importance and heritage significance.

Figure 23-16 shows the land uses of different areas .

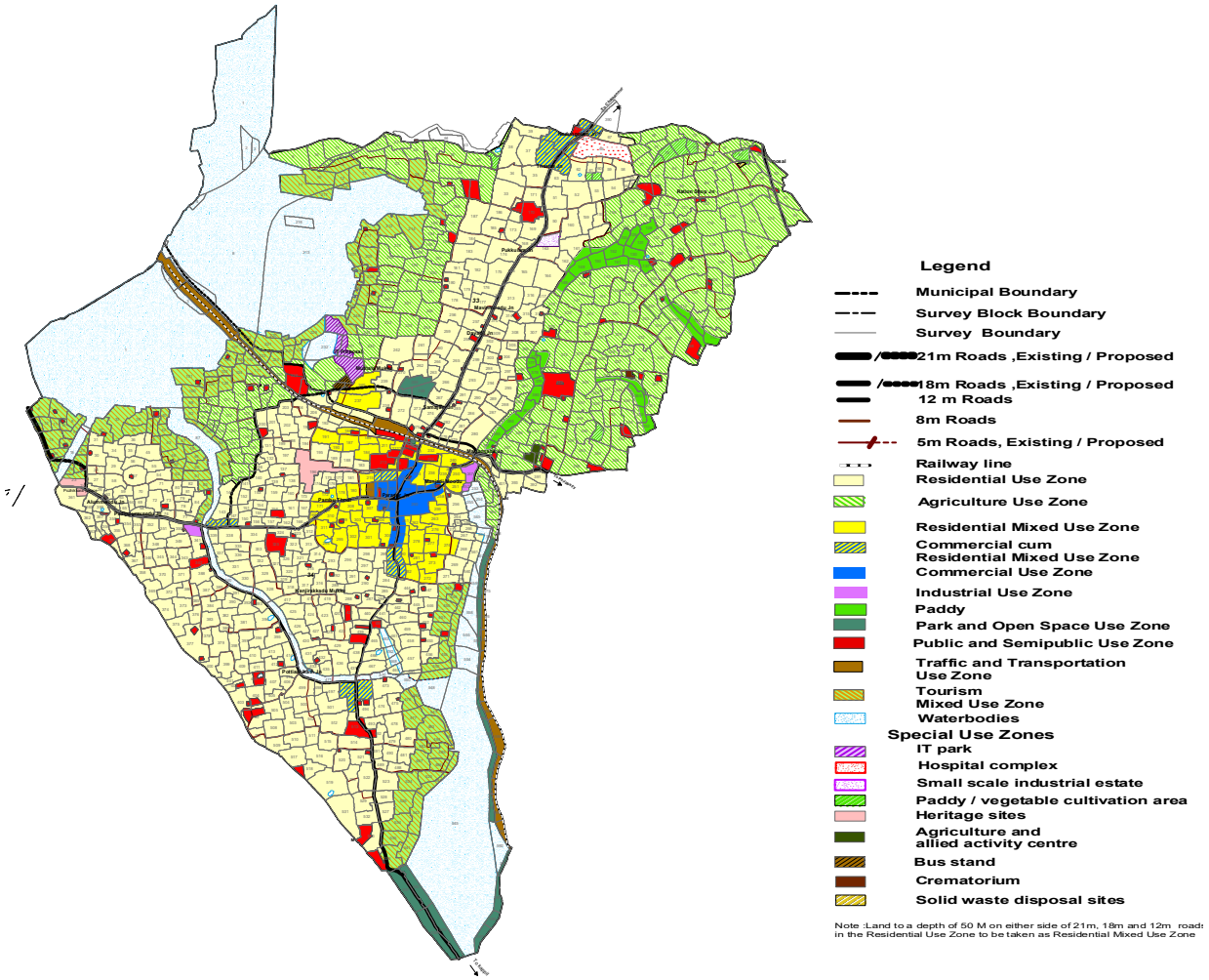


Figure 23.16 Landuse map

In table 23.1 the land use and extent with percentage of land use is shown.

Table 23.1 Proposed Land use- Extent and percentage

Sl No	Land use	Hector	Percentage
1	Residential area	544.46	33.16
2	Residential mixed zone	13.2	0.80
3	Commercial zone	13.13	0.79
4	Commercial residential mixed zone	71.46	4.35
5	Agriculture zone	354.36	21.58
6	Tourism mixed use zone	104.94	6.39
7	Public and semi public use zone	26.25	1.59
8	Waterbodies	377.36	22.98
9	Industrial use zone	1.92	0.12
10	Transportation use zone	48.67	2.96
11	Park and open space zone	12.85	0.78
12	Paddy fields	3.21	0.19
13	Special use Zone	69.87	4.25
	Total	**1641.68**	**100**

Table 23.2 Existing land use in Paravoor 2006

Land use	Resi-dentia-l	Comme-rcial	Indus-trial	Public &Semi public	Agricul-ture	Water body	Barren land	Trans-portati-on	Total
Extent (Sq:km)	9.02	0.13	0.05	0.59	2.16	3.86	0.04	0.37	16.22
Total extent in Percentage	55.61	0.82	0.29	3.62	13.33	23.81	0.24	2.28	100
Area in percentage (Excluding area which is not suitable for human habitation ie.water bodies)	73	1	0.4	4.8	17.5		0.3	3	

Source: Land use survey conducted by Town and Country Planning Department in 2006

Examining tables 23.1, 23.2 it is seen that residential area is reduced to 33% in 2021 from 73% in 2006. Actually there is no reduction in residential area, but the other activities which are expected to come in the residential area such as tourism, agriculture, commercial etc are taken into account. This will improve the economic base of the Municipal area.

PART - V

SECTORAL PROPOSALS

CHAPTER 24

Agriculture Sector

In this chapter the development proposals envisaged in agricultural sector of Paravoor are detailed out.

Since there is scope for Homestead cultivation in Paravoor, Agriculture along with animal Husbandry activities is most suitable for Paravoor. The production of agricultural and animal husbandry products should be in such a way that it should cater to the tourism sector needs also. Thrust should be given in using bio fertilizers in agriculture. The source of bio fertilizers can be from the solid waste collected and procured at Municiapal level. At the same time household composting of solid waste also should be encouraged.

Even though paddy fields are available in Paravoor, dry land cultivation in homesteads are given importance in the development plan. The existing rice fields, Clavara paddy field, Koonayil paddy field, Pandarathil paddy field , Pasuman paddy field, Elakkulam paddy field are to be utilized for paddy cultivation in future also. The small plots of paddy fields in ward number 4,5,7 are proposed for vegetable cultivation. As dry cultivation crops coconut, plantain, tapioca, pepper etc are having more scope it should also be given importance in Paravoor. As a local body adjacent to sea, coconut cultivation is having predominence even now in Paravoor.

The land suitable for agricultural development in Paravoor are in the wards 1,4,5,6,7,8, 14,15,16,22,23,27 and 28 (these areas are shown in proposed land use map) The projects to be implemented by agricultural sector are detailed below.

24.1 Agricultural labour bank

The cultivators in Paravoor are facing lack of supply of agricultural labourers. For getting agricultural labourers in time an agricultural labour bank may be organized. For this, name and address of the agricultural labourers available in Paravoor may be kept in a register in the Municipality. The agricultural labour bank may supply agricultural labourers to the people who are engaged in the cultivation activity. This may be implemented by the agricultural officer with the cooperation of the Paravoor Municipality.

24.2 Cultivators group, agricultural implements bank

For tackling the problems of agricultural sector effectively, cultivators groups may be formed The cultivators group has to assess the requirements of seeds, fertilisers etc in advance and purchase it. The bulk purchase will reduce the cost. At the same time agricultural implements bank is to be set up by the cultivators group.

24.3 Comprehensive homestead cultivation plan

The comprehensive homestead cultivation plan includes, identification of plots suitable for homestead cultivation and identifying and listing of the activities starting from selection of suitable crops up to their ultivation.

The wards in Paravoor Municipal area, suitable for homestead cultivation are 1,4,5,6,7,8,14,15,16,22,23,27 and 28. From the above wards land above 25 cents may be listed. From this list, people who are interested in agricultural activity may be identified. These lands may be listed as model agricultural area. Dry crops suitable for Paravoor are coconut, plantain, tapioca, pepper, vegetables etc. From the plots which are listed as model agricultural area, coconuts with lesser yield and which are affected by various diseases may be cut and removed and, replanted with high yield variety of coconut. In the model agricultural area, as an inter crop to the coconut plantation, plantain, tapioca, pepper etc are to be cultivated. In the model plots irrigation facilities such as bore well, pump set etc may be made available on a priority basis by the agriculture department. The agricultural labour bank, agriculture implements bank and the cultivation group have to work hand in hand under the co-ordinated efforts of the Municipality.

