ACKNOWLEDGEMENT

The revision of Development plan for Malappuram town was taken up by the end of the year 2009, following the direction of the Government and felt need of the Municipality, by the reaching of horizon year of the existing master plan and changes in development planning process brought forward by the 74th Constitutional Amendment and the subsequent state legislations. A methodology was evolved for the preparation of development plans at the state level and the same was adopted with suitable modifications at the town level. People participation has been a crucial element in the methodology. The development plan once sanctioned shall give directions to the development process in the municipality for years to come. Suitable provisions for monitoring and review of the development plan is inbuilt.

We have heavily relied on statistical data from various development departments. Their readiness to share the data is gratefully acknowledged. The collection of data and analysis would not have been possible without the active involvement of Spatial Integration Committee under the Chairmanship of the Municipal Chairmen, Sri.Kiliyamannil Yakkoob and Sri.K.P.Musthafa. The contributions made by Sri.V.Abdul Razak, Town Planner (Rtd) as resource person in the Spatial Integration Committee is also gratefully acknowledged. The unique leadership provided by Sri.Eapen Varughese, Chief Town Planner has been a constant source of inspiration. Sri.G.Mohanan and Sri.P.Anil Kumar, Senior Town Planners gave necessary directions. The resourcefulness of Sri.Jacob Easow, Senior Town Planner, Smt.Ushakumari P.R., Town Planner and Sri.Baiju K., Deputy Town Planner of the State Project Cell has been a constant guidance throughout the project. The other staff members of the State Project Cell and Office of the Chief Town Planner, especially Smt.Leelitty Thomas, Assistant Town Planner, have been highly helpful in giving various inputs for the project.

Sri.K.M.Gopakumar, Sri.V.K.Mohandas and Sri.V.A.Gopi contributed to the work as District Town Planners during the currency of this project. The assistance offered by the statistical wing of this office and Smt.Jamsheera C.P., Planning Assistant is remarkable. The efforts put in by Sri.Saheer Poovanthodi and Smt.Sini G. Nair, Town Planning Surveyors for the preparation of the report needs special mention. Smt.K.Vijayalakshmi, Statistical Assistant of this office has illustrated this report. This gesture, beyond the call of duty is highly appreciated. All the staff members of the District Town & Country Planning Office need to be specially acknowledged for their keen participation in various stages without which this work would not have been completed in the present form and time frame.

K.V.Abdul Malik
Town Planner
Town & Country Planning Office, Malappuram

Malappuram
16th November,2011

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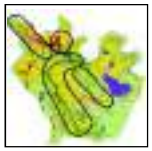


PREFACE

Rapid urbanization evident in the state has been the result of unbridled urban sprawl and population explosion rather than enlargement of production base and the related economic development. Anthropogenic threats to the environment due to this trend of widespread urbanization occupying a large percentage of the state's landed resources are not fully comprehended by the civil society. Limiting the ecological and physical footprints of urbanization to an environmentally sustainable level is crucial for the overall development of the state both in terms of environmental quality and economic sustenance.

The 74th Constitutional amendment and subsequent state legislations have put forward a paradigm shift in the development planning process. The focus has shifted from physical planning to spatial planning for economic development. The inclusiveness of the development process is another important consideration in the nation at present. The Planning Commission, Government of India, in the Approach to 12th Five Year Plan, articulated this view by saying *"Urban planning cannot be limited to spatial allocations and engineering solutions: It must encompass and connect various socio-technical considerations too"*. The development plan has multiple objectives in this backdrop – to ensure efficiency of built form of the town so as to augment economic development, facilitate inclusive and faster development by the impetus given to various sectors of economy and put in place a regulatory mechanism for limiting the anthropogenic threats to the scarce environmental resources, keeping the demands of development well within the carrying capacity of our precious environment.

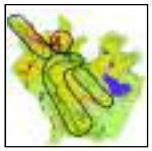
The first development plan for the town was sanctioned by the Government on 24th May, 1990 vide G.O. (Ms)No.74/1990/LAD. The development plan is in force at present. Considering the changes in direction of growth during this 20 years and the shift in the planning process, revamping of this development plan was felt, especially since the development plan shall reach its horizon year during the year 2010. The Government has ordered preparation of development plan for Malappuram town afresh along with 32 other towns vide G.O.(Rt) No.3982/2008/LSGD dtd 13th November,2008. Considering the time required for the preparation of the development plan anew and the difficulties being faced by the people of the municipality with the outdated development regulations, the Government has issued a variation of development regulations vide G.O.(Ms)no.7/2010/LSGD dtd 14th January,2010 as an interim measure.

I take this opportunity to appreciate the officials of the Malappuram district office of the Department, especially Sri.K.V.Abdul Malik, Town Planner and Smt.Isha P.A., Deputy Town Planner in the preparation of this document. The State Project Cell played anchor role in this regard, right from conceptualization to completion. I also appreciate the consistent efforts of Sri.Jacob Easow, Senior Town Planner, Smt.Ushakumari, Town Planner, Sri.Baiju K, Deputy Town Planner and other officials of the State Project Cell. I also appreciate the officials of the circle headed by Sri.P.Anil Kumar, Senior Town Planner for their efforts in vetting and finalizing the development plan for Malappuram town.

Certainly, the development plan for Malappuram will provide a frame work for development of the town for years to come.

Eapen Varughese
Chief Town Planner
Town & Country Planning Department
Government of Kerala

16th November,2011
Thiruvananthapuram



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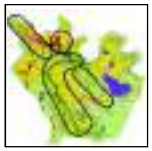

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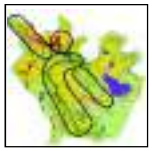

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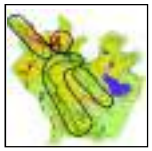
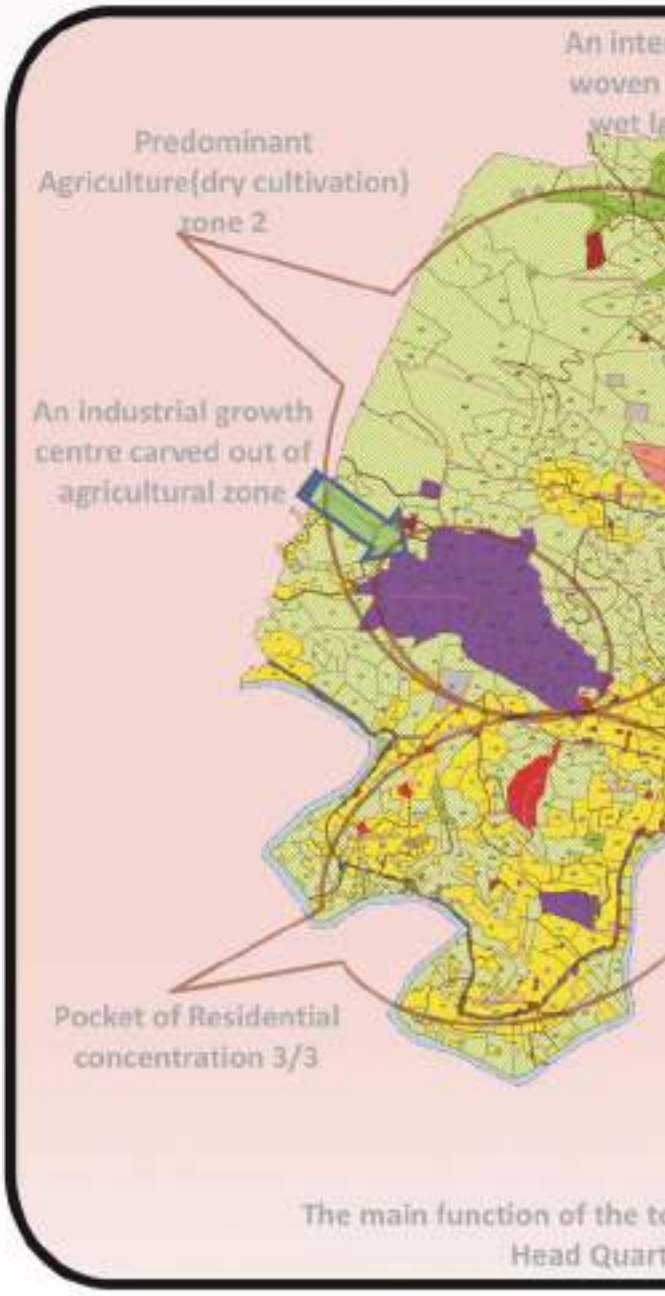






DEVELO
MALAPPU

DEVELOPMENT PLAN
FOR
MALAPPURAM TOWN 2030

Prepared by
THE DEPARTMENT OF TOWN AND COUNTRY PLANNING,
GOVERNMENT OF KERALA

Published by
THE MALAPPURAM MUNICIPALITY
January 2012

FOREWORD

The Malappuram municipality has come forward by leaps and bounds for the last few years right from a third grade panchayat in the early sixties to a district head quarters by 1970. The town has seen number of institutions being set up and investments in various commercial ventures and infrastructure. The town has immense potential to be a regional centre with its District head quarters' status. The economy of the town is robust but this is not being reflected in the finances of the municipality, preventing the municipality from undertaking the infrastructure development and other service delivery to the desirable extent. The efforts of the various development departments in this regard are mostly compartmentalized and we need people's participation to greater extents in identifying and solving the problems faced by the common man.

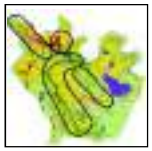
The town has a development plan in operation since 1990. The plan has outlived its natural scope and needs total revamping considering the changes in mindset, investments, needs of the people, public aspirations, economic realities etc.

The town needs an integrated approach to development encompassing the plethora of issues whether it is in infrastructure, environmental conservation, service delivery in various social sectors etc. The Town & Country Planning Department under the notable leadership of Sri.Eapen Varughese, Chief Town Planner to the State has come forward for the preparation of a comprehensive development plan taking the ground realities into consideration. I appreciate the efforts put in by the officials of the Town & Country Planning Department who has prepared this development plan through a process of people's participation, carefully understanding the aspirations and expectations of the citizens of the town.

I hope this development plan shall be the road map for the development of Malappuram for years to come.

K.P.Musthafa
Municipal Chairman
Malappuram

16th November, 2011
Malappuram



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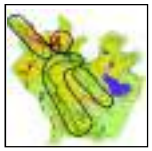

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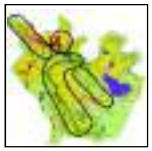

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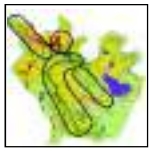
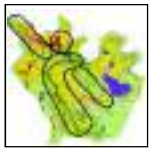




CHAPTER 1 INTRODUCTION

Rapid urbanization is one of the most complex and important socio economic phenomena of the 21st Century. A net addition of 2.2 billion people to the world population (2000) by 2030 is projected. However, the developed countries are at a saturation level of urbanization at present. Which means most of this addition to urban population must take place in developing countries. This implies a rapid pace of urbanization where economic conditions are not ideal for coping with the infrastructure and service needs of such a pace, posing a plethora of issues.

Urbanization as a growth paradigm has been the mainstay of our national development vision since independence and has gained momentum in recent years. The number of towns / urban agglomerations grew from 1827 in 1901 to 5161 in 2001. The total urban population grew from 25.8 million in 1991 (10.82 % of total population) to 285.3 million in 2001 (27.78 % of total population). As per 1901 census 26 % of the urban population in the country was in class I towns. By 1991, this has increased to 65 % and according to 2001 census this stands at 69 %. Number of million plus cities increased from 5 in 1951 to 35 in 2001. Now, 37 % of urban population lives in million plus cities. All these indicate a top heavy structure and lopsided urbanization. In India, urbanization occurs without industrialization and strong economic base. Urbanization is mostly due to demographic explosion. This necessitates strengthening the economic base of small and medium towns in order to create an efficient spatial structure.

Urbanization often adds to the anthropogenic threats to the environment. The urban ecological foot print is never contained within the administrative boundaries of the town affecting the global carrying capacity. Urbanization brings about major and irreversible changes in production and consumption patterns and the way people interact with nature. Hence cities play a key role in sustainable development. The LPG (Liberalization, Privatization and Globalization) policies have resulted in tremendous expansion of trade making cities less reliant upon their hinterland for sustenance blurring the boundaries between Urban and rural settlements. This has a considerable impact on the urban ecological footprint. Traditionally, in developing countries, the urban ecological footprint relies more heavily on their own hinterland. The economic growth and expansion of trade imply major shifts in this.

If we examine the urban profile of the state, reduction in population growth rate is evident in majority of the towns. But the surrounding LSG's of these towns show a higher growth rate of population. This indicates unhindered urban sprawl. Low urban density (compared to other parts of the country) is a characteristic feature of this form of development. This results in larger building footprints with low density and hence inefficient use of land, lack of compactness, increase in cost of urban services and non - achievement of threshold density for viability in the case of many services.

In this scenario planning intervention has a dual responsibility of strengthening local economy and bringing in efficiency of the built environment to support the local economy besides being a regulatory mechanism for limiting the physical as well as ecological foot print in order to ensure sustainable development.

CHAPTER 2 THE GENESIS

The General Town Planning Scheme (otherwise known as master plan) for Malappuram was sanctioned by the Government of Kerala vide G.O.(Ms)No.74/1990/LAD dtd 24th May,1990 under sub section 3 of section 14 of the Madras Town Planning Act, 1920. The need for revising the master plan after so many years of publication was felt and the Government has decided to revise the master plan in toto. However, considering the time required for preparation of a master plan variation of the zoning regulations of the master plan in force was decided at for easing the difficulties faced by the people. A draft of the proposed variations was published vide G.O.(Ms)No.338/2008/LSGD dtd 22nd December,2008 inviting suggestions from the public. The final order containing the variations to the zoning regulations was published vide G.O.(Ms)No.7/2010/LSGD dtd 14th January,2010. Concurrently, the Government has sanctioned the scheme for preparation of development plan for municipalities including Malappuram municipality aiming at preparation of development plans afresh by G.O.(Rt)No.3982/2008/LSGD dtd 13th November, 2008. The Municipal Council Malappuram has resolved to prepare a new development plan for the town by resolution number 08 dated 05.02.2010

The preparation of a new development plan is necessitated not only by reaching of the horizon year of the existing master plan but also by the change in focus of development planning brought about by the 74th Constitutional Amendment Act, 1992 and subsequent legislations in the country. According to the Madras Town Planning Act, 1920 (the legal back up of the master plan in force), a General Town Planning Scheme may contain the following:-

(a) the laying out or relaying out of land, either vacant or already built upon as building sites or for any of the purposes mentioned in this section;

(b) the construction, diversion, extension, alteration, improvement or closure of streets, roads and communications;

(c) the construction, alteration, removal or demolition of buildings, bridges and other structures;

(d) the acquisition by purchase, exchange or otherwise, of any land or other immovable property within the area included in the scheme whether required immediately or not;

(e) the redistribution of boundaries and the reconstitution of plots belonging to owners of property comprised in the scheme:

(f) the disposal by sale, exchange, lease, or otherwise of land acquired or owned by the council ;

(g) Transport facilities.