24.4 Agriculture- Ancillary Development Centre

An agriculture-ancillary development centre is proposed in Paravoor for effective implementation of activities in agricultural and animal husbandry sectors. In the above centre the following offices are to be housed - agriculture office, Veterinary hospital, a training hall, storage facilities, marketing facilities & a modern slaughter house. Agriculture ancillary working and development centre shall be located in ward number 8 near Ollal junction.

24.5 Irrigation facilities

The canal of Kallada Irrigation Project is passing through Paravoor. The portion of the canal passing through Paravoor municipal area is the tail end of the canal. So water is not supplied to the desired level now. If this canal, thodu and ponds are effectively utilised, water will be available in the area ear-marked for agriculture during dry season also. It is proposed to connect KIP canal and the Akathu Kayal in Paravoor. The water from the Akathu Kayal is to be pumped to the upstream portion of the canal within Paravoor. This increass the flow of water through canal and the thodus and ponds within Paravoor will be replenished. This inturn will increase the irrigation potential of



Pandarathil Paddy field



K.I.P Canal

Paravoor. Along with this there are chances of floriculture and vegetable cultivation as homestead cultivation in Paravoor. In order to have sufficient coconut husk for making coir fibres, coconut cultivation need to be improved. Table 24.1 gives the project expenditure (estimated) in agricultural sector.

Table 24.1 Agricultural sector – project expenditure (Estimated)

Sl.No	Activities	Estimated amount in Rs.
1	Agricultural labour bank	25,000
2	Cultivators group, Agricultural Implements Bank	10,00,000
3	Comprehensive dry cultivation plan	10,000
4	Agriculture – Ancillary activity development centre	1,12,00,000
5	Irrigation facilities	20,00,000

CHAPTER 25

Animal Husbandry

In this chapter development proposals in animal husbandry sector of Paravoor carved out based on the development concept are detailed out.

The development plan envisages co-ordinated activity of Agricultural and Animal Husbandry sector in Paravoor. Co-ordinated effort in a centralised manner is the suitable approach for the production of egg, meat etc in a profitable manner. The areas which are suitable for development of Agriculture are in ward numbers 1,4,5,6,7, 8,14,15,16,22,23,27 and 28. Similarly these areas are identified as suitable area for animal husbandry activities also. From the analysis it is seen that approximately 1.19 lakh litres of milk and milk products, approximately 1.93 lakh eggs and 9.6 tons of meat are consumed in Paravoor municipal area in one month. To produce half the quanties of above items in animal husbandry sector is the policy.

25.1 Small scale diary farm

It is proposed to establish small scale diary farms with 10 to 25 cows in one Unit. 15 such units are proposed to be started in Paravoor Municipal area in a phased manner. In the first phase it is proposed to start 5 units, and gradually increase it to 15 units with in 20 years. It is estimated that this will fetch 0.6 lakh litres of milk in Paravoor Municipal area. A survey is proposed under the auspicies of veterinary hospital to identify the interested persons in running diary farms. The animal husbandry department may be directed to prepare an action programme for starting small scale dairy farms. Agriculture, ancillary development centre can function as a centre for collection and sales of products from the small scale diary farms.

25.2 Agriculture –Ancillary development centre

The Agriculture –Ancilliary development centre is meant for animal husbandry sector also. The above centre may be used to store meat, egg, milk etc.

25.3 Duck farms

The Kayal banks of Paravoor are suitable for duck farming. Duck farming may be promoted by those who are residing near back waters. People who are interested in duck farming may be identified by conducting surveys by the Animal Husbandry Department and project reports prepared for scientific duck farming. The ducklings may be given to the benefitiaries selected through Agriculture and ancilliary development centre.

25.4 Poultry farm

The demand for eggs is around two lakh eggs per month in Paravoor. In the next 20 years, 100 small scale poultry farms (75 to 100 hens) can be started in Paravoor Municipal area. From these poultry farms the eggs required for internal consumption of Paravor can be met. Poultry farms can be started in the areas suitable for agricultural development.

25.5 Broiler farms

In the next 20 years it is proposed to start 75 small scales broiler chicken farms (75 to 100 broiler chicken) in Paravoor. The demand for local variety chicken is increasing. By starting poultry farms for ordinary variety of chickens, the income for the farmers may be increased. The broiler chicken farms may be started in land suitable for agricultural development.

25.6 Fish landing centre

The construction of fish landing centre in ward number 21 may be taken as of atmost priority. The fish landing centre will have the following facilities viz. an auction centre, a cold storage plant and dry fish processing plant.

25.7 Shed for keeping fishing equipments

A storage hall is required for keeping the fishermen's net and other fishing equipments. It is proposed in ward number 21.

25.8 Stock centre

Fish stock centre is proposed to stock the fish hatch necessary for inland fish farming this. This stock centre shall be started in the agriculture and ancillary centre.

25.9 Artificial reef Construction

In the two back waters suitable areas for artificial reef may be selected, and artifitial reef to be constructed. This action may be taken up in co-ordination with fisheries department .

25.10 Inland pond conservation

The ponds which are suitable for inland fishing activity need to be renovated and protected in Paravoor. The ponds which are suitable for in land fish farming are given is table 25.1

Table 25.1 Ponds which are suitable for inland fish farming

New ward	Public Pond
12	Chirayakkulam
7	Malakkulam
25	Kattakkulam
6	Pambinthodikkulam
13	Pannikkulam
22	Panthalikkulam
12	Thottathilkkulm
13	Pulikkulam
1	Varukkulam

25.11 Construction of light house

People who are using country boats for fishing should be able to know the appropriate direction for reaching the coast safely. For this, construction of a light house is an urgent need. This may be located in ward number 21.

The approximate expenditure required for Animal Husbandry sector development is given in Table 25.2

Table 25.2 Animal husbandry sector, the estimated project cost.

Sl. No.	Activity	Amount in rupees
1	Small scale diary farm	2,50,000
2	Agriculture-Ancillary development centre	1,12,00,000
3	Duck farm	1,00,000
4	Poultry farm	1,00,000
5	Broiler farm	1,00,000
6	Fish landing centre	50,00,000
7	Fishing activity equipment storage shed	15,00,000
8	Stock centre	1,50,000
9	Artificial reef construction	2,00,000
10	In land pond conservation	5,00,000

CHAPTER 26

Tourism Sector

The development proposals in tourism sector which will be one of the future economic bases of Paravoor is, detailed in this chapter.

In tourism sector a very good progress is expected in the Municipal area. The analysis shows that nearly 14000 foreign tourists are expected to visit Paravoor a year. Being an environmentally sensitive area environment friendly tourism is the policy suitable to the tourism sector of Paravoor. And hence large scale tourist complexes are not suitable a year. But local level infrastructure development, giving importance to the natural beauty of Paravoor should be promoted for tourism development. Adequate advertisement regarding tourism potential of Paravoor, road and rail facilities to reach Paravoor and facilities for staying in Paravoor are to be arranged.

26.1 Construction of road signs

It is proposed to construct road signs on important roads which converges to Paravoor (The road signs should be so designed to show the cultural importance and character of Paravoor) This is proposed as a land mark which tells the tourist that they are entering Paravoor.

26.2 Widening the width of canal and protection of the canal

The T.S canal is to be deepend and the sides may be protected for motor boat and ordinary country boat services.

26.3 Construction of boat jetty/boat service for tourist

A country boat service starting from Nadayara back water via Paravoor back water to Ithikkara river, may be started to attract tourists. Speed boats and pedal boats services are to be started in Paravoor back water and Nadayara back water. Boat jetty may be constructed in TS canal near Kuttoor bridge and near Maniyamkkulam bridge.

26.4 Home stay

Home stay facilities are to be arranged for tourists. For this, people interested in providing home stay facilities may be identified and shall be given financial incentive for the above purpose. The home stay facilities may be provided in the area identified for tourism development in the development plan for Paravoor.

26.5 Beach/Park

Steps may be taken for developing beach from Malappuram mosque area up to Kappil bridge. The road may be widened to 8 meters from canal road and up to Malappuram mosque. A park is to be constructed in the land adjacent to Nadayara Kayal near Kappil bridge.

26.6 Back water/ Canal bank roads

A pathway of 5 meter width is proposed from Nadayara back water to Paravoor back water along the canal and kayal banks. On both sides of these road, trees, bamboo and other ornamental trees are to be planted to beautify this area.

26.7 Tourist information centre

A tourist information centre is proposed to be started in Paravoor. The above centre may be started by tourism promotion council or by municipal council. This is to give necessary information about tourist spots and the facilities available for tourists.

26.8 Website

A website may be started to detailing out the facilities available for tourists, tourism spots, cultural and heritage importance of Paravoor.

26.9 Look out area

A look out area is to developed near Malappuram mosque to get an arial view of the sea coast in an elevated place.

26.10 Heritage museum

A heritage museum is proposed to be started near puttingal temple to show the history and heritage of Paravoor.

26.11 Elephant ride

Facilities may be arranged to see elephants and to conduct elephant ride in tourism area. This may be started in private sector.

26.12. Angling plat form

Angling Platforms may be constructed with wood projecting towards the back water in Paravoor back water and Nadayara back water. This facility may attract foreign tourists to this area.

26.13 Way side traditional restaurant

In tandem with the concept of promoting environment friendly tourism, way side traditional restaurants are to be started. The locally available fish cooked according to the traditional taste of Paravoor will be a tourist attraction. The vegetables, meat and eggs are also to be cooked in the traditional taste and served to the tourists. These way side traditional restaurants can be started with co-operation of private entrepreneurs at appropriate locations in Paravoor.

Tourism sector plan expenditure estimate

The approximate estimated amount for implimenting various proposals in tourism sector is shown in table 26.1.

Table 26.1 Tourism sector – Plan expenditure (Approximate estimated amount)

Sl. No	Activities	Amount in rupees
1	Construction of road signs	3,00,000
2	Widening the canal and protection of the canal	10,000,000
3	Boat service/Boat jetty for the use of tourists	16,00,000
4	Home stay	
5	Beach/Park	3,975,000
6	Construction of roads on the side of back water and canal bank roads	26,100,000
7	Tourist information centre	2,00,000
8	Website	50,000
9	Look out area	10,00,000
10	Heritage museum	10,00,000
11	Elephant riding	10,00,000
12	Creating facilities for angling	5,00,000

CHAPTER 27
Transportation

This chapter details out the development proposals to be implemented in the transport sector with in a plan period of 20 years in Paravoor.

27.1 Proposed road net work

The major road network in Paravoor is aligned in such a way that it bye passess the CBD. Road in a four tier order are proposed in Paravoor (Figure 27.1).

Road classified as first order

1. Road from Nedungulam junction up to Paravoor railway over bridge (21 meter)
2. Road from Ollal railway cross upto Koonayil junction (21 meter)
3. Road from Kuttoor bridge up to Kappil bridge (21 meter)
4. Coastal road starting from Kollam up to Maniyankulam bridge(21 meter)
5. Road from Maniyamkulam bridge up to Kuttor bridge canal road (18 meter)
6. Maniyamkulam bridge to road up to Samajam junction via Sastham nada (18 meter). (The above road is a link road connecting Chathanoor Paravoor road and 21 meter wide coastal area).
7. Road from Ollal railway cross up to over bridge in Paravoor road. The width of the road is 18 meter.

Second order roads

The second order roads are roads to Paravoor junction as an extension of the first order roads. The proposed width of the road is 12 meter.

1. Road from Maniyamkulam bridge via Pampinthodi to Paravoor junction.
2. Road from Kuttoor bridge to Paravoor junction
3. Road from Ollal level cross to Paravoor junction
4. Road from Railway over bridge via - sastham nada ending in Paravoor Kayal (Parallel to railway line).
5. Road from Railway overbridge to Paravoor junction.

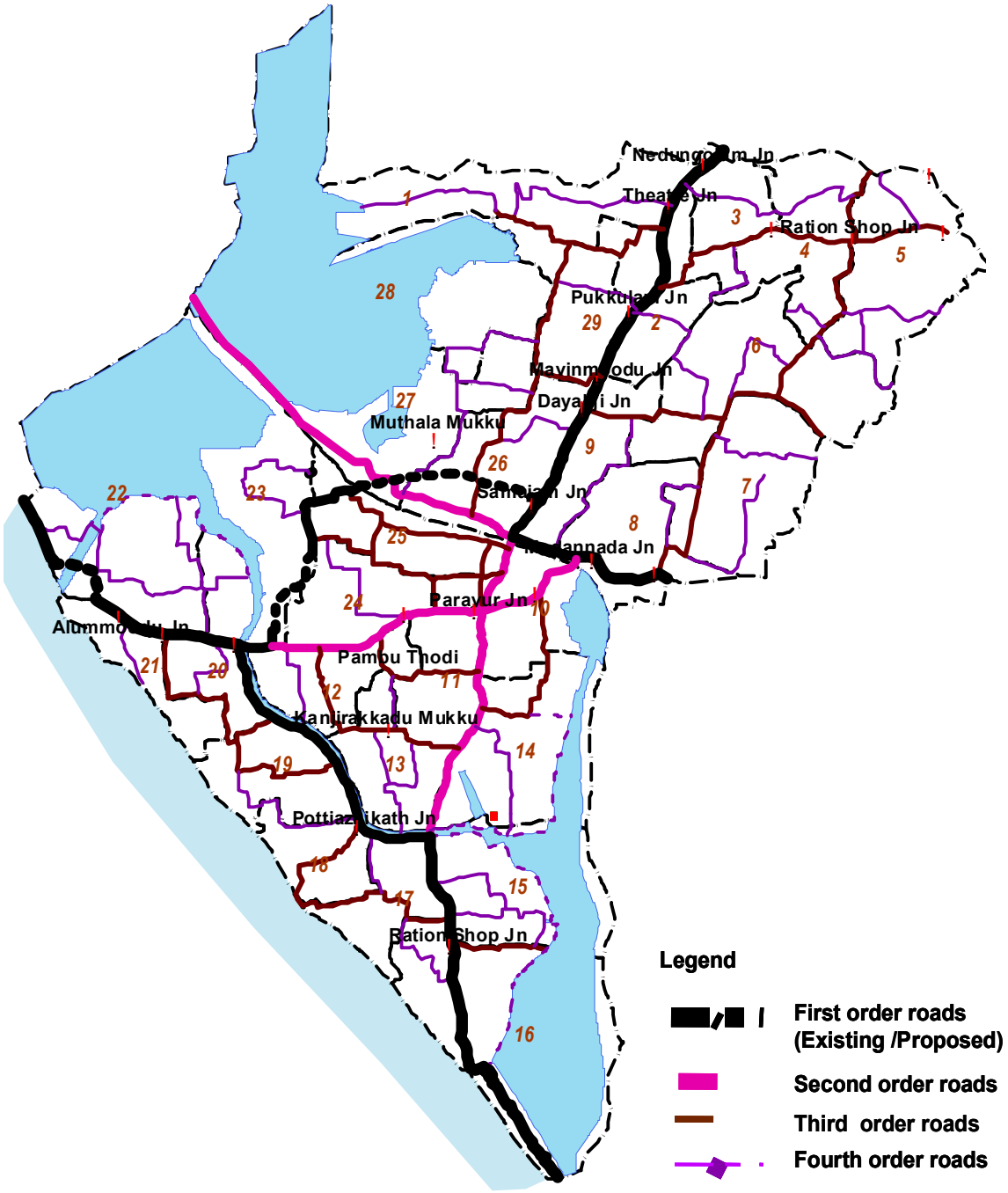


Figure 27.1 Proposed road net work

Roads proposed as third order

The proposed third order roads with a width of 8 meter.

1. Road from Vinayagar weavers junction via Parayil Kavu junction, Ration shop junction to Ozhukkuppara.
2. Road from Koonayil junction via Ayiravally temple, Chirayil temple, Ration shop junction upto Channanamoodu temple junction.
3. Road from Dayabji junction via Panayilkavu temple, passing through boundaris of ward 6 and 7 up to Paravoor Municipal boundary.
4. Road starting near theatre junction through the rear side of ITC and its continuation
5. Road starting from over bridge- Sasthamnada temple road and passing through Durga temple to Perumpuzha temple and its continuation.
6. Road from Mavinmoodu junction and ending in road number 5
7. Road starting after the over bridge and passing through the municipal office and parallel to railway station and ending in ring road.
8. Road starting from municipal office junction to Ayurveda hospital ending in Paravoor junction.
9. Road starting after municipal bus stand and crossing the road number 8 and ending in overbridge road.
10. Road starting from Puttingal temple junction and ending in ring road.
11. Road starting from Manchadimoodu junction and ending in Poorneswary temple junction in Paravoor-Kappil road.
12. Road from Ration shop junction in Paravoor-Kappil road up to backwater.
13. Road after Puthiyakavu temple passing through the boundaries of ward number 16,17 and passing through the rear side of Puthiyakavu temple up to coastal road.
14. Road starting from Pottazhikath junction up to coastal area.
15. Road starting from Thayyil temple junction in Paravoor - Maniyakam road via Kanjirakkada junction and ending in Paravoor Kappil road.
16. Road starting after Sastha temple and passing parallel to coastal area up to Padippura Veedu junction.