(h) water - supply;

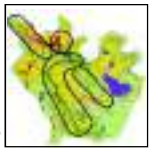
(i) lighting;

(j) drainage inclusive of sewage and of surface draining and sewage disposal;

(k) the allotment or reservation of land for streets, roads, squares, houses, buildings, for religious and charitable purposes, open spaces, gardens, recreation grounds, schools, markets, shops, factories, hospitals, dispensaries, Government and municipal buildings, and public purpose of all kinds;

(l) Construction of houses;

(m) the preservation of objects and buildings of archaeological or historic interest or of natural beauty or actually used for religious purposes or



regarded by the public with special religious veneration;

(n) the imposition of conditions and restrictions in regard to the character, number, architectural features and height of buildings allowed in specified areas and purposes to which buildings or specified areas may or may not be appropriated: and the provision and maintenance of sufficient open space about buildings;

From this it is obvious that the General Town Planning Scheme prepared under the Madras Town Planning Act, 1920 concentrates on the physical aspects of the planning area only.

The Constitutional Amendment Act, 1992 has put forward a new development paradigm. This calls for a total revamping of the development planning practice in the country. Section 243W a (i) of the Constitutional Amendment Act, 1992 provides for the preparation of plans for economic development and justice. The twelth schedule added to the Constitution by this amendment inter alia includes:-

- Urban planning including town planning
- Regulation of land use and construction of buildings
- Planning for economic and social development etc as functions of urban local self governments.

The Kerala Municipal Act, 1994 enacted subsequent to the constitutional amendment, prescribes that

- *Every municipality shall prepare a master plan for its development in the prescribed manner with focus on scientific spatial planning taking into account its resources and as per the fiscal investment and submit the same to DPC (Section 51(3)).*

- *Municipality shall have the power to prepare and implement detailed town planning schemes as per the laws relating to Town planning for the time being in force subject to the master plan approved by the Government (Section 51(4)).*

The draft Kerala Town & Country Planning Bill, 2009 prepared by the Town & Country Planning Department in line with the constitutional amendment and subsequent state legislations deals with The Local Development Plan in detail. According to the bill,

The Local Development Plan shall be prepared through a participatory process, as may be prescribed, and shall include the following:

(i) Development Strategy with a Perspective vision preferably for a period of twenty years having regard to the policies and strategies for the Local Planning Area concerned as laid down in the Perspective Plans of the State and the Metropolitan Area or the Development Plan for the District as the case may be. It shall also incorporate socio-economic and developmental issues, goals, objectives, potentials, policies, strategies and priorities pertaining to all sectors of development;

(ii) Development Plan document with land use proposals, infrastructure plan and Development Control Rules;

(iii) Statement of community involvement in the preparation, implementation and monitoring of Local Development Plan.

The Local Development Plan shall generally indicate the manner in which development of the Local Planning Area shall be carried out and also indicate the manner in which the use of land in the Local Planning Area shall be regulated. In particular it shall provide for, so far as may be necessary, all or any of the following:

(a) analysis of dynamics of development which may also include history of development, present status and trend of development, location, regional context, hinterland, its attributes and accessibility, physiographic and demographic characteristics, city influence area and its characteristics including settlement pattern, rural-urban relationship and fringe area developments;

(b) Existing land use;

(c) Current issues, prospects and proposals regarding:

(i) Economic base and employment in trade, commerce and industries in both formal and informal sectors;

(ii) Hierarchy of commercial areas, dispersal of commercial activities and related issues;

(iii) Dispersal of industries and restriction on specific type of industries in both formal and informal sectors;

(iv) Space requirement for various activities and designating the survey number wise use of land for such purposes;

(v) Poverty and measures for alleviation;

(vi) Housing including affordable housing, informal sector housing, resettlement strategy and slum up-gradation;

(vii) Facilities for the destitute, women and children in distress, disabled, handicapped, senior citizens etc;

(viii) Educational facilities including specialised education and research centers, health facilities including specialised hospitals, cultural and religious facilities, public and semi public institutions;

(ix) System of open space, play fields and recreation areas; conservation areas; ecologically and environmentally sensitive areas; natural hazard prone areas and public gathering grounds;

(x) Transportation covering roads, railways, waterways, pedestrian-path ways and related activity centres, parking and terminal facilities; mass transportation system and its integration with activity nodes, integration of land use with activity nodes and land use pattern; airport and seaport etc;

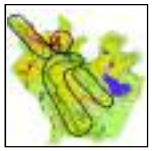
(xi) Utilities and services such as water supply, drainage, sewerage, solid waste management, energy, communication, police, fire protection, cremation and burial grounds, slaughter houses etc.

(xii) Tourism, environmental conservation, heritage, sites for reclamation, coastal area development and the like;

(xiii) Such other proposals for public purpose as may, from time to time, be approved by the Local Planning and Development Committee or as may be directed by the Government or the Metropolitan Planning Committee or the District Planning Committee as the case may be in this behalf.

(d) Implementation mechanism which shall include:

(i) Phasing of the proposal contained in the Local Development Plan depending upon the priorities determined;

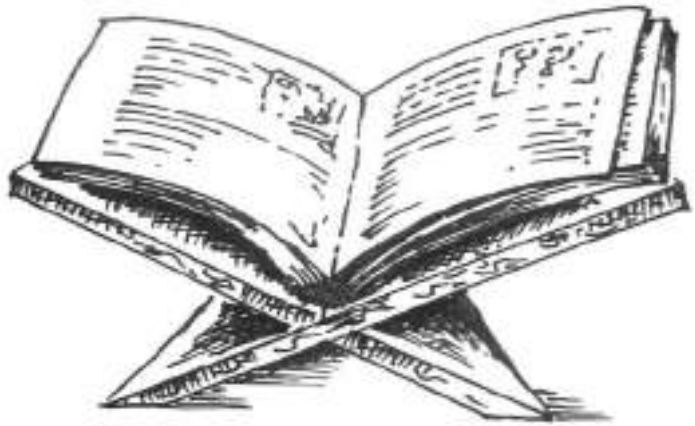


(ii) Identification of sector-wise schemes and projects to be implemented by Central or State Government, Local Planning and Development Committee, corporate bodies, co-operatives, private and joint sectors;
(iii) Proposals for Transferable Development Rights, Accommodation Reservation, Land pooling or any other similar technique for promoting planned development;
(iv) Development promotion regulations for promoting and regulating the use and development of land including regulations for natural hazard prone areas, imposition of conditions and restrictions in regard to the building line, open space to be maintained about buildings, the Floor Area Ratio or Floor Space Index, the location, number, size, height, number of storeys and character of buildings and density of built-up area allowed in specified area, the use and purpose to which buildings or specified areas of land may or may not be appropriated, the sub-division of plots, the discontinuance of objectionable uses of land in any area in reasonable periods, parking spaces, loading and unloading space for any building and the size of projections and advertisement signs and the like;
(v) Fiscal requirements and resource mobilisation proposals;
(vi) Any other matter as may be considered necessary for carrying out the objects of this Act;
(e) Monitoring and review mechanism.

Being the latest legislative attempt in the sphere of development planning, the document reflects the state of the art in the subject. Comparing the prescriptions in the Madras Town Planning Act, 1920 and the draft Town & Country Planning Bill, 2009 (which has been derived from the Constitutional amendment and subsequent legislations) one can see the drastic changes being affected in the planning process. The current situation calls for an all encompassing strategic planning for economic and physical development rather than a proposal for physical improvement.

The Approach to the Twelfth Five Year Plan (Planning Commission, Government of India) opines that *urban planning cannot be limited to spatial allocations and engineering solutions: it must encompass and connect various socio – technical considerations too.* The Planning Commission finds that *there is an urgent need to shift focus towards an outcome-based approach that is based on service level delivery rather than an approach that focuses only on investments and asset creation.*

The preparation of Development plan for Malappuram, 2030 is being attempted at in this backdrop.



CHAPTER 3 SCOPE AND LIMITATIONS

The Scope of the project includes

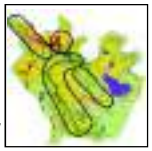
- Study of the various socio-economic and physical features of the municipality.
- Statistical and spatial analysis of the primary and secondary data collected.
- Probing peoples' aspirations and perception of problems.
- Understanding development issues from the scientific analysis as well as the peoples' perception.
- Formulation of goals and objectives for the plan.
- Devising development strategy for realizing the objectives.
- Prepare land use plan, regulations and project proposals based on the strategies identified.
- Costing and phasing the implementation.

The preparation of this development plan has the following limitations

- The study is based on 2001 census. The 2011 census figures are due in a short time whereas 2011 figures are projected using time series data in this report.
- The various secondary data collected from different sources have different base year and thus a direct comparison across data may not be accurate.
- Besides, some of the sources of data have no method for collecting the data in regular time intervals affecting the time series nature of data.
- The administrative sub division of the municipal area into wards changes with every election. Since the census 2001 were relied upon, the ward division in 2005 is considered for planning purpose.
- The details of existing land use (prior to 2010) available are only that of the year 1971 and hence assessment of direction of growth has become difficult.



Fig 3.1 Malappuram Municipality- ward Division



CHAPTER 4 METHODOLOGY

The process of preparation of development plan involves four major steps.

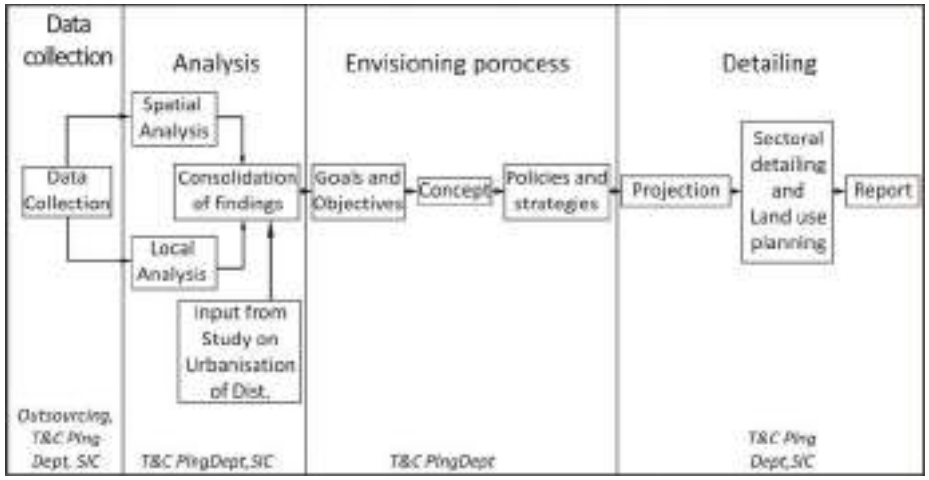


Fig 4.4 Stages of preparation and responsible authority

I – Data collection and compilation

The primary data required for the preparation are land use survey, socio-economic survey and traffic survey. The land use survey was conducted by surveyors engaged on daily wages basis under the supervision of departmental surveyors and cross checked by officers of the department. Socio-economic survey was conducted on a format prepared at the state level for all the towns. The data collection was conducted by the enumerators on daily wages under the supervision of the Statistical wing of the Town & Country Planning office, Malappuram and verified by the officers of the department. The traffic survey and studies were conducted by the NATPAC, Thiruvananthapuram.

II – Analysis

The analysis is done in two stages. The local level analysis focuses on the development trend of each sector, its potential and development problems associated with each sector. This includes development aspirations of the people also. The Spatial Integration Committee constituted in the municipality was responsible for this analysis. The Town Planner of the State Town & Country Department provided technical guidance for the same. The spatial analysis concentrates upon regional setting of the settlement, distribution pattern of activities & population, land use and infrastructure network within the town. The findings of both the analysis and findings from the urbanization study (conducted by the Town & Country Planning Department for all the districts in the state) of the district are then integrated to form consolidation of findings in order to facilitate the envisioning process.

III – Envisioning process

The envisioning process starts with the identification of development issues from the consolidated findings of the study and proceeds with formulation of development goals and objectives for the town. Once the objectives are identified, development policies and strategies for fulfilling the objectives, be it in the form of land use policy or specific projects for addressing the issues identified, are developed. The detailing of the development plan follows these policies and strategies.

IV – Detailing

The detailing of the development plan is done at this stage. The detailing include preparation of sector level proposals to be taken up during the plan period, a detailed land use plan giving out the land use policy for the town during the plan period, zoning regulations for regulating the land use, costing and phasing of the projects proposed in the development plan and details of implementation and monitoring including the provisions for monitoring of the development plan.

CHAPTER 5 COMMUNITY INVOLVEMENT



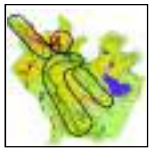


The adopted methodology for the preparation of the development plan stresses on community involvement at every stage of plan preparation imbibing the spirit of 74th Constitutional Amendment Act, 1992 and subsequent legislations. A Spatial Integration Committee was constituted under the Chairmanship of Municipal Chairman. The Municipal Secretary is the Convener of the Committee and The Municipal Engineer acts as the Joint Convener. The membership of the Committee constitutes of one representative from each working group, District Town Planner and one resource person. Sri.V.Abdul Razak, Town Planner (Rtd) was nominated as the resource person.

The Spatial Integration Committee for Malappuram Municipality met on 25th March, 2010 and decided to conduct a Stake holder meeting before proceeding with the preparation of development plan for the town. According to this decision, a Stake Holder meeting was conducted on 8th April, 2010 in the Bus stand auditorium. The meeting was inaugurated by Sri.Arimbra Muhammed master, the then President of District Panchayat, Malappuram. The meeting chaired by the Municipal Chairman had a brief presentation about the preparation of development plan by the District Town Planner. The participants from various walks of life like municipal councilors, representatives of various political parties, service organizations, practicing engineers, trade union leaders etc have expressed their opinions and aspirations about the development of Malappuram town besides highlighting the present problems and potentials. The District Town Planner invited written suggestions from the community at large to be considered while preparing the development plan. Number of representations from individuals and organizations were received by the Department during the preparation of the draft Development plan due to this.

After the stake holder meeting the Spatial Integration Committee decided to go ahead with the collection of secondary data from various sources. The data collection was completed by May, 2011. The Committee met on 6th June, 2011 to discuss on the finalization of the Local level analysis which is being conducted by the various working groups. A joint meeting of Spatial Integration Committee, members of the working group and departmental officers (from various sectors) was conducted on 9th June, 2011 for the purpose. During this meeting the local level analysis dealing with the problems and potentials of the various development sectors was completed.

Further, the Municipal Council has made various suggestions for inclusion in the development plan for Malappuram town. The draft Development Plan was discussed with the Councilors prior to submission to the Chief Town Planner for vetting in order to ensure that the draft Development Plan submitted reflects the needs of the community, identifies with its aspirations, addresses the perceived problems and take advantage of the identified potentials.



CHAPTER 6 PROFILE OF THE TOWN

6.1.0 Location

Malappuram, which literally means the land atop hills, is the Head Quarters of Malappuram District. The district is bounded on the North by Kozhikode and Wayanad districts, on the South by Thrissur and Palakkad Districts, the east by Nilgiri district of Tamilnadu and on the west by Lakshadweep Sea.



Fig. 6.1 Location of the District

Malappuram is one among the seven municipal towns in the district and is located almost in the centre of the district between 76 °1.9' & 76 °6' east longitudes and between 11 °1.55' & 11 °5.5' north latitudes. The height from MSL varies from 20 m to 360 m. Anakkayam, Kootilangadi, Kodur, Urakam, Pookkottur, Ponmala are the surrounding Local Self Governments. Manjeri Municipality which shares many of the facilities for the administrative Head Quarters is at a distance of 12 Km from the town. Tirur, Kottakkal, and Perinthalmanna municipalities which are the important trade centers of the district are at 28 km, 14 km, and 20 km respectively from the town centre. Ponnani Municipality is an important Port Town located 60 km from the town. The Nilambur Municipality which is famous for the teak museum located in the north-east quadrant of the district is at a distance of 35 km from Malappuram town. The nearest railway stations are Angadipuram and Tirur at a distance of 18 km and 28 km respectively.