17. Road connecting Kuttoor bridge - Paravoor road and Maniyamkulam Paravoor road passing through boundary of ward number 11&12.

Roads included in fourth order.

1. Roads connecting 2nd & 3rd order roads and small junctions with each other are the fourth order roads. The width of this road is 5 meter. This is shown in the road network map.

27.2 Junction development plans

The junctions which require development are :

- ❖ Paravoor junction
- ❖ Kuttoorpalam junction
- ❖ Maniyamkulam palam junction
- ❖ Samajam junction

27.3 The roads which require detailed plans

- ❖ Maniyamkulam bridge - Sastham nada - Samajam junction road.
- ❖ Railway over bridge - Ollal level cross road
- ❖ Railway over bridge - Sasthamnada junction - backwater coastal road.

27.4 Other developments

1. Bus stand

A new bus stand is proposed by the side of Maniyamkulam bridge - Sastha nada - Samajam road & near Sasthanada. Two acres of land is proposed for this purpose.

2. Lorry stand / Taxi, Car stand

The existing bus stand is to be converted into lorry stand and taxi stand only. Bus bays are to be retained here. The buses starting from the new bus stand near, Sasthanada reach the bus bay via link road.

3. Auto booth

The Autorikshas in Paravoor junction may be parked in existing taxi stand area by the side of Paravoor - Chathanoor road. Some portions of the market may also be used for this purpose. Auto booth is proposed near the bus bay. It is suggested that a minimum of about 5 Autorikshas may be

parked here at a time. As the autos go for trips, autos from the designated auto parking area will come here and park.

The expenditure expected for the projects to be implemented in traffic and transportation sector are given in table 27.1.

Table 27.1 Transportation sector - proposed plan expenditure

Sl. No	Activities	Estimated amount in Rupees
1	Construction of first order roads	39,230,000
2	Construction of second order roads	40,42,000
3	Construction of 3rd order roads	20,240,000
4	Construction of local roads	53,402,000
5	Junction development plan	1,00,000
6.	Maniyamkulam bridge-Sasthamnada-Samajam junction road detailed alignment plan preparation	50,000
7	Railway over bridge –Ollal level cross detailed alignment plan	25,000
8.	Railway over bridge-Sasthamnada junction-back water coastal road detailed alignment plan preparation	25,000
9	Widening of railway over bridge near municipal area	50,00,000
10	Re-location of taxi stand, lorry stand in old bus stand area, Auto booth	50,000
11	Taking possession of the land for the proposed bus stand near Sastham temple and the construction of the busstand	11,200,000
12	Construction of railway over bridge in the link road near Sastha temple	100,000,000

Local roads which are proposed to be widened to 5 meters

1. Uzhavil road
2 Thekkumbhagam auditorium road up to Kadavu.
3. Thekkumbhagam market to road up to the Kadavu road.
4. Madannada to road up to Kottamoola.
5. Pottikazhikam junction to Parakkada palli road
6. Mankattazhikom temple to Attinpurath road.
7. Aravind theatre to Kumuth temple road.
8. Puthanmukkalavattom temple to Valiya Velichazhikom temple road.
9. Road starting from Veliveettil to road up to Attinpurathottu .
10. Pampinthodi junction to Mullazhi temple via Sastha temple road.
11. Road from Pozhikkara post office to Thanathum vathukkal temple road.
12. Road from Echantazhikom junction to Kottiyathu road up to house of K.C.Sir
13. Road from Damoola thodiyil to road up to Moonnumoola.
14. Road from Pozhikkara number .92 Anganvadi to road passing up to Primary Health Centre.
15. Road from Varukulam to Pozhikkara coastal road.
16. Clavara temple road.
17. Road from Moolavila junction to road up to Palavila junction
18. Mavila Kallumkunnu road.
19. Mavinmoodu junction to road via Kallumkunnu to Subhramanya temple road.
20. Road starting from Pookkulam junction to gas agency via Aquaseren road.
21. Road from Presanna theatre junction towards western side gas agency via road to Perumpuzha.
22. Punchirakkulam – Sajina junction (Deyabji road).
23. Road from Pookkulam junction to Perumpuzha temple road.
24. Road from Madan nada junction to Koonayil Munnazhimukku road.
25. Road from Ayiravally Lower Primary School to Chamavila temple road.
26. Road from Chamavila- Municpal library via Yela road.
27. Road from Koonayil ration shop to convent via Kodiyathi temple road.
28. Parayil kavu Vyasavidya mandir –Pookkulam road.
29. Road starting from reading room to Koonayil ration shop junction as the end of the road.
30. Koonayil – Ration shop junction road to road up to the boundary of Paravoor.
31. Durga temple to reading room road.
32. Kochalumoodu reading room road.
33. Road starting from Vinayakar – Ration shop road Parayil kavu junction to road up to Pookkulam.
34. Road from Channamoodu to Ozhukupara road.
35. Road starting from Nedungulam V.R hospital to Nedungulam ela.
36. Road passing through the bank of back water to Puthiya road (Kuttoor palam –Kappil).
37. Road starting from canal bank Puthiya road (Kuttoor palam –Kundarazhikam temple).
38. Road starting from canal bank Puthiya road (road starting from road 13 to Pozhikkara spill way road)

CHAPTER 28

Industries

In this chapter the projects to be implemented in industrial sector are detailed out.

The analysis of the economic base of Paravoor indicates that it has development potential in industrial sector, mainly in coir, fishing and technology based industries (Information technologies). Similarly small scale industries also have potential in Paravoor. A big boost is not expected in the coir sector of Paravoor. It is proposed to improve the existing situation in coir industry. The analysis shows that coir retting is not concentrated in an area but is transferred in to house holds. Concentration of coir industry is seen in Ollal area. This may be continued in future also. It is proposed to link coir sector and tourism sector to improve coir sector. Bangles, necklace, chain, pictures etc can be made out of coir for sale to tourists. Similarly foreign tourists may be given opportunities for observing the process of coir manufacturing. This will increase the income in coir sector from tourism activities.

1. Mini industrial estate.

It is proposed to establish a Mini industrial estate in Vinayar Weavers society area. It is suggested that Paravoor municipal council with the help of the small scale industrial development corporation, conduct the feasibility study for starting small scale industrial enterprises and select the prospective entrepreneurs to start small scale industries in Paravoor.

Infrastructure like buildings, internal roads, electricity lines, water supply facilities etc are to be developed for the mini industrial estate. It is proposed to start the mini industrial estate jointly by SIDCO and Municipal Council.

2. Information Technology Park.

The policy of the government in this regard is to start small scale IT park in all urban areas. In line with the policy it is proposed to start an IT park near Sastha temple in an extent of 12 acres of land which is to be acquired by the Municipality. The road to reach this area is to be widened.

3. Collection of Coconut husk with the help of Kudumbasree.

The analysis shows that the major problem faced by coir sector is shortage of raw material for the manufacture of coir and coir products. This is to be solved by collecting the raw material from house holds. The approximate number of houses in Paravoor Municipal area is 9000 and around two lakh coconut husk is available in one month. If half of this which will come to around one lakh coconut husks is collected at the rate of Rs 1/husk (50 paise for the owner, 50 paise for the person who is collecting the coconut husk) can fetch Rs.50,000 from collection alone. If a unit with 10 persons is formed for collecting coconut husk, income of Rs.5,000 will be obtained per month per person. It is suggested that the collection of coconut

husk may be entrusted with Kudumbasree unit and the facilities which are required for them may be given (Vehicle to collect coconut husk and to distribute it to the people who need the raw material) by Municipality.

4. Coir products

In the mini industrial estate proposed it is possible to start units for manufacturing of card board and fertilizer from coconut husk. A project may be started to manufacture souvenirs from coir fibre also.