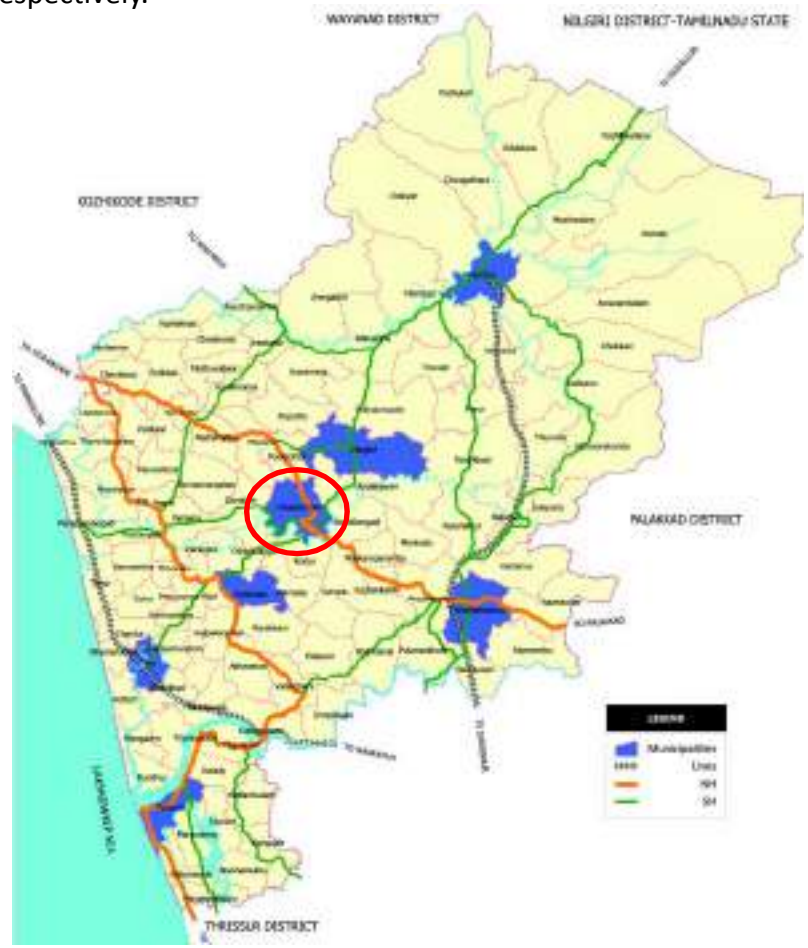


Fig. 6.2 Location of the Municipality

The town is located 350 km to the north of the state capital, Thiruvananthapuram. Distance to other major cities viz. Kozhikode, Kochi and Coimbatore are 51 km, 160 km and 150 km respectively. Thrissur, Palakkad, Shoranur and Guruvayoor are the other major urban centers in the region.

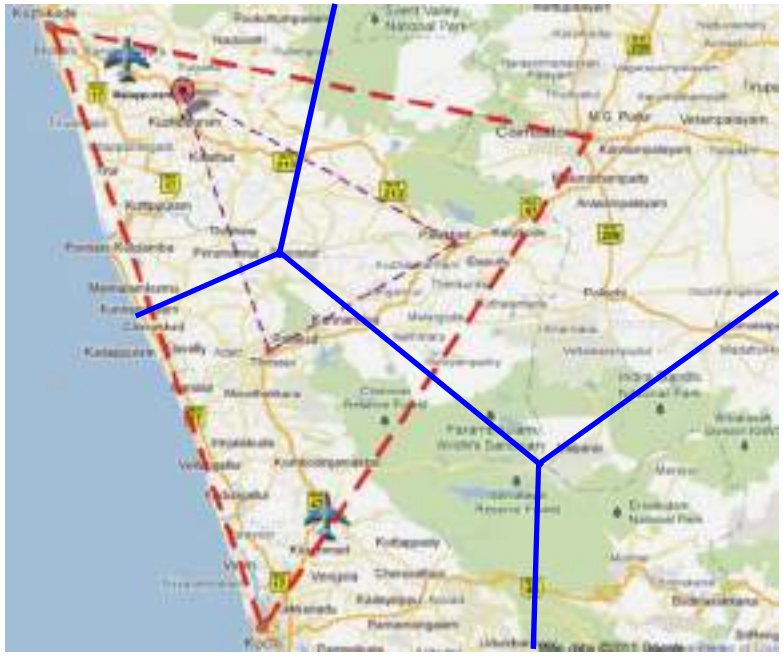


Fig. 6.3 Regional setting

6.2.0 Area and population

With a total area of 33.61 Sq. Km, Malappuram town accounts for 0.947 % of the geographical area of the district. The municipal area has been divided into 40 electoral wards as per the ward division in 2010. For study and analysis ward division in 2005 is considered since the statistics is available based on this division. According to the 2005 division there are 37 wards. The population of Malappuram Municipality is 58491 (as per 2001 census) which constitutes 2 % of the district population.

The male population is around 49 % of the total, indicating a higher sex ratio. The population density is 1741 person/Sq.km which is low compared to other towns in the state. Perinthalmanna and Nilambur are other towns in the district with comparable area. But they show still lower density values.

6.3.0 Climate

The town has more or less the same climatic conditions prevalent elsewhere in the state viz. dry season from December to February, hot season from March to May and the South west and North east monsoon from June to November. The South west monsoon is usually very heavy and nearly 75 % of the annual rains are received during this season. The climate is generally hot and humid; the range of temperature varies between 20 ° C and 30 ° C. The average annual rainfall is 2500 mm.

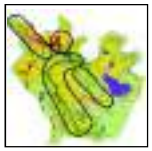
6.4.0 Physiography

As the name suggests the topography of the town is highly undulating, even though it belongs to the mid land region of the district as per the physiographical classification. The district has three distinct physiographical classifications viz. low land, mid land and high land as shown in fig 6.4. The low land stretches along the sea coast, the mid land is in the central area and the high land region is towards the eastern and north eastern parts of the district. The contour map of Malappuram(M) is shown in fig 6.5The ground level of the town varies from 20 m to 360 m from MSL.

6.5.0 History

6.5.1 History of governance

Malappuram is the head quarters of Malappuram District. The district



was formed in 1969 comprising or Ernad and Tirur Taluks of erstwhile Kozhikode district and Perinthalmanna and Ponnani Taluks of the former Palakkad district.

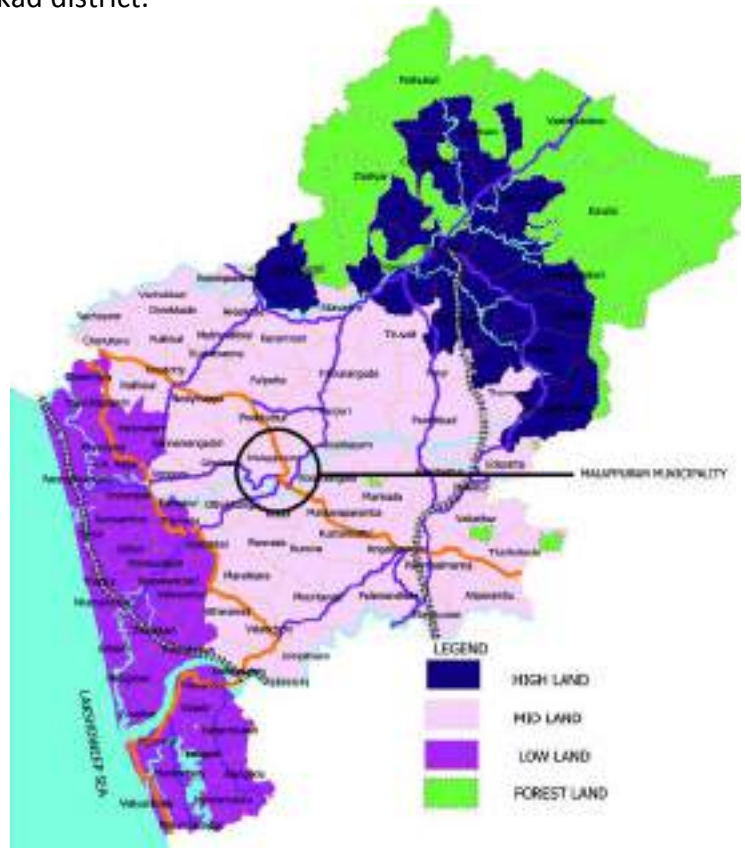


Fig. 6.4 Physiography of the district

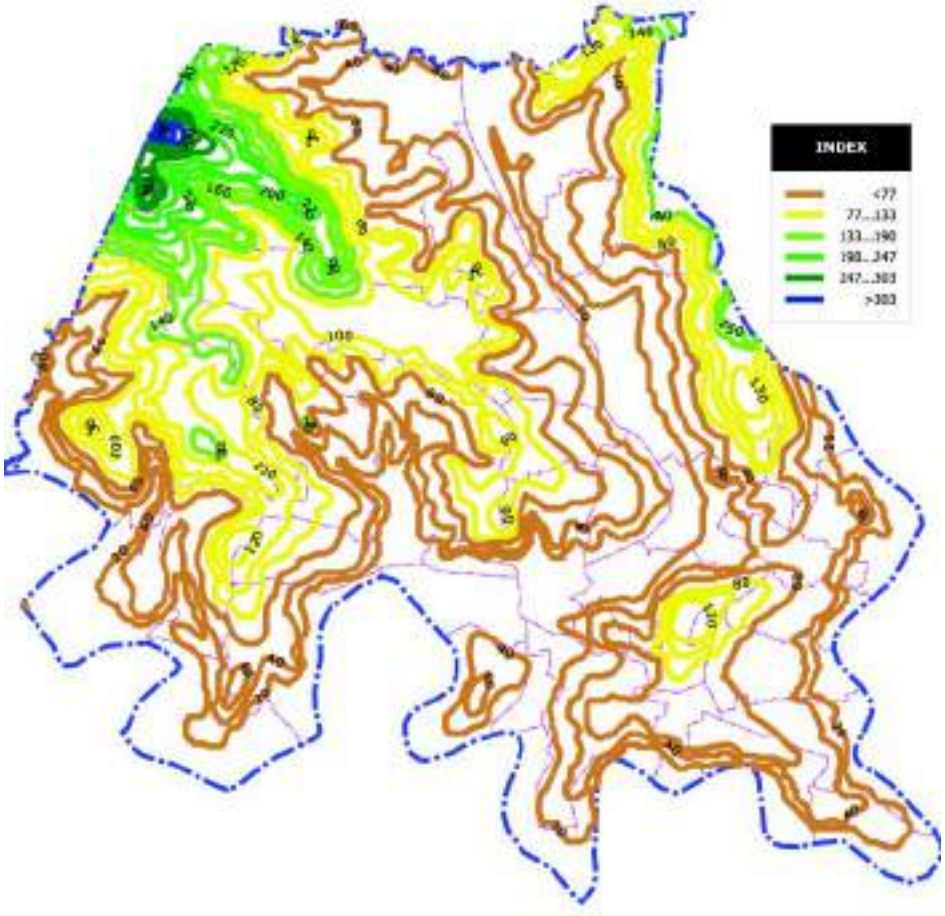


Fig. 6.5 Contour map of Malappuram Municipality

The rulers of Ernad were the ancestors of zamorins and the later history of the district is interwoven with the history of Zamorin rulers. Zamorin orSamuthiri originally belonged to Nediyirippu in Eranad Taluk of the district before shifting his seat to Kozhikode. Zamorins later conquered over Parappanad and Vettathunadu (Tanur). By 1400 AD Zamorin established control over the entire district.

The Mysorian invasion during the period 1766-93 had political overturns in Malabar. Manjeri was the headquarters of Hyder Ali's troops. Later in 1788, Tippu Sulthan descended in Kerala with large army and established his authority in Malabar and made Feroke his capital. But signing the treaty of Sree Ranga Pattanam in 1792 resulted in the collapse of Mysorian throne and the large tract of Malabar, which were under the

authority of Mysorians were ceded to the British. There after the district was under the direct control of the British and Zamorins were vested with the power to administer over the region. In October 1798, the British East India Company assumed full control of the region covered by the Zamorin. Thereafter British Collectors ruled Malabar, which included the present Malappuram District.

Tippu Sulthan had a fort at Malappuram. The Fort gate Maidan (Kottapadi) at the foot of the cantonment hill was once used by the "Para Nambi "a chieftain under the patronage of the British. In order to quell the frequent disturbance in this place, the British raised the Malappuram Special Police which ruthlessly suppressed the Malabar Rebellion 1n 1921. This police force was disbanded later and the Malabar Special Police took its place. Malappuram is the headquarters of the special police force which plays a unique role in the maintenance of law and order in the state.

Before independence, Malappuram was a part of Malabar District in the Madras Presidency of British India. After Independence, this area was covered by the Malappuram Panchayat consisting of Melmuri and Malappuram villages. Prior to the abolition of the District Boards by the Kerala Panchayath Act of 1960, the administration of educational institutions, hospitals, roads etc. in the area was vested with the District Board. Though in 1962, this area was constituted in to 3rd grade Panchayath, the election to the council was held only in 1964. In 1965 it was upgraded to a 2nd grade Panchayat and in 1968 to I st Grade Panchayat. Consequent to the formation of the new district of Malappuram on 16th June 1969, the need for upgrading the town to a municipality was felt and the Malappuram municipality was formed on 1st April 1970.

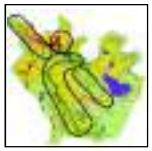
Presently the municipal area comprises of 3 revenue villages viz. Malappuram, Melmuri and Panakkad, and is divided in to 40 electoral wards. Election to the Municipal council are held every five years.

6.5.2.History of Development

The history of development in Malappuram starts from the period of Zamorins. Para Nambi, a Chieftain of Zamorins ruled over the place, with head quarters at Kottappady. During the Mysorian invasion Tippu Sulthan had built fort and roads over here. The British established Haig Barracks at Kunnummel to station their forces, Malappuram Special police, which later on was transformed to Malabar Special Police, with head quarters at Malappuram. Health and educational institutions, residential and other facilities were developed for the use of the military personnel.

After indepdence, the place remained rather underdeveloped until the formation of the district in June 1969 with head quarters at Malappuram





and the up gradation of the Panchayat to Municipality in April 1970. After this the town started developing gradually, with facilities for a district head quarters.

Due to the peculiar topography, the town has developed with twin nuclei, Kunnummal and Kottappady, the former being more of an administrative centre with civil station and other institutions, while the latter is a centre for trade and commerce along with health and educational institutions. But compared to other district headquarters, Malappuram is developing in a very slow pace. Many of the facilities for district head quarters like District Hospital, Court etc are still functioning at Manjeri.

6.5.3 Socio Cultural History

Malappuram District has long been a part of Indian history by means of its participation in the Indian National movement. K. Madhavan Nair, the former President of Kerala Pradesh Congress Committee and founder Managing Director of Mathrubhumi Daily, Sadhoo. P. Ahammed Kutty, K.P. Sankaran Nair, K.P. Vasudevan Nair, M.P. Govindan Nambeesan etc were the renowned persons from here who participated in the struggle. Malappuram witnessed the Khilafat Movement and the Mappila Rebellion. The later was a protest by the Muslims of Malabar against the abolition of the Islamic caliphate in Turkey by the British. It was at Pookkottur, a place very near to Malappuram municipality that the Mappila warriors fought the British with their traditional weapons and were killed ruthlessly during the rebellion. The British established the Haig Barracks on top of the hill (Kunnummel) at the banks of the Kadalundi River, to station their forces. The main barracks now house the district administration. Major district offices are functioning here.

The backwardness in education has been a reason for frequent riotsin this place, and kept the place backward in development. But compared to other places in Ernad, academic education started in Malappuram as early as 1882, in which the first school, The Anglo Indian Vernacular School, was established. Female education was very low in the earlier days, but now it has come in pace with the male education.

The office of the Sub Collector and the Registrar's Office established in 1890 were the first government offices in Malappuram town. Now the Civil Station functions at Kunnummel which accommodates many of the important district offices.

There are many renowned personalities from the place that have played an important role in the social and political domain of Kerala. The residence of the Thangal family at Panakkad, 6 Km from the town centre is an important spiritual centre for the Muslims of Kerala. Malappuram is rich in festivals and cultural celebrations. Malappuram Nercha, the four day annual festival is celebrated in summer at the Valiya Juma Masjid.

6.6.0 Biodiversity

Malappuram is rich in bio-diversity. Of the total area of 33.6 Sq.Km the developed area comes to only 17.9 Sq. Km, the remaining area being occupied by water bodies and vegetations. The most important crop in the municipal area is coconut, the Paddy constituting 3.71 % of the municipal area. The paddy has largely been filled up for construction purposes but the dry cultivation area is more or less preserved. In this areas coconut plantations are predominant, which unlike in other places accommodates indigenous crops also. Besides this there are sacred groves called "Kavu" which contain rich and characteristic flora and fauna, The rubber and pineapple cultivation which have extensively come up in other places of similar topography has not yet got a foundation in Malappuram. This is one one of the main reasons for the environmental quality and rich biodiversity of the place.

CHAPTER 7 REGIONAL SETTING

7.1.0 Activity Pattern

The activity pattern identifies the economic activity for which the settlement under consideration is most suitable. This is derived from the settlement studies based on spatial analysis. The aspects under consideration are land use concentration pattern, functional character and urban profile. These three aspects are considered together in judging the most suitable activity pattern for the LSG under consideration.

7.1.1 Land use Concentration pattern

To study the land use concenteration pattern of the district the differend types of land uses are categorised into urban, agri,plantation and forest. It is seen that urban activities are concentrated more in the existing urban LSGs and those LSGs along the national highways and important state highways. Agricultural land use is existent in majority of the LSGs. Plantation activities are concentrated more in a few of the north eastern LSGs and there is concentration of forest area in the eastern part of the district. Water bodies are seen more in the Low Land area. Fig. 7.1 shows the land use conceteration pattern of the settlements of the district. The land use concenteration of Malappuram (M) is urban.

7.1.2 Functional Character

The function of a settlement is the major activity within the settlement. The functional Character of each settlement is determined based on the land use, population distribution and average plot size within the settlement. It is classified as rural, semi rural, semi urban and urban.

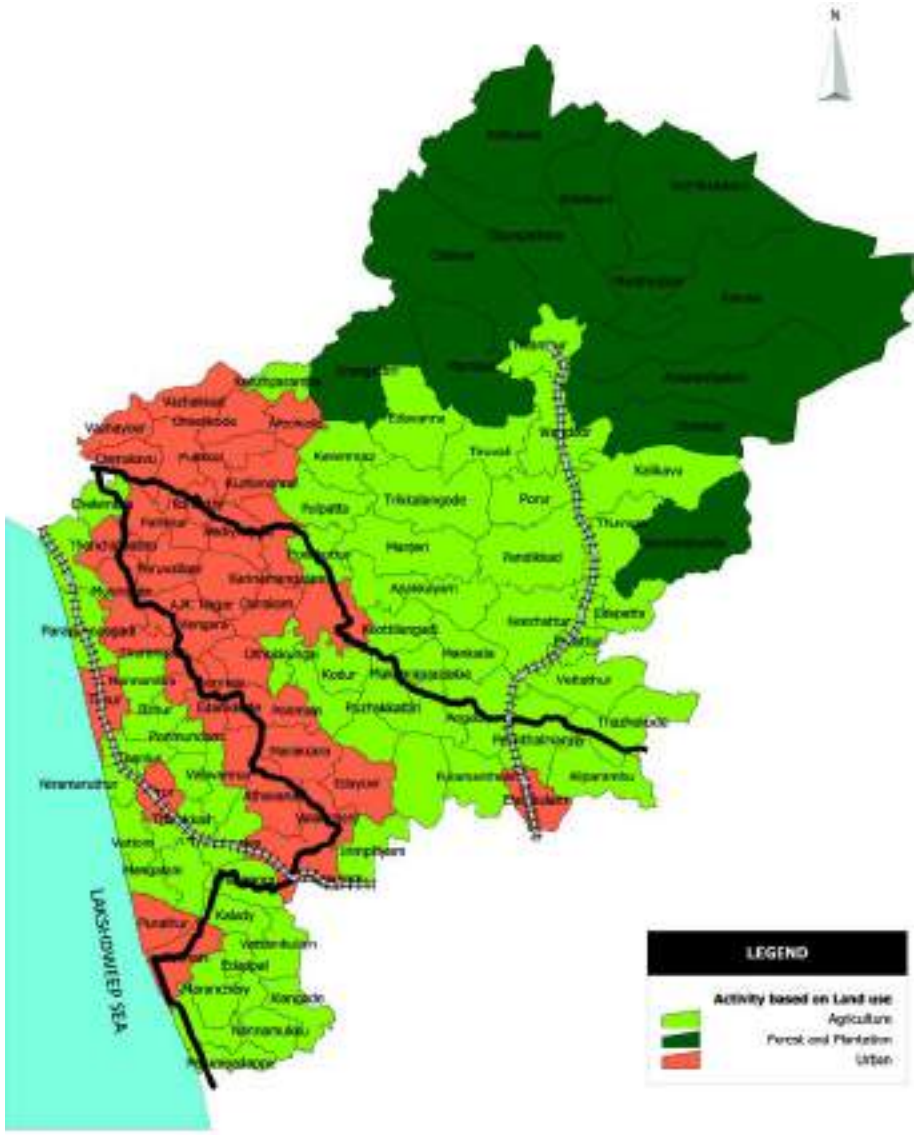
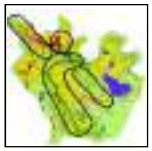


Fig. 7.1 Land Use Concenteration Pattern



From the study it is seen that 68 out 107 settlements show rural character, 29 semi rural , 6 semi urban and 4 urban character. Fig.7.2 shows the functional character of the settlelments. Malappuram (M) shows rural character.

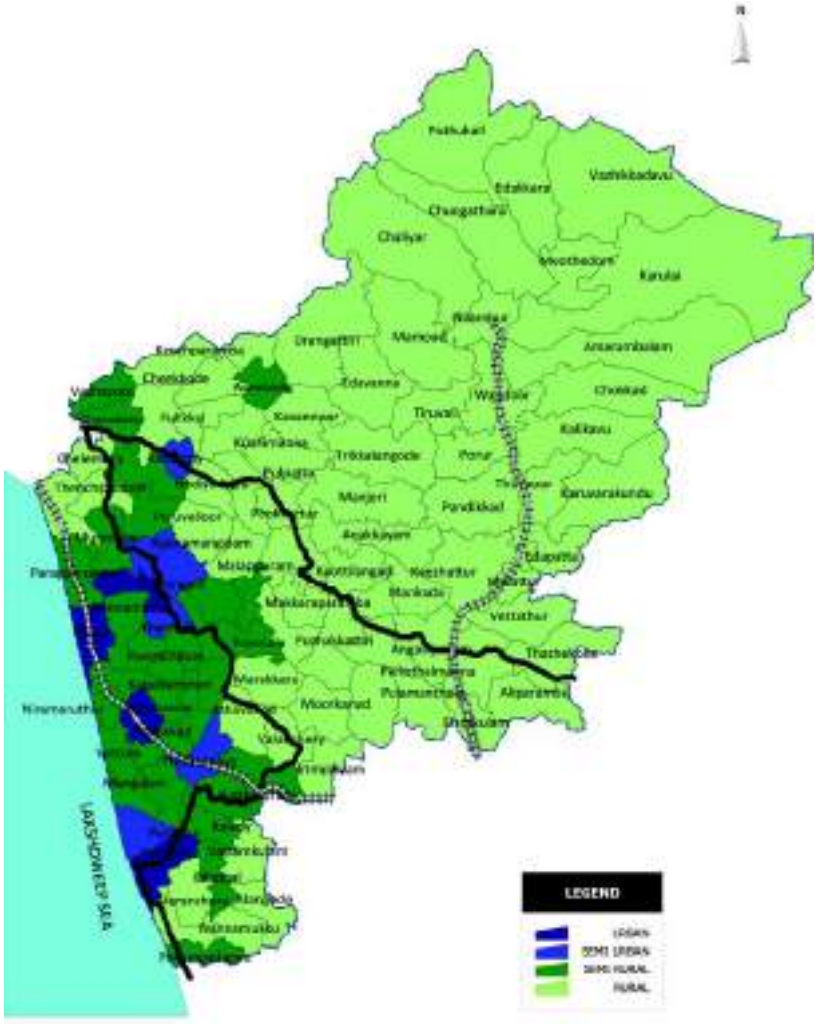


Fig.7.2 Functional classification of the LSGs of the district

7.1.3 Urban Profile

There are seven urban LSGs in the district. They are Malappuram, Manjeri, Tirur, Ponnani, Perinthalmanna, Kottakkal and Nilambur, the later two being added to the list in November 2010. The future urban profile of the district is determined based on criteria like existing statutory urban areas, census urban areas, grade of LSGs, hierarchy of settlements and perspectives in urban development. It is estimated that the number of urban centers will become 22 in the next 20 Years. Fig.7.3 shows the urban profile of the district.

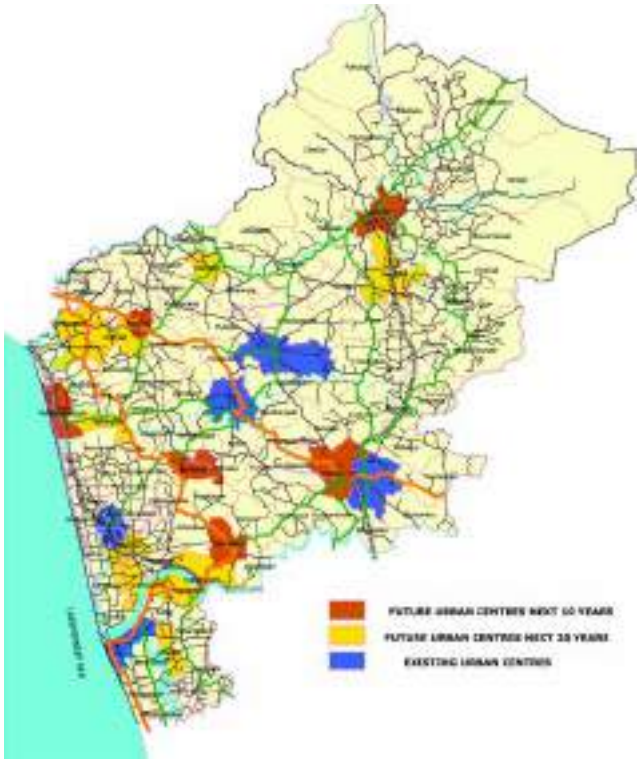


Fig.7.3 Urban profile of the district.

7.1.4 Determination of activity pattern

The activity pattern of the settlements of the district is determined based on the above three factors. It is seen that in 44 LSGs the predominant activity is primary (agriculture) and in 9 LSGs it is plantation. In 28 LSGs a mix of agriculture and animal husbandry activity is predominant and in another 18 LSGs SSI along with agriculture and animal husbandry activities are predominant. Ponnani, Tirur and Kottakkal municipalities and grama Panchayaths of Kondotty, Kuttippuram, Tanur, Tirurangadi and Vazhayur exhibit teritiary activity pattern. The activity pattern of the LSGs of the the district is shown in fig.7.4. The activity pattern of Malappuram (M) is AGRI+SSI+ANIMAL HUSBUNDRY.

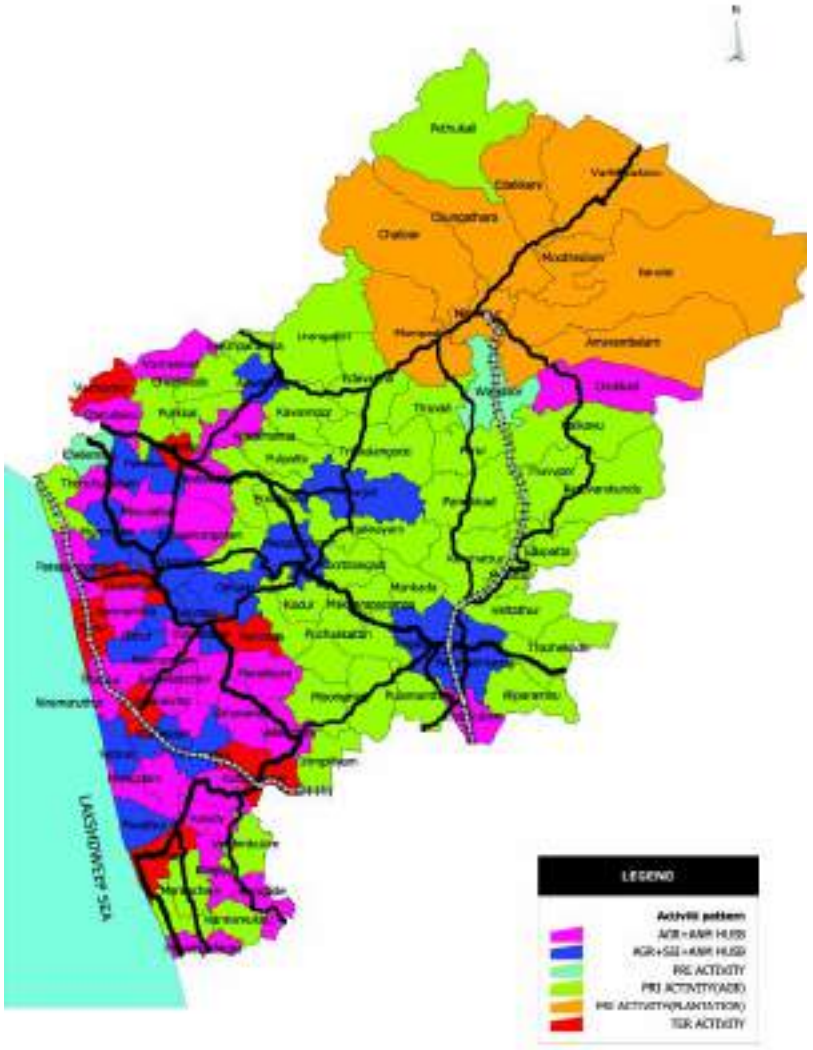


Fig.7.4 Activity Pattern of the settlements of the districts

7.2.0 Functional hierarchy of settlements

The existing hierarchy of settlements in the district is determined based on the number and order of facilities. Cumulative Functional Index (CFI) method is used for this purpose. The CFI of a settlement is assessed based on the number and presence of education, health, market, agriculture and allied sectors, transportation and community facilities in the settlement. CFI is plotted against the number of settlements to find out the hierarchy of settlements. It is seen that Perintalmanna municipality comes as the first order settlement with a very high CFI compared to the other settlements in the district Ponnani, Tirur, Manjeri, and Malappuram Municipalities come in the second order category while kondotty, Angadipuram, Kottakkal, Nilambur and Thenhippalam grama Panchayats are in the third order. The rest of the settlements are grouped in the fourth order. The spatial distribution of the settlements of different hierarchies is shown in the Fig.7.5 . The first order settlement is at the meeting point of NH 213 and SH 39. In all the settlements up to third order except Tirur, Manjeri, Nilambur and Thenhippalam there is a node which is a meeting point of a national highway and a state high way.