The expenditure estimated for different project in the industrial sector are detailed in table 28.1

Table 28.1 – Industrial sector – Plan expenditure

Sl. No	Activities	Amount in Rs.
1	Mini industrial estate	1020000
2	IT Park	52500000
3	Collection of coconut husk through kudumbasree	300000
4	Coir Products	300000
5	Production of souvenir with coir as raw material	100000

CHAPTER 29

Education

The projects which are to be implemented in the education sector in Paravoor are detailed below.

The vision for education sector in Paravoor is to give priority to primary education. Based on the above vision the projects to be implemented in the education sector are detailed below.

29.1 Municipal library

It is proposed to start reading rooms in all wards with library facilities. To cater to the needs of higher education, a Municipal library may be started in Paravoor. The land adjacent to Paravoor Municipality, earmarked in the land use map as public use zone is to be utilised for this purpose.

29.2 Higher Secondary Level

From the analysis it is seen that more number of seats are needed in the Higher secondary level. KHS School may be upgraded to Higher secondary level, so that the number of seats may be increased by 100.

29.3 Improvement of infrastrucure facilities in Educational Institutes

The 10 schools functioning in Paravoor are to be provided with physical and Academic facilities to the desired level .The list of schools are given in Table 29.1

Table 29.1 Physical –Academic facilities required in schools

Sl. No	Name of school	Facilities required
1	Government L.P.S Paravoor	Computer room, furniture room, building re-construction
2	Government L.P.S Koonayil	Library facilities, compound wall
3	Government W.L.P.S Ozhukkupura	Compound wall, library, computer room
4	Government L.P.S Kottappuram	Library facilities, compound wall
5	Government U.P.S Kurumandal	Library, computer room, laboratory class room
6	Government U.P.S Paravoor	Play ground, library, laboratory furniture
7	Ayiravally U.P.S Koonayil	Compound wall, library, computer room
8	Government Higher secondary school Paravoor, Thekkumbhagam	Toilet facilities, roofs for the existing toilets, computer
9	S.N.V.G.H.S. Paravoor	Computer
10	K.H.S .Paravoor	Construction of new building

CHAPTER 30

Health

The projects which are to be implemented in Health sector are detailed in this chapter.

In the Integrated District Development Plan for Kollam, Paravoor is classified as a 3rd order settlement. Paravoor have to function as a service area providing higher level of facilities to the surrounding panchayat. The health facilities are to be decided based on the population of surrounding panchayats. It is assumed that from the surrounding panchayat 1/3 of the population may depend for the facilities available in Paravoor. Thus the estimated population is as given below.

Population depending Paravoor for

health facilities available in Paravoor = The population of Paravoor + 1/3 population of (Mayyanadu + Bhoothakkulam + Chirakkara)

= **75000 persons**

Number of beds avalable in Ramarao hospital, Nedungulam is only 55. According to the planning standards, for a population of 75,000 atleast 100 bedded hospital should be there.

Ayurveda and Homeo systems of medicine are fast growing and getting more acceptance among the people. It is proposed to provide the required buildings and other facilities by Ayurveda & Homeo sector in Paravoor. The vision for the health sector is to provide facilities in the three systems of medicines (Alopathy, Ayurveda, Homeo) to the people of Paravoor and of surrounding Grama Panchayats.

1. Hospital complex

The major proposal in the health sector in Paravoor is to start a hospital complex in 4.5 hectare of land now owned by Nedungulam Ramarao hospital. All the three systems - Alopathy, Ayurveda and Homeopathy can work together here. Laboratory, medical store, ambulance facilities, drinking water, canteen and other infrastructural facilities may be provided commonly. For all this the estimated cost is nearly Rupees 2 crores.

2. Health survey

In the urban area, life style of people have created diseases like hypertension, diabetes, heart attack, cholesterol etc. Always people are approaching specialised medical treatment after the diseases become very serious. If the above diseases are identified at an early stage then complications in treatement can be reduced considerably and a healthy generation can be created in Paravoor. It is proposed to create awareness among the people about the new life style diseases

and all the people above 30 years be examined for their general health with the co-operation of Health department of Kerala. For this an estimated cost of Rupees 3 lakhs is expected.

The estimated expenditure for Health sector in given in Table 30.1

Table 30.1 The estimated expenditure for activities proposed in Health sector.

Sl .No	Activities	Amount in rupees
1	Hospital complex	20000000
2	Health survey	300000

CHAPTER 31

Drinking Water and Waste Disposal

Almost all the houses depend on local source (well water) for water. The drinking water sector of Paravoor is to be approached keeping the potential of local resources in mind.

31.1 Drinking water

The population expected in Paravoor by 2021 is 42897. Taking wells as one source of water, quantity of pipe water to be distributed per day is calculated as 75 liters (per capita water requirement for daily use is generally taken as 135 liters) Common purpose and commercial purpose require another 50 litres per capita per day. So pipe water to be distributed per day is 125 liters/person.

Water to be distributed per day in Paravoor through pipe water supply	=	42797 x 125 = 53.5 lakh liter
Quantity of water distributed presently	=	25 lakh liter
Balance	=	28.5 lakh liter

The Akathu Kayal can be considered as a future source of water in Paravoor if conserved properly. It is proposed to repair the sluice valve at Pozhikkara to stop intrusion of salt water to Paravoor Kayal. This will make Paravoor back water a major source of water in Kollam District.

1. Drinking water project

The Akathu Kayal in Paravoor may be converted to an important source of water. The conservation of this water body may be given high priority. A pump house , water purification plant (Near Akathu Kayal) storage tank etc is required for the above drinking water .project. These projects may be implemented by the water authority.

2. Pozhikkara sluice valve repair and maintenance

It is proposed to repair the Pozhikkara sluice valve and thus prevent salt water intrusion in to the Paravur Kayal. The expenditure for the implementation of projects in drinking water sector is given in table 31.1

Table 31.1 – Drinking water- Project implementation expenditure

Sl. No	Activity	Amount in rupees
1	Drinking water project	21500000
2	Maintenance and repair of Pozhikkara sluice valve	1000000

31.2 Waste disposal

Waste water disposal project

The analysis in Paravoor Municipal area shows that for the disposal of waste water 99% of houses are using septic tank or pit latrine. In colonies there are no waste water disposal arrangement facilities. In Paravoor average plot size is approximately 25 cents to 50 cents, so it can be assumed that in future also septic tank as a method of waste disposal will be continued.

Due to the presence of two back waters, sea coast and elevated land, drainage of rain water is generally good in Paravoor. However in the CBD area of Paravoor scientifically planned drainage system for disposal of storm water is to be provided. For this it is proposed to construct drains on the sides of roads and the water thus collected may be treated in primary treatment plant which is to be established near Manchadimukku. This is shown in figure 31.1

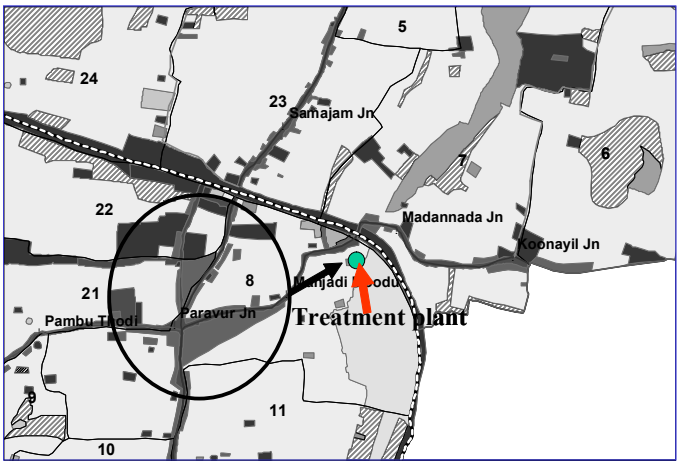


Figure 31.1 - Waste water disposal projects

2. Solid waste disposal project

The Municipality have started taking actions for proper solid waste disposal. In ward 5, about 0.11 hecter of land has already been taken in possession by the Municipality. A biogas plant is proposed in ward number 12, for treating solid waste generated from highly populated wards (11 to 23) and from tourist destinations. For this purpose approximately 5 cents of land may be taken in possession by the Municipality in ward number 12 (Figure 31.2). The expenditure required for the implementation of the projects for waste disposal sector is given in Table 31.2