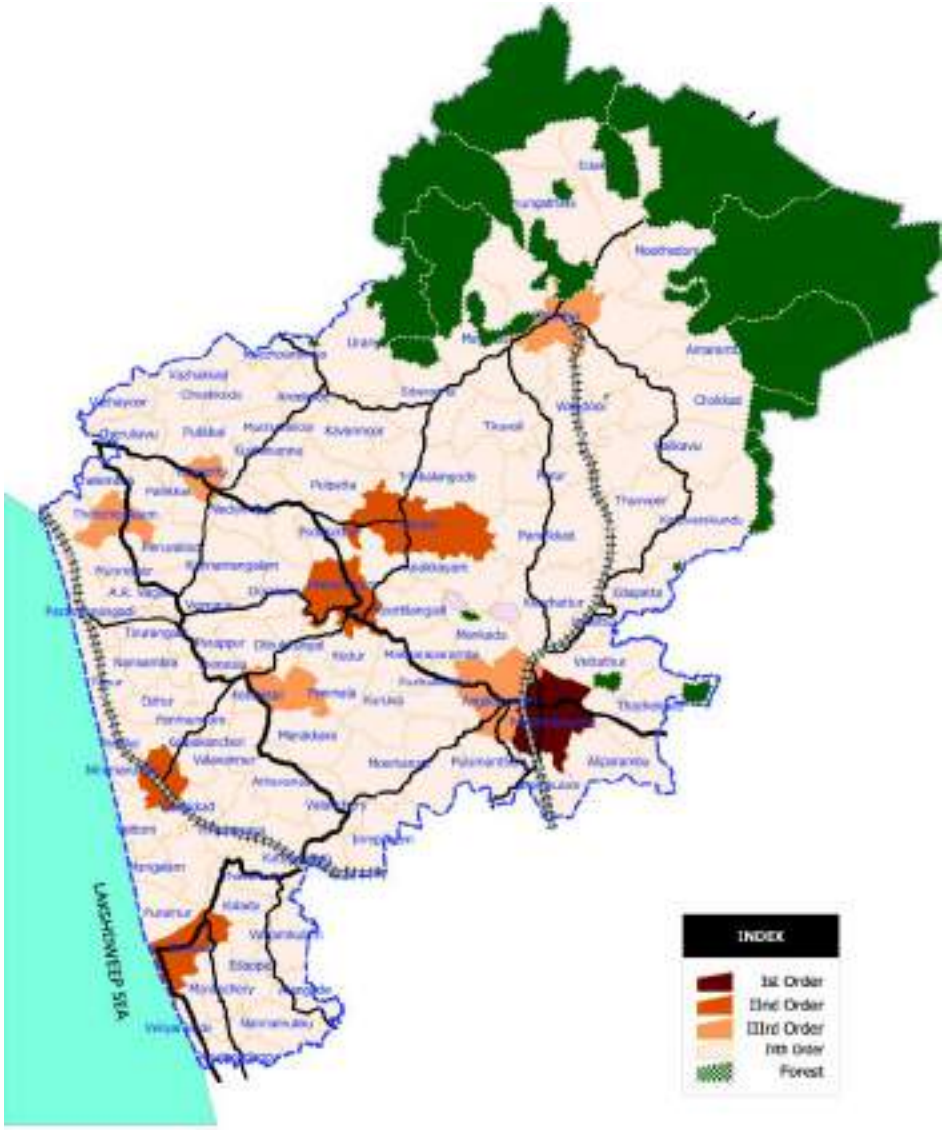


Fig.7.5 Functional hierarchy of the settlements of the district

7.3.0 Connectivity

Physiographically, the district has a distinct high land on the eastern side, a mid land region and a coastal strip on the west. This makes the connectivity in the east west direction difficult. However, even with these limitations, a few roads are running in the east west direction. As a result the north south corridor which is very strong elsewhere in the state with national highway and railway running in this direction does not get a primacy.

7.3.1 Road network



NH 17 and 213 are the national highway passing through the district. The major state highways are Tiur – Manjeri, Parappanangadi – Malappuram, Kozhikode – Nilambur – Gudallur and Perumpilavu – Nilambur. Of these the first three run in the east west direction. Valancheri – Perinthalmanna and Kottakkal – Perinthalamanna roads also add to the east west connection. District roads maintained by the state PWD and other minor roads owned by the LSGs also impart connectivity within the district.

7.3.2 Rail network



The Shoranur - Mangalore and Shoranur - Nilambur Road are the two rail links in the district. The total length of railway line in the district is 91 KM. The important railway stations are Kuttipuram, Tirur and Parappanangadi

in the Shoranur – Mangalore line, and Angadipuram in the Shoranur – Nilambur road line.

7.3.3 Water transport

Water transport is limited to Ponnani region. Ponnani is a minor port in the estuary of the river Bharathapuzha and is very shallow. The places connected by water ways are Ponnani, Tirur and Tirurangadi. The share of water transport is negligible compared to other modes of transport.

7.3.4 Air Transport

The Calicut International Airport 24 KM from the district head quarters is catering to the air transport needs of the people of Malabar region. Services are operated to the major destinations within the country as well as the middle east from this airport.

Fig. 7.6 shows the existing transportation network within the district.

7.3.5 Spatial Structure of the district

The spatial structure of a region is defined as the geographical distribution of people and other uses of land across the region and the pattern of trips necessitated by their land uses. Spatial structure of a region defines the functions within the sub regions (LSGs), their hierarchy and connectivity. The spatial structural integrity is the key to robust economic development of any region. The major factors affecting the spatial structure of a region are activity pattern of settlements, connectivity & physiographical limitations and functional hierarchy of settlements. The spatial structure can be understood by overlaying the mapsof the above three, as shown in fig 7.7.

From the analysis the spatial structure of the district is conceived as follows.

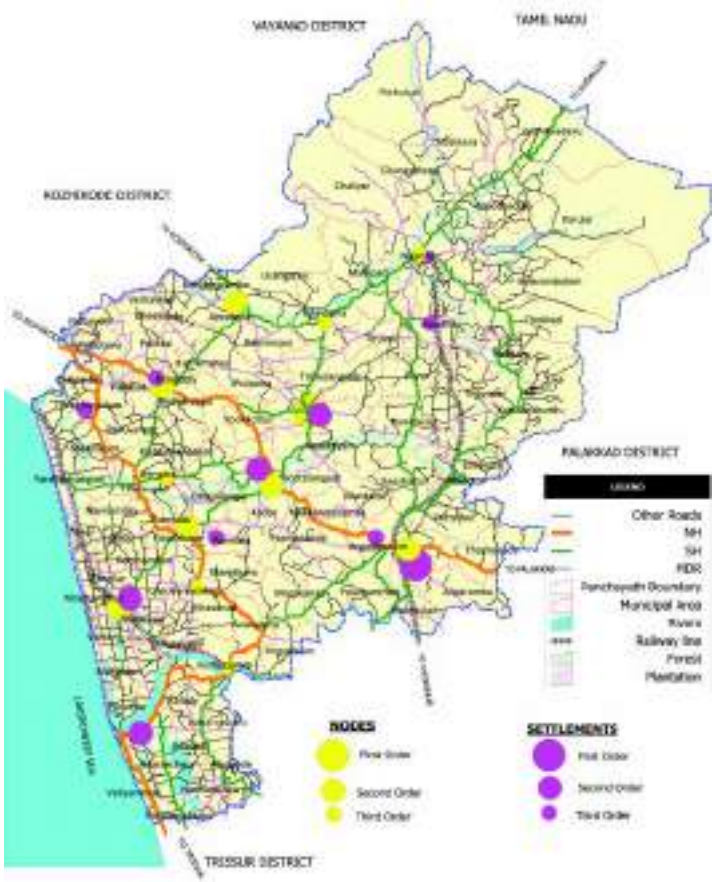
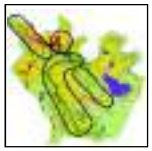


Fig. 7.6 Existing Transportation network within the district

The plantation and forest resources are concentrated in the eastern highland region. In the west, the coastal strip is segregated from the rest of the district by railway line running in north south direction. This is a constraint on connectivity. The economic activities, various land uses, workers and people are almost evenly distributed in the rest of the district. The urban nodes are also evenly distributed showing a dispersed urban



growth. The transport network (well developed) is in the form of a hub and spoke with an outer ring strengthening the nature of growth. Manjeri, Malappuram and Valluvamburam Junctions come in the vertices of a triangle which forms the hub. The spokes are approximately in the north, south, east and west directions. Higher order settlements (other than Manjeri and Malappuram) are placed mostly at junctions where these spokes intersect the outer ring. So the district has a sound spatial structure which needs only a few improvements (like standards of roads, alignment changes etc) by conscious efforts. Fig.7.8shows the spatial structure of the district.

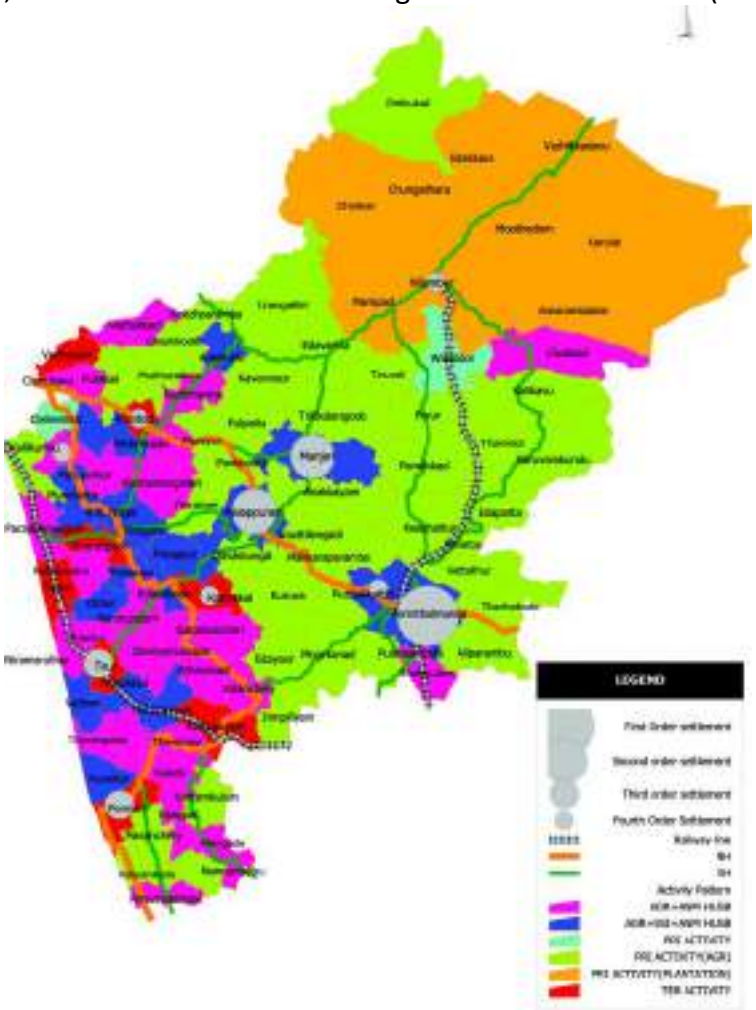


Fig.7.7 Formation of spatial structure

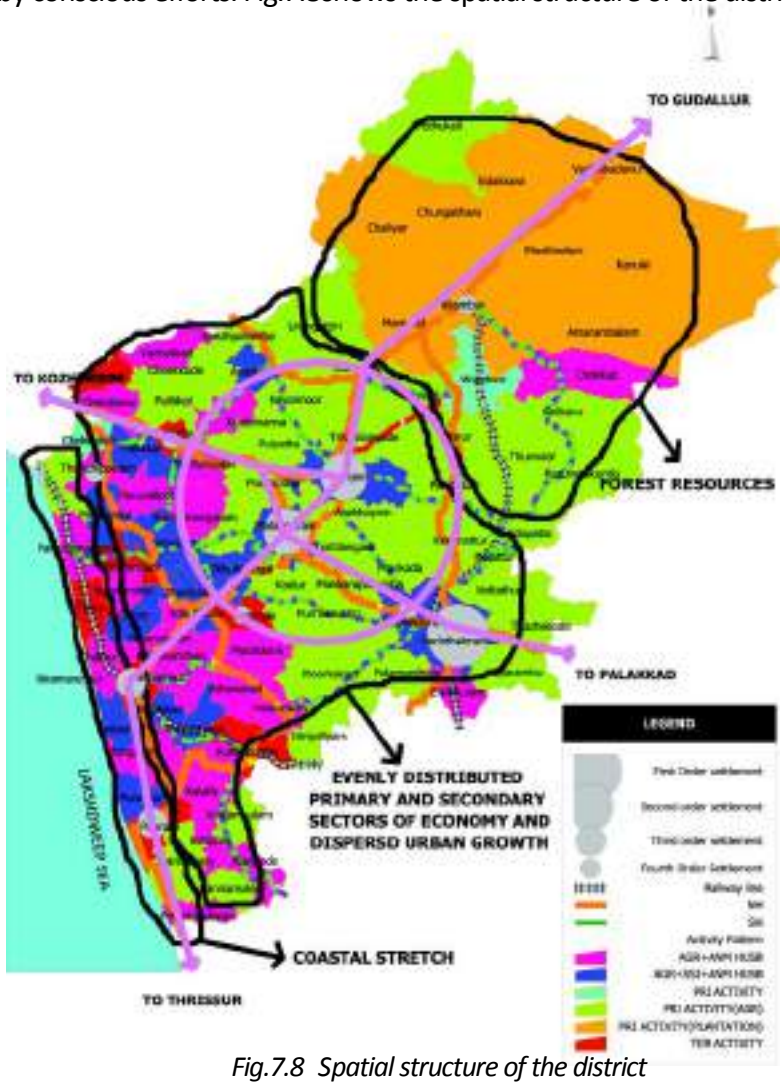


Fig.7.8 Spatial structure of the district

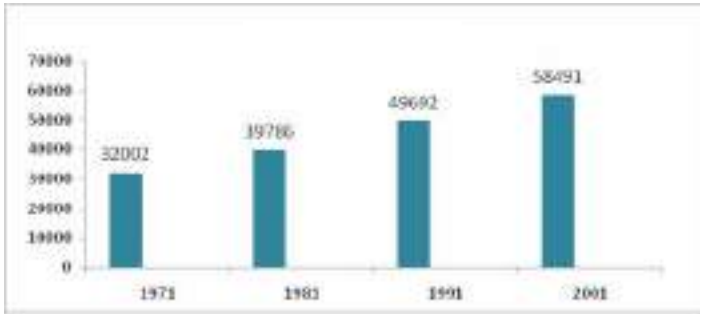
CHAPTER 8 DEMOGRAPHY

8.1.0 Population and its growth pattern



Malappuram has been the most populous district in the state with the highest rate of population growth for the last three decades. The total population of the district is 36,25,471 and 41,10,956 as per the census 2001 and provisional total, census 2011 respectively. This accounts for 12.31 % and 11 .39 % of the state population. It ranks third in the state in total area and fifth in population density. Though the population growth rate is declining, it is still very much higher than the state average (13.39 % compared to 4.86 % as per census 2011, provisional totals).

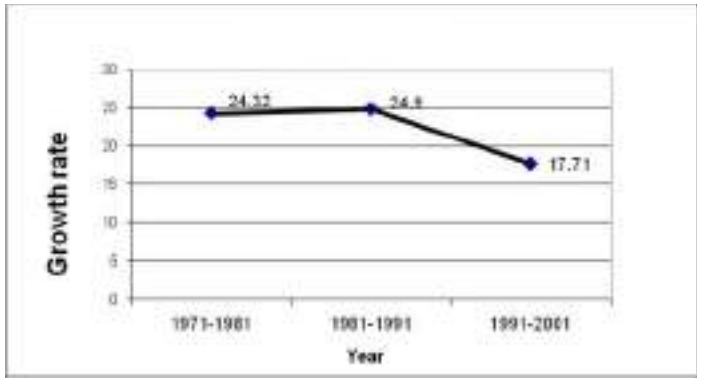
As per the Census 2001, the total population of the Malappuram Municipality is 58491 which is approximately 2% of the total population of the district. The municipal population also grows in pace with the district population. The variation of the population from 1971 onwards is shown in *Fig. 8.1.*



Source:census

Fig.8.1 Temporal variation of total population in Malappuram municipality

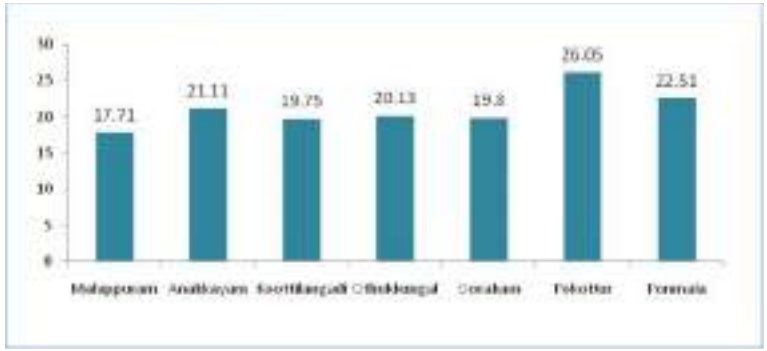
As per the census 2001 population growth rate of the municipality is 17.71 % and that of the district is 17.09 %. It shows a declining trend as shown in Fig. 8.2.



Source: Census

Fig 8.2 Growth rate of Population -Temporal variation

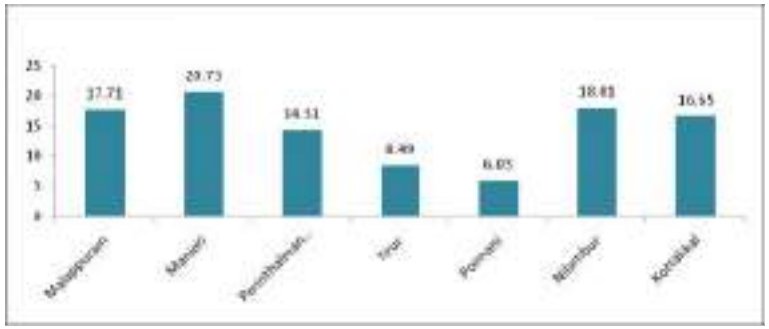
While comparing the growth rate with nearby LSGs it is seen that the growth rate is the lowest in the municipality.



Source: Census 2001

Figure 8.3 Growth rate of Population - Comparison with nearby LSGs

Among the seven municipal towns in the district, Ponnani and Tirur show very low growth rate. Malappuram comes in the third position, Manjeri and Nilambur showing higher growth rate This is shown in Fig. 8.4.



Source: Census2001

Fig 8.4 Growth rate of Population- Comparison with other towns

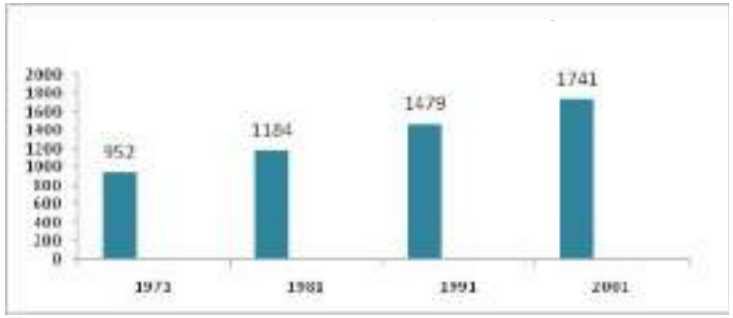
The Population of Malappuram Municipality grows at a higher rate compared to other administrative head quarters except for Kalpetta Municipality. The comparison of growth rate with other administrative head quarters is shown in Fig 8.5.



Source: Census 2001

Fig 8.5 Growth rate of Population -Comparison with other AdministrativeHead Quarters

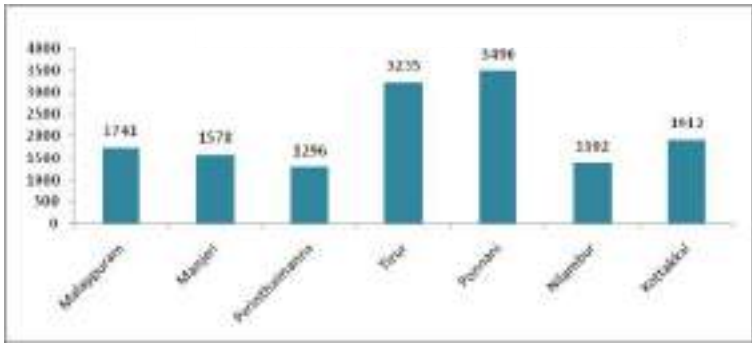
Malappuram district ranks fifth in population density as per the census 2001. It has been raised to fourth as per the Census 2011 (Provisional totals). The population density of Malappuram Municipality is 1741 persons/Sqkm as per census 2001. The temporal variation of population density is shown in Fig. 8.6.



Source: Census2001

Fig 8.6 Temporal variation of population density in Malappuram municipality

Among the Seven municipal towns in the district Ponnani and Tirur have highest density, Malappuram ranking fourth. Compared to nearby LSGs Malappuram has a higher density, except for Othukkungal Panchayath with a density of 2614 persons per Sqkm. The comparison of the density with the other municipal towns and nearby LSGs is shown in Fig. 8.7 and 8.8 respectively.



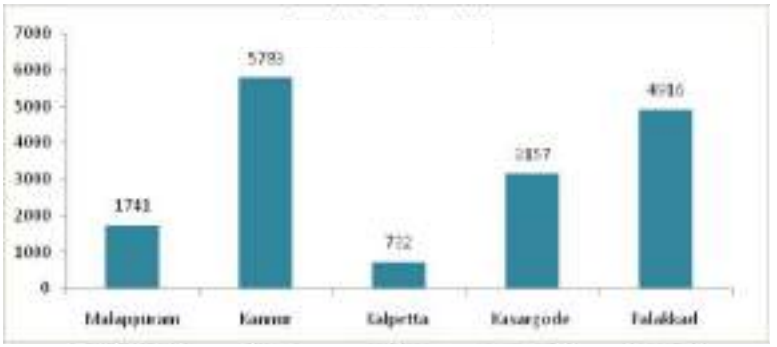
Source: Census 2001

Fig 8.7: Population Density 2001-Comparison with other towns



Source: Census 2001

Fig 8.8: Population Density - Comparison with nearby LSGs



Source: Census 2001

Fig 8.9: Population Density - Comparison with other administrative head quarters

The population density of Malappuram town is low compared to other Administrative Head Quarters except Kalpetta municipality**.**

8.2.0 Spatial distribution of population

The municipal area has been divided into 40 electoral wards as per the ward division in 2010. But as this was not available at the time of data collection, the ward division in 2005 is considered for study and analysis. According to the 2005 division there are 37 wards and the population in 2001 projected to the year 2010 is distributed among these wards. The ward wise distribution of population is shown in Table 8.1. It ranges from 562 to 3223. Varangode, Konompara, and Kynode are the most populous wards. The spatial distribution of population is shown in Fig. 8.10.



Fig.8.10 Ward wise population distribution in Malappuram (M)

Table 8.1: Ward wise population in Malappuram (M)

Ward No	Name of ward	Area of Ward (sq.km)	Population	Population Density (persons/ sq.km)
1	Padincharemukku	4.0506	2309	570
2	Noorengalmukku	1.8395	2479	1348
3	Cheruparamba	0.9966	1820	1826
4	Kalladimukku	2.2255	2724	1224
5	Kattungal	0.4218	1703	4037
6	Govt.College	0.6760	1792	2651
7	Munduparamba	0.3926	953	2428
8	Cholakkal	0.6468	1548	2393
9	Karuvala	0.4288	936	2183
10	Moonampadi	0.6081	1419	2334
11	Kavungal	0.6183	870	1407
12	Kalampadi	0.4632	2074	4478
13	MSP School	0.5756	1981	3442
14	Thamarakuzhy	0.2959	1735	5864
15	Kottakunnu	0.4388	1541	3512
16	Cherattukuzhy	0.6823	1392	2040
17	Chemmankadavu	0.5564	1594	2865
18	Korangode	0.9845	3164	3214
19	Cheenithodu	0.1802	716	3974
20	Mylappuram	0.6149	2155	3505
21	Kottappadi	0.4629	1057	2283
22	Valiyangadi	0.1505	870	5780
23	Varangode	0.8475	3223	3803
24	Paithiniparamba	0.4827	2153	4460
25	Athikarithodi	0.4649	1594	3429

Ward No	Name of ward	Area of Ward (sq.km)	Population	Population Density (persons/ sq.km)
26	Kynode	1.7080	2884	1689
27	Konompara	0.6145	3000	4882
28	Alathurpadi	0.2286	562	2458
29	Muthuvathparamba	1.2657	1244	983
30	Kolmanna	0.5049	1446	2864
31	SpinningMill	0.8600	1718	1998
32	Pattarkadavu	0.9321	2174	2332
33	Karaparamba	0.9180	1364	1486
34	Panakkad	0.9090	1963	2159
35	BhoothanamColony	2.9252	1949	666
36	Podiyad	0.6701	1687	2517
37	Perumparamba	1.9563	1748	894
	Total	**33.5974**	**65540**	

Source: Census

Density of population is an indicator of pressure of population on land which inturn is influenced by factors like accessibility, proximity to facilities etc. The ward wise density varies from 570 to 5864 . Tamarakuzhi and valiyangadi are the wards with highest density. The proximity to civil station makes Tamarakuzhi the densest ward; the peculiar pattern of residential development with row houses abutting the street, and the very small size of the ward are the reasons for the high value in valiyangadi. The ward wise distribution of density is shown in Fig. 8.11. From the figure it is seen that the wards with high density are located along the major transport corridors. Since the North West area of the municipality is occupied by agricultural land and strict development control measures are exercised in these areas as per the master plan in force these areas show low population density. The population concentration pattern of the municipality is shown in Fig 8.12.



Fig.8.11 Ward wise Distribution of population density in Malappuram (M)



Fig.8.12 Population Concentration Pattern in Malappuram (M)

8.3.0 Age - Sex Ratio



The distribution of Male and Female in the society has direct bearing on the social and economic condition of a state. It also reflects the status of women in the society. Sex ratio is the comparison between the number of males and females in the population. According to 2001 census sex ratio of Malappuram municipality is 1041, where as the sex ratio of the district is 1066. Variation of sex ratio for Malappuram municipality in the previous decades is given in Table 8.2

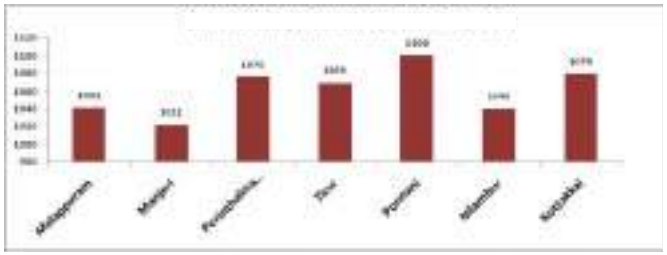
Table 8.2 Decadal variation of sex ratio for Malappuram municipality

Year	1971	1981	1991	2001
Sex Ratio in Malappuram municipality	1014	1004	1019	1041

Source: Census

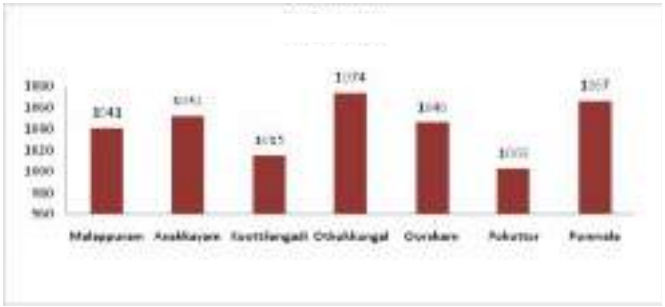
Data indicates that sex ratio of Malappuram municipality is gradually increasing over the last two decades. Sex Ratio for population in the age group (0-6) in 2001 is 962 and that for the district is 960.

Sex ratio of Malappuram Municipality is higher than that of Nilambur and Manjeri municipalities and lower than that of Anakkayam, Othukkungal and Ponmala LSGs. Sex ratio comparison with urban areas and adjacent Panchayats are shown in Fig 8.13 and Fig. 8.14.



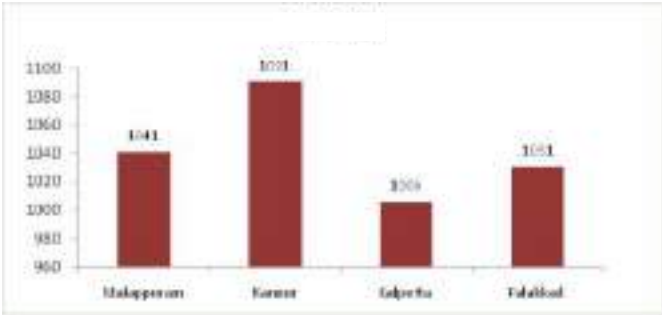
Source: Census 2001

Fig 8.13 Sex ratio 2001-Comparison with other urban areas



Source: Census 2001

Fig. 8.14 Sex ratio 2001-Comparison with nearby LSGs

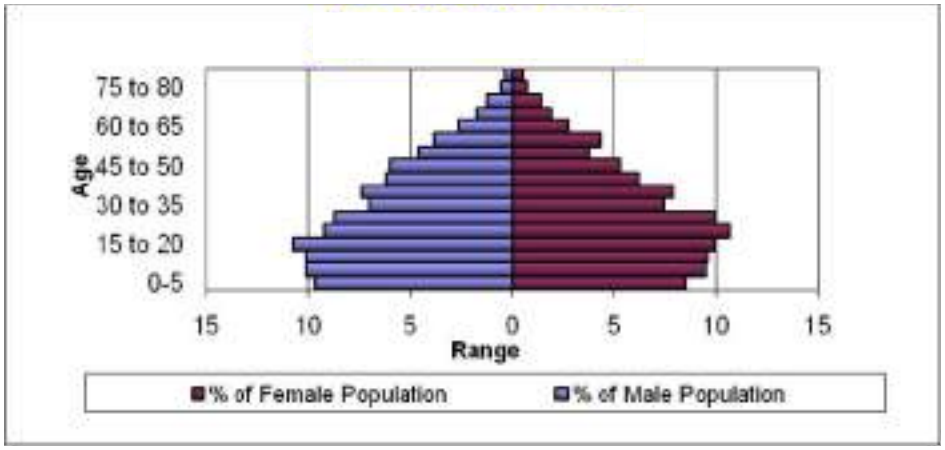


Source: Census 2001

Fig 8.15 Sex ratio - Comparison with other Administrative Head Quarters

Compared to other administrative Head Quarters sex Ratio of Malappuram Municipality is higher than that of Palakkad and Kalpetta municipalities.