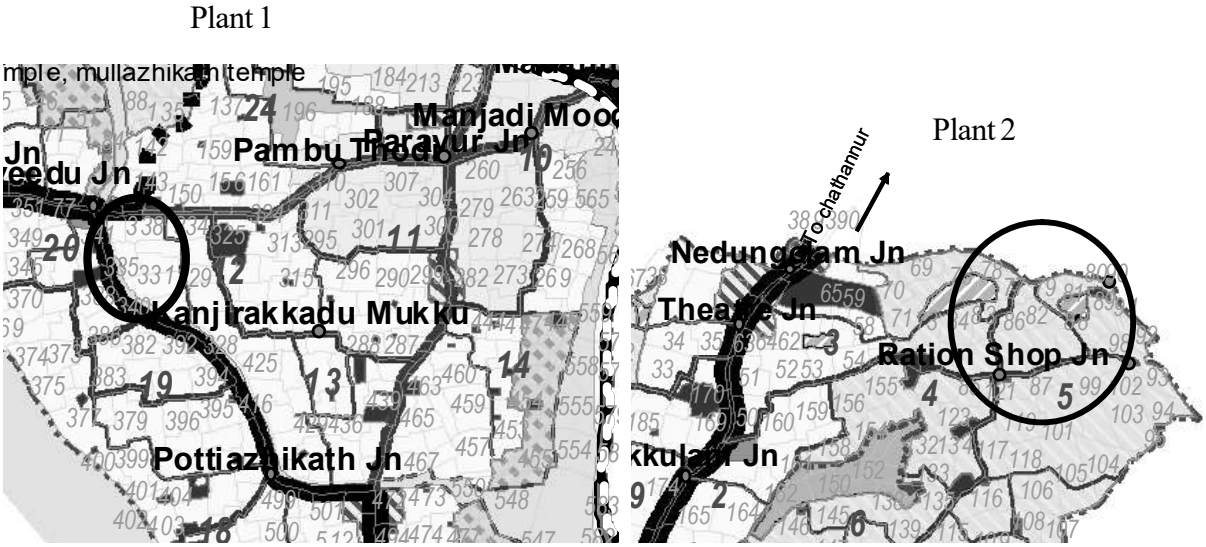


Figure 31.2 Solid waste disposal - Proposed sites

Table 31.2 Waste disposal projects - Estimated expenditure

Sl.No	Activity	Estimated amount in rupees
1	Waste collection and disposal	6000000
2	Drainage facility in CBD area	5000000

CHAPTER 32

Trade and Commerce Sector

Nedungolam, Thekkumbhagam and Pozhikkara subcentres are to be developed as a subsidiary to the CBD area of Paravoor. The above subcentres are intented to de-centralise the commercial activities in Paravoor. At the same time the CBD area may be made free of the existing problems there. The proposals for the trade and commerce sector in Paravoor municipal area are detailed in this chapter.

1. Preparation of detailed Town planning scheme

The extent of CBD area of Paravoor is around 14.5 hector. In this area around 240 number of small scale and medium scale establishments are functioning. The existing land use in the CBD reveals that most of the commercial development is along the road side, where as the interior portions remains under developed. This necessitates a detailed Town Planning Scheme for the area of Paravoor to have optimum utilisation of land.

2. Expansion of market

The existing market may be developed in a planned way also by taking possession of the land adjacent to market for open market and some other remunerative schemes.

3. Bus bay

A bus bay is to be constructed near the existing bus stand for parking of buses to CBD area and going from CBD area.

4. Taxi stand / Lorry stand

.This is detailed in transportation section

5. Auto booth

This is detailed in transportation section

6. Development of subcentres at Nedungolam, Thekkumbhagom and Pozheekkara

Facilities like parking area, drainage, collection and disposal of solid waste, public markets etc to be provided at these subcentres. An amount of Rupees 5 lakhs is earmarked for the development of one subcentre.

The expenditure for the implementation of trade and commerce sector is detailed in Table 32.1

Table 32.1 – Trade and commerce sector - Estimated expenditure

Sl. No.	Activities	Expenditure in rupees
1	Preparation of detailed Town planning scheme	100000
2	Expansion of the market	2900000
3	Bus bay	20000
4	Taxi stand/Lorry stand	50000
5	Auto booth	50000
6	Development of subcentre	1500000

CHAPTER 33

Slums

There are five listed slums and 15 backward housing areas in Paravoor. The projects which are to be implemented in the above slums are detailed in this chapter.

1. Varukulam colony renovation

It is recommended to issue Pattayam (lease) to the Varukulam colony residents. Steps may be taken at higher level for speedy implementation of issue of Patta. It is proposed to construct moderate houses to the residents of the colony. For this necessary financial assistance may be given. In this colony, where sanitation facilities are not available, latrines may be provided for each house at the same time septic tanks may be provided at a common area. Bio gas plant shall be installed near to common septic tank. Bio gas can be utilized for lighting the street light.

2. Charuvila -1 Colony renovation

It is proposed to take necessary steps to provide moderate housing accommodation by replacing the sub standard houses. In this colony the inadequacy of the sanitation facilities may be rectified.

3. Yekshikkavu (Vietnam) colony renovation

The substandard houses may be replaced by moderate houses in this colony. The inadequacy of sanitation facilities may be rectified. Internal roads may be constructed to facilitate travel by the residents of the colony.

4. Pulikkulam colony renovation

Provide moderate housing accommodation instead of the sub standard houses in this colony. The pond near the colony shall be cleaned and protection walls constructed.

5. Peralthodi colony renovation

Internal roads shall be constructed for travel facility in the colony. Bore wells shall be constructed for distribution of drinking water to the residents of the colony.

6. Muthalakkulam renovation

Bore well shall be constructed for distribution of drinking water in this colony.

7. Punchirakkulam colony renovation

The sub standard houses may be improved by the appropriate agency. Sanitation facilities and its inadequacy may be rectified.

8. Vettikkunnuvila colony renovation

In this area the people who have no houses shall be provided with moderate housing accommodation. The sub standard houses may be improved and bore well for providing drinking water shall be provided.

9. Malakayal colony renovation

The sub standard houses may be improved in this colony and drinking water projects shall also be implemented.

10. Colonies which are included in "A" Grade

In the colonies of Charuvila -2, Parakkulam ,Parakkulam Parayilkavu , Koonayil one lakh houses, the drinking water shortage may be solved, the sub standard houses in Pandarathu Vadakkethodi colony may be improved, the infrastructural facilities of Pannikkulam colony shall be improved. Table 33.1 gives the details of the renovation works in colonies of Paravoor Municipality with approximate cost estimate.

Table 33.1 The details of renovation - estimated expenditure

Sl. No	Activities	Amount in rupees
1	Varukulam colony renovation	2250000
2	Charuvila -1 colony renovation	595000
3	Yekshikkavu (Vietnam) colony renovation	2255000
4	Pulikkulam colony renovation	850000
5	Peralthodi colony renovation	350000
6	Muthalakkulam colony renovation	100000
7	Punchirakkulam colony renovation	600000
8	V ettikkunnuvila colony renovation	300000
9	Malakkayal colony renovation	210000
10	A grade colonies renovation (Charuvila, Parakkulam, Parakkulam-Parayil kavu, Koonayil one lakh colony, Pandarathu vadakkethodi, Pannikkulam)	530000

CHAPTER 34

Other Infrastructural Facilities

In this chapter the infrastructural facilities proposed in Paravoor Municipal area are detailed.

1. Janbhavan:- The analysis shows that most of the Government offices are functioning in rented buildings. It is proposed to construct Janabhavan to accomodate the Government offices functioning in Paravoor wtih in one building. For this purpose the area within Government Ayurveda Hospital can be utilized.

2. Town Hall:- For the construction of Town hall the land available near the Municipal office having an extent of 0.33 hectare may be taken possession. The Municipal library is also proposed in this area.

3. Stadium:- Land near the link road having an extent of 3.5 hectares may be utilized for construction of stadium and open ground. This shall be taken as a municipal project.

4. Cremation ground:- For the construction of cremation ground 0.22 hectares of land in ward number 7 has been taken in possession by the Municipal council. Steps may be taken to construct cremation ground.

Table 34.1 shows the approximate expenditure for implimenting other infrascture facilities

Table 34.1 Other infrastructure facilities

Sl.No	Activities	Amount in Rs.
1	Construction of Janabhavan	10000000
2	Construction of community hall	10000000
3	Construction of stadium	20000000
4	Construction of cremation ground	20000000

CHAPTER 35

Environment and Heritage Area

Water bodeis, sacred groves and paddy fields are included in the environmentally important areas. The Puttingal Devi temple and Pozhikkara Devi temple are included in the heritage significant areas. The vision for this sector is to protect environmentally important areas and heritage area.

35.1 Environmentally important areas

1. Paddy fields

The analysis shows that the paddy field and its surrounding areas act as storage basins for rain water. The ground water table can be raised. Around 92% people are depending for drinking water on the wells existing in Paravoor urban area. So the protection of wells in these areas is an urgent necessity.Paddy fields so the paddy fields collect water and are controlling the flood situation in Paravoor Municipal area. Therefore the paddy fields which are to be conserved are detailed below.

- ★ Clavara paddy field
- ★ Koonayil paddy field
- ★ Pandarathil paddy field
- ★ Pasuman paddy field
- ★ Elakkulam paddy field.

These paddy fields are suitable for paddy cultivation which may be continued in future also. Hence they need to be protected.

2. Coastal area

Construction on coastal area may be regualted based on C.R.Z. norms. It is proposed to construct sea wall in coastal area near Malappuram mosque upto 200 meter length and protect the coastal area from errosion problems.

3. Backwaters

The coast of back waters may be demarkated clearly and bamboos may be planted in this area. The Bamboo protects the banks of back water from land slides. A 5 meter wide coastal road is proposed on the banks of Paravoor back water and Nadayara back water (Figure 35.1). It is proposed to plant bamboos on the side of coastal roads also. This may protect the back waters and reduce encrochment.

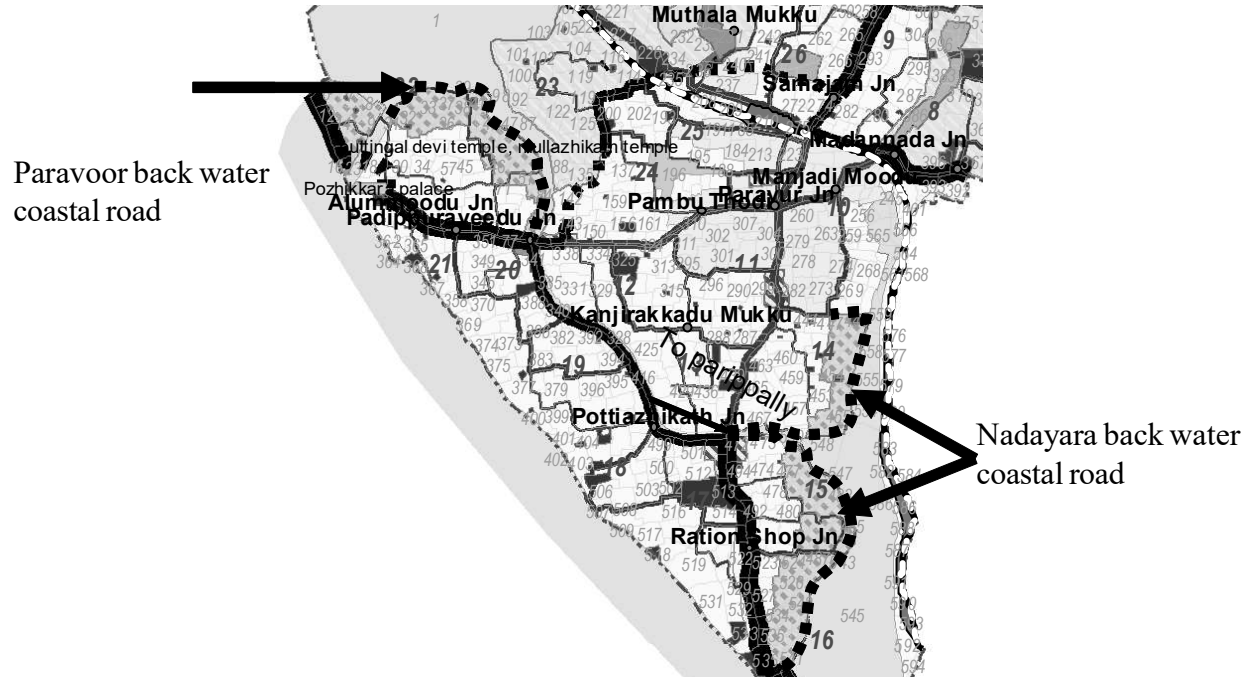


Figure 35.1 Back water coastal roads

4. Akathu Kayal

The land in between the Akathukayal and the roads surrounding it is to be declared as a 'no construction zone'.

5. Sacred grooves

Ayiravally sacred grooves may be protected. Any construction which would threaten the sacred groove may be restricted and banned.

35.2 Heritage significant areas

The Pozhikkara Devi temple and Puttingal Devi temple are the two heritage significant temples which are centuries old. For protecting these two temples and retaining the importance of the temples, construction may be restricted to a height of two floors in the area of nearly 50 meters from the temple premises, .

PART - VI

FINANCE, DEVELOPMENT ADMINISTRATION AND PHASES OF DEVELOPMENT

CHAPTER 36

Finance -Development Administration and Phases of Developments

In this chapter the approximate expenditure for implementation of development proposals, the departments which are to be functioned in an integrated manner and the time period required for implementation of the development proposals are detailed.

36.1 Finance and development administration

The expenditure required for implemention the development proposals and the departments which are to be functioned in an integrated manner are detailed in table 36.1

Table 36.1 Development expenditure, implementation by departments.

Approximate expenditure for different activities								
Sl.No:	Project Proposals	Taking Possession of land	Land developm ent	Construction	Infrast-structural facilities	Others	Total in Rs.	Participating department in development
1	2	3	4	5	6	7	8	9
I	Agriculture sector							
1	Agricultural Labour bank					25000	25000	Municipal council of paravur, Agri dept
2	Co-operative of cultivators Agriculture					1000000	1000000	"
3	Comprehensive dry land					100000	10000	"
4	Agriculature ancilery activity development	600000	200000	2500000	2500000		11200000	"
5	Irrigation facilities			1000000			2000000	Irrigation department
6	Pozhikkara sluice valve repair					1000000	1000000	"
	Total						15235000	
II	Animal husbandry sector							
1	Small scale diary farms					250000	250000	Municiaplity,Animal husbandry dept, Private
2	Agriculture ancillary development	It is included in the agriculture sector						Municipality Animal husbandry dept

3.	Duck farms					100000	100000	Muncipality Animal husbandry department,private enterpreneurs
4	Poultry farms					100000	100000	Private enterpreneurs
5.	Broiler chicken					100000	100000	"
6.	Fish landing centre			5000000			5000000	Fisheries depart ment port depar tment
7.	For storing the equipments for fishing shed			1500000			1500000	Fisheries depa rtment
8.	Stock centre			150000			150000	"
9.	Construction of artificial reef					200000	200000	"
10.	Protection of inland ponds			500000			500000	"
	Total						**7900000**	
III	Tourism sector							
1	Construction of land mark			300000			300000	Muncipality, Tourism department
2	Widening the canal and protecting the canal			10000000			10000000	Irrigation department
3.	Operating the boat service for tourist/boat jetty			1000000			1000000	Municipality,Tourism department
4.	Home stay							Port department Tourism departmeent Private enterprneur
5	Beach/Park	3750000	125000				3975000	Municipality,Tourism department
6.	Coastal road /canal	20000000	600000	500000			26100000	"
7.	Tourist information centre				200000		200000	Tourism department
8.	Web site					50000	50000	Municipality,Tourism department
9.	Look out area			1000000			1000000	"
10.	Heritage museum			1000000			1000000	"\
11.	Elephant ride					1000000	1000000	Private enterprener
12.						500000	500000	Municipality, Tourism department
	Total						**45725000**	
IV	Transportation sector							
1	Construction of first order roads(11330 mt)	27000000	900000	11330000			39230000	Public works depaartment(Roads)
2.	Construction of 2nd order roads (4042mt)			4042000			4042000	"
3	Construction of 3rd order roads			20240000			20240000	"
4.	Construction of local roads (32323mt)	20400000	680000	32322000			53402000	Municipality