From the socio economic survey, the age structure of people is obtained. The values suggest that majority of people are within the age group of 15 to 20.This is an indication of a healthy population. The age structure is given in *Fig 8.16.*



Source: Socio economic survey2010

Fig 8.16 Age- sex pyramid

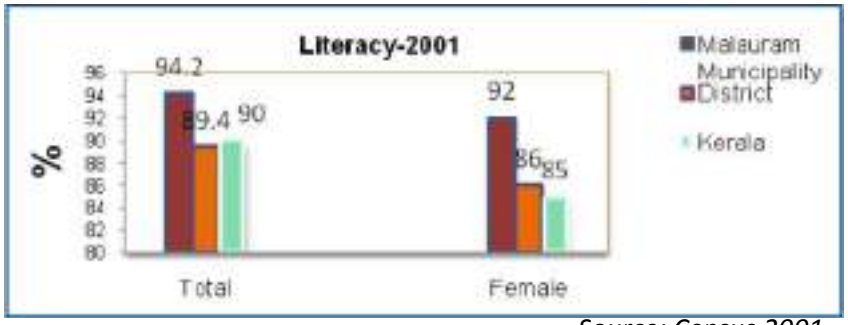
The age structure shows that the percentage of working population within the age group (20-60) is about 50%.



8.4.0 Literacy

Literacy is one of the important social characteristics. Children in the age group of 0-6 are considered illiterate and are excluded from the calculation of literacy rate. Kerala is the most literate state in the country. The

district also has a high rate of literacy, but it is slightly below the State average. The municipality shows a higher literacy rate compared to the district average. The literacy rate of municipality in comparison with the State and District is shown in Fig.8.17.



Source: Census 2001

Fig 8.17 Literacy rate - *Comparison with District & State*

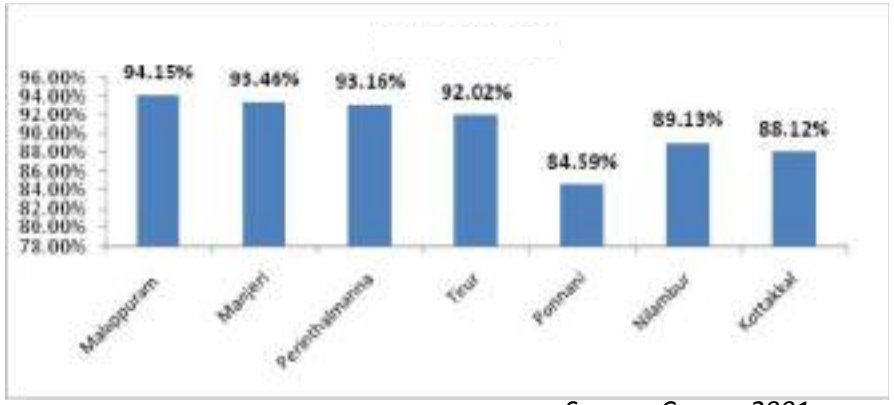
The literacy rate of Malappuram municipality is 94.15% as per census 2001; the male literacy rate is 96.48% and the female literacy rate is 91.96%. The literacy rate has increased over the past decades. Variation in literacy in Malappuram municipality for the previous decades is given Fig 8.18.



Source: Census 2001

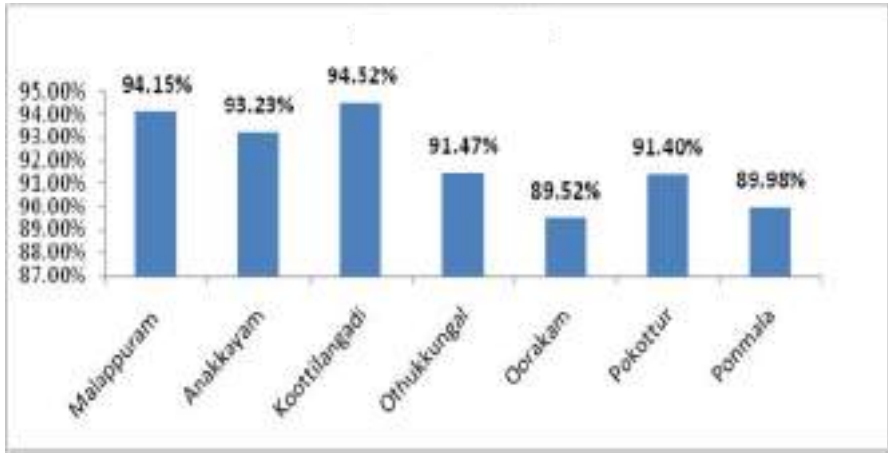
Fig 8.18 Literacy –Decadal variation in Malappuram municipality

Malappuram has the highest rate of literacy among the municipal towns in the district. Among the nearby LSGs Koottilagadi Gramapanchayat has a slightly higher value. The comparison of literacy rate with other urban areas and adjacent Panchayats are shown in Fig 8.19and Fig. 8.20.



Source: Census 2001

Fig 8.19 Litareacy -comparison with other urban areas



Source: Census 2001

Fig 8.20 Literacy -2001 comparison with nearby LSGs

8.5.0 House hold size

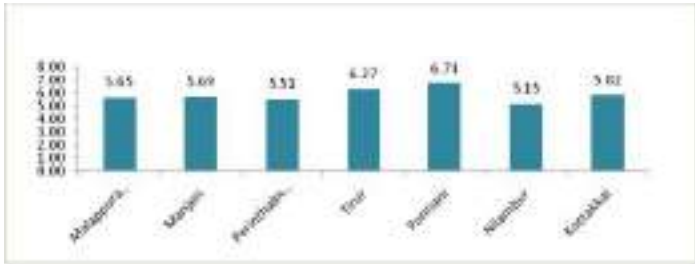


Total number of households in Malappuram municipality in 2001 is 10353. The total population being 58491, the average house hold size is 5.65. This is higher than the state average, the general trend seen in the district. From the socio economic survey conducted in 2010, it is observed that the house hold size is decreasing, the size being reduced to 5. The average house hold size for the district is 5.92. The municipality has a low house hold size compared to nearby LSGs. House hold size of other municipal towns in the district is almost similar to that of Malappuram (M) except for Tirur and Ponnani municipalities, which have a household size of 6.27 and 6.74 respectively.



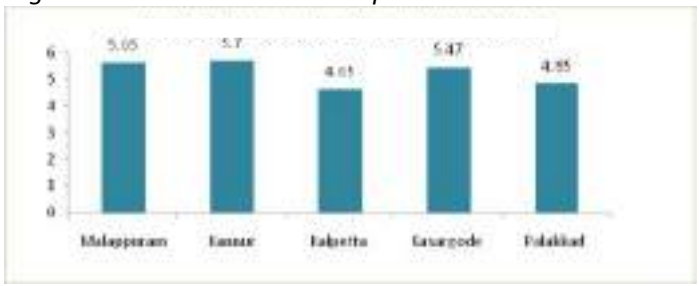
Source: Census2001

Fig 8.21 House hold size- comparison with nearby LSGs



Source: Census2001

Fig 8.22: House hold size- comparison with similar towns



Source: Census2001

Fig 8.23: House hold size- comparison with other administrative head quarters

Compared to other administrative Head Quarters, house hold size of Malappuram Municipality is higher than that of Kalpetta, Palakkad and Kasargode Municipalities.

8.6.0 Inference

Being part of the district with the highest rate of population growth, the municipal population is also growing at a high rate. The population is almost evenly distributed among the wards except for a few wards with very low density located in north west part containing the dry agricultural lands. The literacy rate is higher than the state average. The household size is also higher than the state average, but shows a decreasing trend.

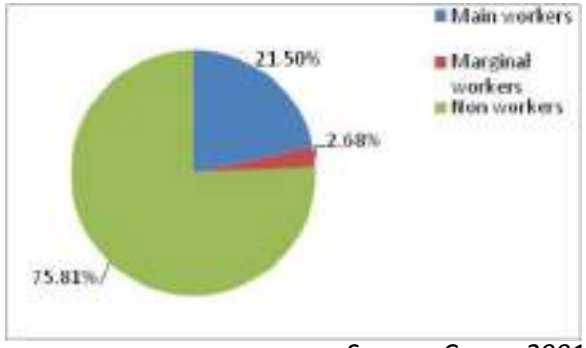
CHAPTER 9 EMPLOYMENT

9.1.0 Workers



The percentage of population engaged in economic activities is an indicator of the economic development and urbanization in an area. In Kerala generally the percentage of workers increases, but in Malappuram district this increase is only nominal. Major reason for this is the migration of male population to the Middle East countries for employment.

The total number of workers in Malappuram municipality as per 2001 census is 14148. The total workers are further divided into main and marginal workers. The main and marginal workers constitute 21.5% and 2.68% respectively of the total population. This is shown in figure 9.1



Source: Census2001

Fig 9.1 Main, Marginal & Non workers- Malappuram municipality

The change in number of total workers and main workers over a period of time is shown in Table 9.1 and figure 9.2. Even though there is an increase in the number of total workers it does not grow in proportion to the growth rate of total population. This may be an indication of shrinking economic base. But another fact to be noted is the significant share of workers from other states like Tamil Nadu, Orissa, and Bengal etc in the tertiary sector, which is not included in the census data. More than 30% of the workers in this sector are from this group, but no clear cut statistics is available to substantiate this.

Table 9.1 Decadal variations in Total workers & main workers

Year	Total Workers	Total main Workers
1981	9603	8599
1991	11149	10480
2001	14148	12578

Source: Census2001

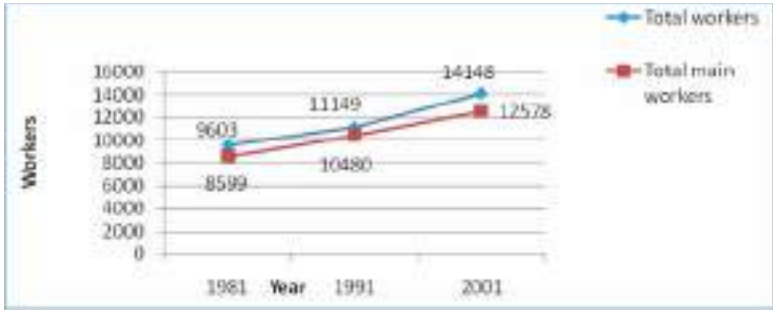
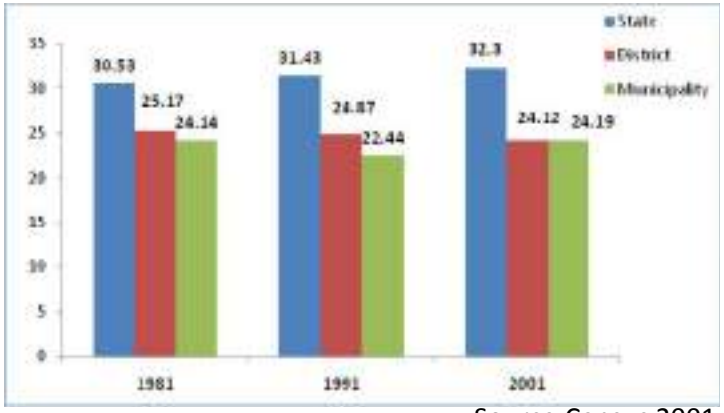


Fig 9.2 Decadal variations in Total workers & main workers

The share of female workers is also very low in Malappuram. There is a clear dominance of male in all the sectors. According to census 2001, the male workers constitute 85.72% of the total workers.

9.2.0 Work Participation Rate

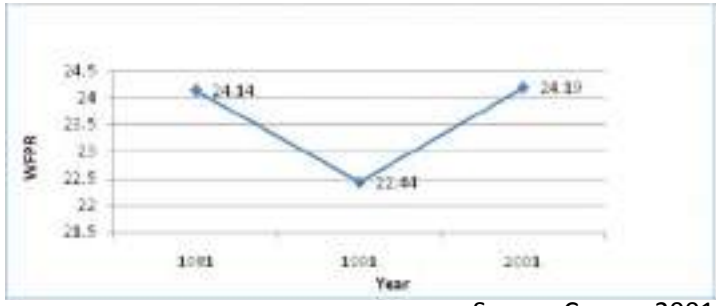
Malappuram is the district with lowest WPR in the state. The WPR of Malappuram municipality is 24.19%. Figure 9.3 shows the comparison of the WPR with that of district and state. It is seen that municipality has low WPR compared to District and State.



Source:Census 2001

Fig 9.3 Comparison of the WPR with district and state

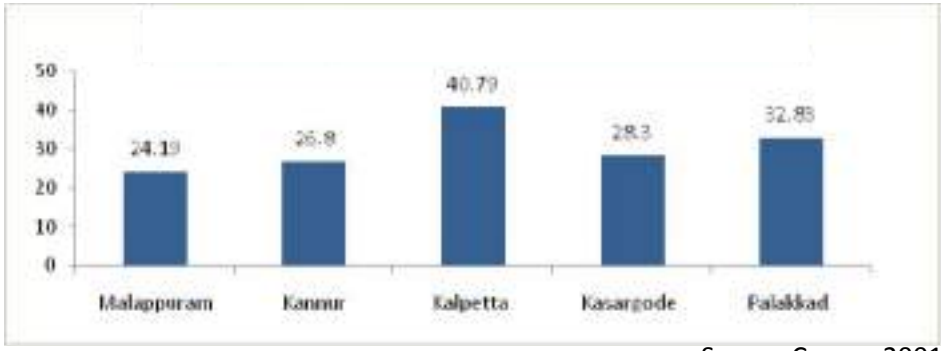
The temporal variation of WPR in the municipality is shown in figure 9.4. The increase over the two decades is only nominal.



Source:Census 2001

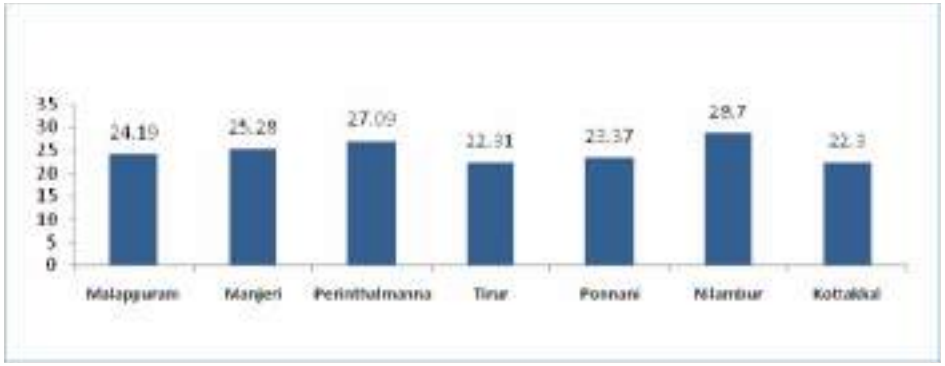
Fig. 9.4 WFPR in Malappuram municipality

WPR value of Malappuram (M) is in 3rd position compared to other urban local bodies. Nilambur, Perinthalmanna and Manjeri urban local bodies have higher values. The same is higher than the nearby local bodies except Anakkayam panchayath and it is lower compared to other administrative Head Quarters. Comparison of WPR of Malappuram (M) with other administrative Head Quarters, other urban local bodies and adjacent local bodies, is shown in Fig.9.5, 9.6 and 9.7 respectively.