5.	Junction improvement schemes					100000	100000	PWD(Roads)
6.	Preparation of detailed plan for the road Maninyamkulam bridge Sasthanada-Samajam junction					50000	50000	Municipality,Town and country planning department
7.	Preparation of detailed plan for the road Railway over bridge-Sasthanada junction -back water coastal road					25000	25000	"
8.	Construction of railway over bridge near sastham temple					100000000	100000000	Railway
9.	Preparation of detailed plan for Railway over bridge-Ollal level cross					25000	25000	Muncipality,Town and country planning department
10.	Procedures to be taken for widening the railway overbridge near Muncipal office			500000			500000	Railway
11.	Re-locating taxi stand, Lorry stand to the old bus stand area Action to be taken to establish auto booth					50000	50000	Muncipality
12.	The area near Sastham temple are to be taken possession to start the construction of Bus stand	6000000	200000	5000000			11200000	"
	Total						**233364000**	
V	Industrial sector							
1.	Mini industrial Estate		200000	10000000			10200000	SIDCO,Muncipality
2.	IT Park	36000000	1200000	10000000	5000000	300000	52500000	Muncipality IT Department,Private enterpreneur
3.	Collection of coconut husk through Kudumbasree							Municipality coir co-operativesociety
4.	Coir products					300000	300000	"
5.	Manufacturing of souvenier with coir					100000	100000	"
	Total						**63400000**	
VI	Health sector							
1	Hospital complex	20000000					20000000	Muncipality, Health department
2.	Health survey					300000	300000	"
	Total						**20300000**	
VII	Drinking water							
1	Drinking water project						21500000	Muncipality,water authority
2.	Pozhikkara sluice valve repair					1000000	100000	Irrigation depart ment
	Total						**22500000**	
VIII	Solid waste collection and processing							
1	"					6000000	6000000	Muncipality
2.	Liquid waste disposal in CBD area					5000000	5000000	"

	Total						11000000	
IX	**Trade and commerce sector**							
1	Preparation of detailed town planning scheme	This is included in the traffic and transportation sector						Muncipality,Town and country planning
2	Expansion of market	300000	100000	2500000			2900000	Municipality
3	Bus bay	This is included in the traffic and transportation sector						
4	Taxi stand/Lorry stand	This is included in the traffic and transportation sector						"
5	Auto booth	This is included in the traffic and transportation						
6	Development of subcentres			"			1500000	"Municipality
	Total						2900000	
X	**Colonies and substandard housing areas**							
1	Renovation of Varukulam							
	Colony					2250000	2250000	Municipality
2	Renovation of Charuvial 1							
	colony					595000	595000	"
3	Renovation of Yekshikkavu							
	(Viatnam)Colony					2255000	2255000	"
4	Renovation of Pulikkulam							
	colony					850000	850000	"
5	Renovation of Peralthodi							
	colony					350000	350000	"
6	Renovation of Muthalakkulam							
	colony					100000	100000	"
7	Renovation of Punchirakkulam							
	Colony					600000	600000	"
8	Renovation of Vettikkunnuvila							
	Colony					300000	300000	"
9	Renovation of Malakkayal							
	Colony					210000	210000	"
10	Renovation of A							
	colonies					530000	530000	"
	Total						8040000	
XI	**Other infrastructure**							
1	Construction of Janabhavan					10000000	10000000	Municipality
2	Construction of community hall					10000000	10000000	
3	Construction of stadium					20000000	20000000	"
4	Construction of cremation ground					2000000	2000000	
	Total						42000000	

36.2 Phases of Development

The proposals given in the development plan is envisaged for a perspective period of 20 years. The implementation of the development plan in different plan period are given in schedule 36.2

Table 36.2 Plan implementation - Phases

Sl.	Plan Proposals	First 5 year	5 to 10 years	10 to 15 years	15 to 20 years
1	2	3	4	5	6
1	**Agricultural sector**				
1	Agricultural cultivators bank	Completion of Plan proposal			
2	Cultivators cluster, Agricultural implements bank	"			
3	Comprehensive dry land cultivation plan	"			
4	Agriculture -Allied activity development centre	Taking possession of land	Completion of palan proposal		
5	Irrigation facilities	Preliminary activities	forming a net work for irrigation facilities		
6	Sluice valve repair	Completion of plan proposal			
II`	**Animal husbandry sector**				
1	Small scale diary farms	Completion of plan proposal			
2	Agriculture and allied sector development centre	Taking possession of the land	Completion of plan proposals		
3	Duck farms	Completion of plan proposals			
4.	Layer farms	"			
5.	Poultry farms	"			
6.	Fish landing centre	Priliminary activities		Completion of plan proposals	
7.	Construction of shed for keeping the fishing equipments	Taking possession of the land	completion of plan proposals		
8.	Stock centre		"		
9.	Construction of artificial reef	Completion of plan proposals			
10.	Protection of inland ponds	completion of plan proposals			
III	**Tourism Sector**				
1	Construction of land mark	Completion of plan proposals			

2.	Widening of the canal protecting	Taking possess-ion of land	Completion of plan proposals		
3	Construction of boat jetty and conducting boat service for tourists		"		
4.	Home stay		"		
5.	Beach/Park	"	"		
6.	Backwater coast roads/canal bank roads	"	"		
7.	Tourist information centre	Priliminary activities	Taking possess ion of land	Completion of plan proposals	
8.	Web site		Completion of plan proposals		
9.	Look out area		"		
10.	Heritage musium	Taking possessi-on of land	"		
11	Elephant ride		"		
12.	Fishing by here		"		
IV	**Transportation Sector**				
1	Construction of first order roads (1131mts)	Priliminary activities	Priliminary activities	Taking posse ssion of land	Completion of plan proposals
2.	Construction of 2 nd order roads (4042 mts)	"	"	"	"
3.	Construction of 3rd order roads (20240 mts)	"	"	"	"
4.	Construction of local roads (32323 mts)	Completion of land proposals	Completion of land proposals	Completion of land proposals	
5.	Junction improvement projects	Priliminary activity	Taking possess ion of land	"	
6.	Preparation of detailed plan for Maniyankulam bridge-Sasthanada - Samajam road	Completion of plan proposals			
7.	Prepartion of detailed plan for the road Railway over bridge-Sastha nada jun.-backwater coastal road	"			
8.	Construction of Railway overbri dge near Sastha temple	Priliminary activities	Priliminary activities	Taking posses sion of land	Completion of paln progress
9.	Preparation of detaled plan for Rail way over bridge-Ollal level cross	Completion of plan proposals			
10.	Procedures to be taken for widen ing the railway over bridge near Municipal office			Priliminary activities	"

11.	Re- locating taxi stand, lorry stand area. Action to be taken to establish Auto booth	Priliminary activities	Priliminary activities	Taking posses sion of land	Completion of plan progress
12.	The area near Sastham temple are to be taken possession to start for the construction of bus stand	"	"	"	"
V	**Industrial Sector**				
1	Mini industrial estate	Priliminary activities	Completion of plan proposals		
2.	IT Park	"	"		
3.	Collection of coconut husk through Kudumbasree	Completion of plan proposals			
4.	Coir Products	Priliminary activities	"		
5.	Manufacturing of sovaneer with coir	"	"		
VI	**Health Sector**				
1	Hospital complex	Priliminary activities	Priliminary activities	Completion of paln prposal	
2.	Health survey	Completion of plan prposal			
VII.	**Drinking water**				
1	Drinking water facilities	Priliminary activities	Completion of plan proposals		
2.	Pozhikkara sluice valve repare	Completion of pland proposals			
VIII	**Solid waste collection and processing**				
1.	Solid waste collection and processing	Completion of plan proposals	Completion of plan proposals		
2.	Liquid waste disposal in CBD area				
IX	**Trade and commerce sector**				
1	Preparation of detailed Town Planning Scheme	Completion of plan proposals			
2.	Expansion of market	"			
3.	Bus bay	"			
4.	Taxi stand / Lorry stand				Completion of plan proposals
5.	Auto booth				"

X	**Colonies and sub standard housing areas**				
1	Renovation of Varukulam colony	Completion of plan proposals			
2	Renovation of Charuvial-1Colony	"			
3.	Renovation of Yekshikkavu (Viatnam)	"			
4.	Renovation of Pulikkulam colony	"			
5.	Renovation of Peralthodi colony	"			
6.	Renovation of Muthalakkulam Colony	"			
7.	Renovation of Punchirakkulam colony	"			
8.	Renovation of Vettikkunnivila colony	"			
9.	Renovation of Malakkayal colony	"			
10.	Renovation of A grade colonies		Completion of plan proposals		
XI	**Other infrastructure facilities**				
1	Construction of Jana bhavan	Priliminary activities	Priliminary activities	Completion of plan preparation	
2.	Construction of community hall	"	Completion of plan preparation	"	
3.	Construction of stadium	"	Priliminary activities	"	
4.	Construction of cremation ground	"	Completion of plan preparation		