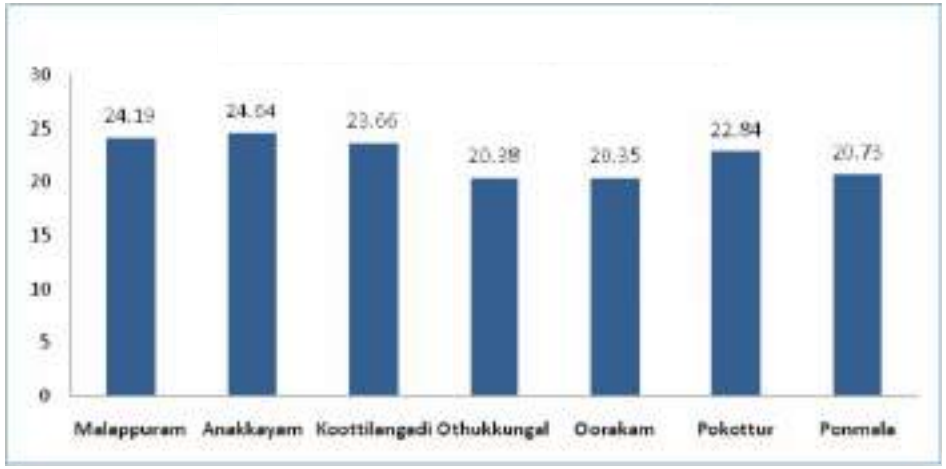
Source:Census 2001

Fig 9.5 Comparison of WPR with other administrative head quarters



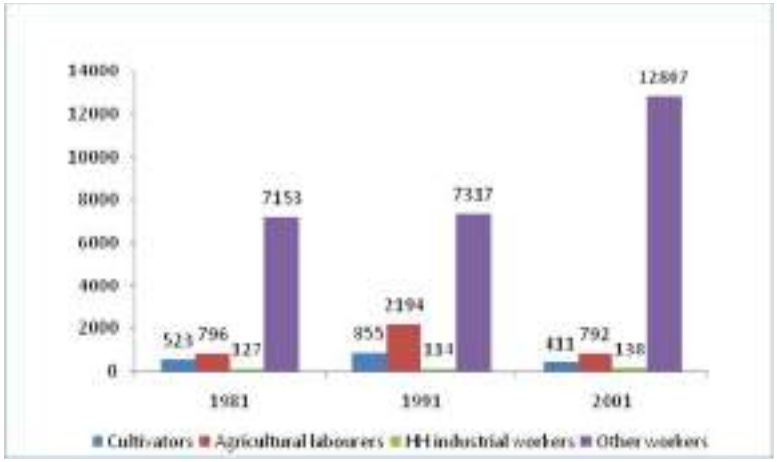
Source:Census 2001

Fig 9.6 Comparison of WPR with other urban local bodies



Source: Census 2001

Fig 9.7 Comparison of WPR with adjacent local bodies



Source:Census

Fig 9.8 Variations in number of main workers

9.3.0 Occupational Structure

As per census 2001, the main workers are classified into four categories viz. cultivators, agricultural labourers, household industrial workers and other workers. The number of workers in each category is shown in Table 9.2 and its variation is shown in figure 9.8.

***Table 9.2 Decadal variations of* main workers**

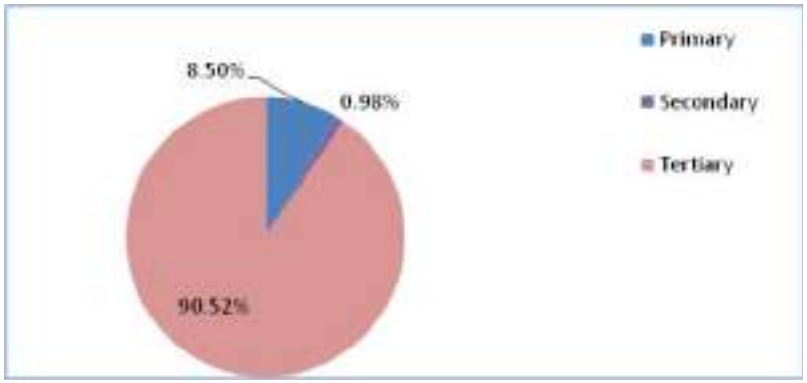
Year	Cultivators	Agricultural labourers	HH industrial workers	Other workers
1981	523	796	127	7153
1991	855	2194	114	7317
2001	411	792	138	12807

Source: Census

Majority of the workers are coming under 'Others' category and their number is increasing at a constant rate. The number of Agricultural laborers is showing a sudden decline after 1991. This is due to the weakening of agricultural sector. Agricultural labourers and Cultivators constitute 8.5% of the total workers as per 2001 census, where as other workers forms about 90.5% of total workers. This shows an inclination of people towards service sector. In the case of Malappuram district the share of other workers is 73.61% and Agricultural labourers and Cultivators is approximately 24.37% of total workers. Other workers in Ponnani and Manjeri municipalities are higher than the Malappuram municipality.

Workers are also classified into Primary, Secondary and Tertiary workers. The workers in others category can be considered as tertiary workers, therefore the increase in the total number of workers is due to an increase in the number of tertiary workers. From Socio economic survey

analysis it was found that majority of workers are engaged in Tertiary sector work. The percentage of workers is shown in Fig. 9.9



Source: Census 2001

Fig.9.9: Workers classification

9.4.0 Spatial Distribution

The ward wise distribution of different category of workers is shown in the following Figures.

Figure 9.10 & 9.11 gives the ward wise Concentration of cultivators and agricultural labourers. The maximum concentration of cultivators is seen in the ward of Kalladimukku (north eastern area of the town) and agriculture labourers are mostly concentrated in the wards of Noorengalmukku, Cheruparamba and Perumparamba (north east & north western parts of the town).

From the maps it can be seen that both the category of workers are concentrated within the same or nearby wards. These wards are mostly located in the north east and north west part of the municipal area. The agricultural land is distributed more or less in the same or nearby wards where there is a high concentration of cultivators and agricultural workers. The distribution of agriculture land as obtained from land use survey is shown in Figure 10.21



Fig.9.10: Concentration patternof cultivators



Fig.9.11 Concentration pattern of Agricultural labourers

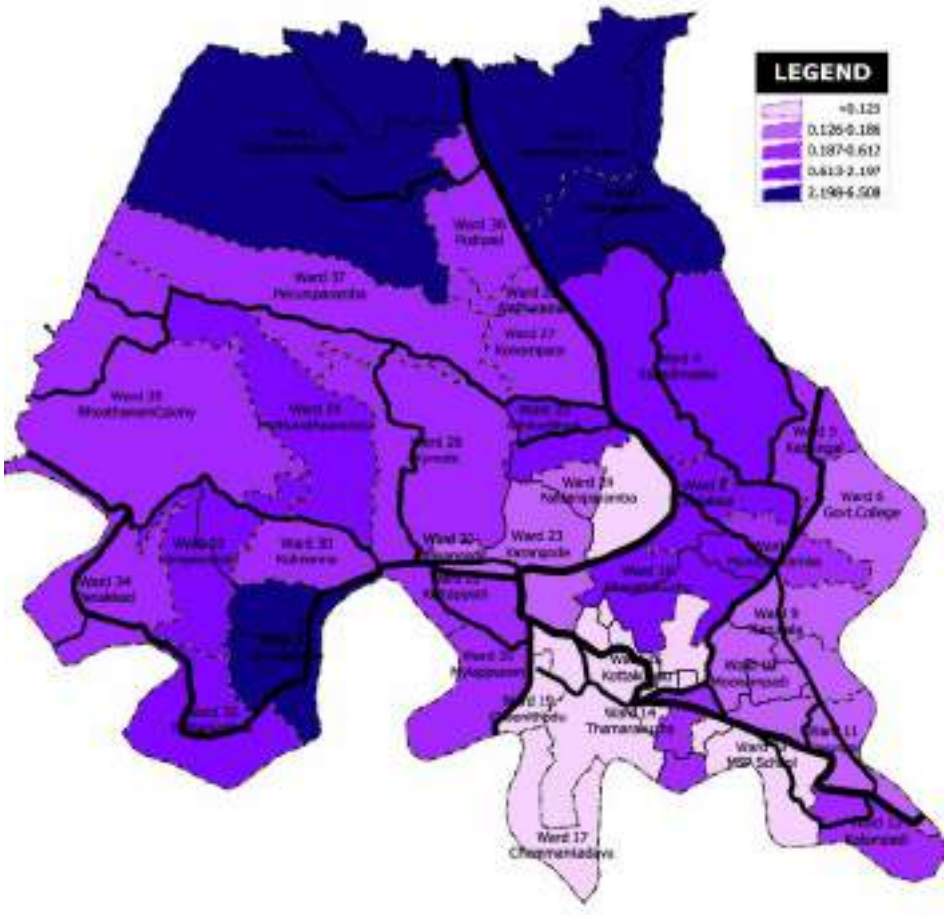


Fig.9.12 Spatial distribution of Household Industrial workers

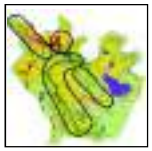


Fig.9.13 Concentration pattern of other workers

Figure 9.12 & 9.13 gives the ward wise concentration of household industrial workers and other workers respectively. HH industrial laborers constitute only 0.98% of the total workers. This concentration is more in the wards of Padincharemukku, Noorengal mukku, Cheruparamba and Spinning Mill. The other workers are concentrated more near the town centre.

9.5.0 Inference

Being a part of the district with the lowest WPR and per capita income as per the census data, Malappuram municipality also shows the same character. The town depends the Middle East countries also equally for its economic development.



CHAPTER 10 LAND USE

10.1.0 General analysis of land use

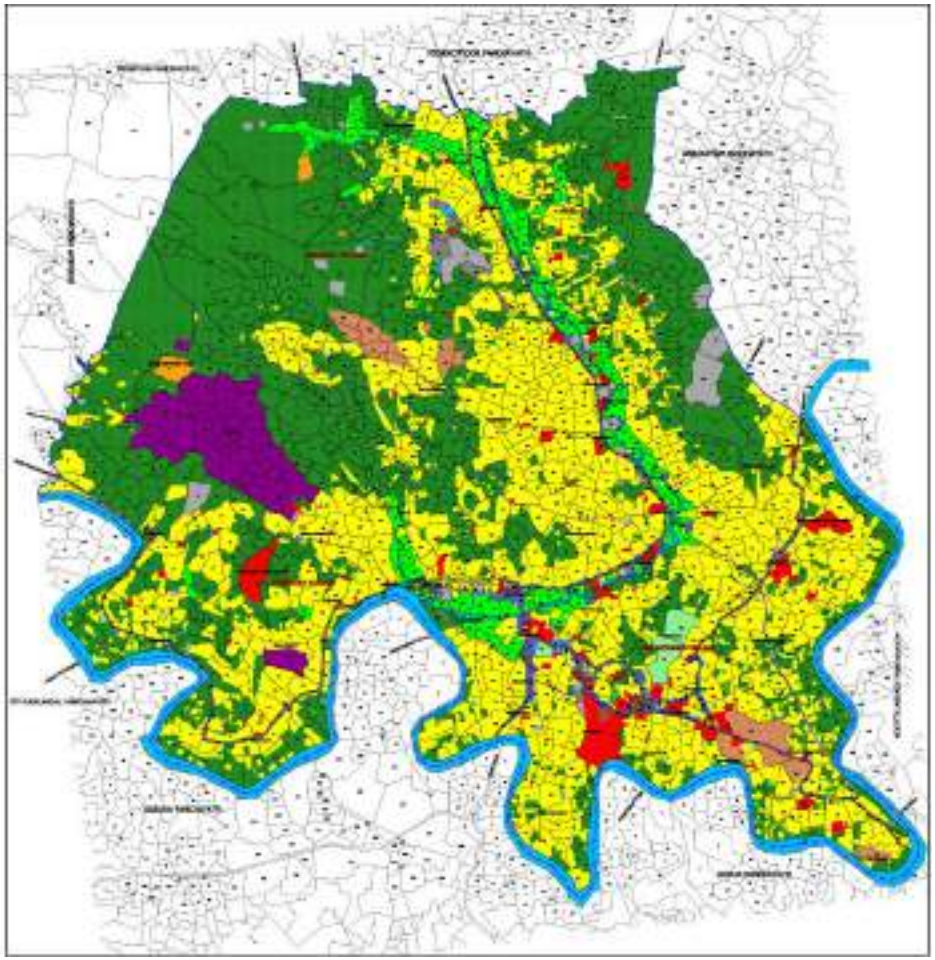


Figure 10.1 Existing Land use map of Malappuram municipality 2010

While studying the existing Land use pattern of the town it is seen that nearly half of the geographical area is covered by agricultural lands, park and open spaces and water bodies. This indicates the environmental quality of the place and emphasizes the necessity of proper planning interventions in order to meet the present and future requirments without compromising this quality. The existing land use map of Malappuram (M) is shown in fig. 10.1, the land use break up in terms of area as well as percentage with respect to total area is given in table10.1& fig 10.2.

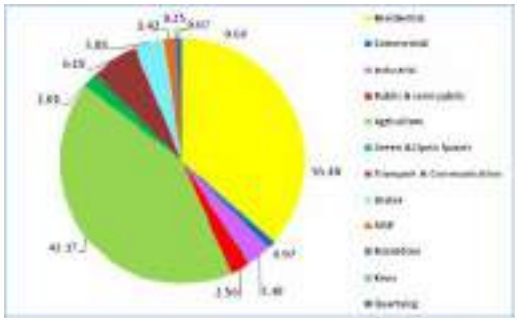


Figure 10.2 Existing Land use Breakup 2010

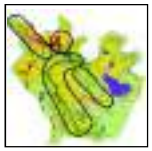
The table and figures show that the major land use is agriculture which covers 42% of the municipal area. The second major land use is residential covering about 36.4%. Table 10.2 shows the ward wise distribution of different types of land uses.

Table 10.1 Existing Land use breakup 2010

	Residential	Commercial	Industrial	Public & semi public	Agriculture	Green & Open Spaces	Transport & Communication	Water	MSP	Hazardous	Kavu	Quarrying	Total
Area in Ha	1223.15	32.75	114.35	86.03	1416.9	67.38	207.71	130.34	47.75	8.5	2.28	22.88	3360
% of total area	36.40	0.97	3.40	2.56	42.17	2.01	6.18	3.88	1.42	0.25	0.07	0.68	100
% of net area	37.87	1.01	3.54	2.66	43.87	2.09	6.43	0.0	1.48	0.26	0.07	0.71	100

Table 10.2 Ward wise distribution of land use 2010

Ward No	Residential	Commercial	Industrial	Public & Semi Public	Agriculture	Green and open space	Transport & Communication	Water bodies	MSP	Hazardous	Kavu	Quarrying
1	0.4706	0.0007	0.0009	0.0147	3.4016	0.0235	0.0552	0.0227		0.0266		0.034
2	0.2050	0.0068	0.0018	0.0800	0.4326	0.0592	0.8776	0.1759				0.0005
3	0.2049	0.0036		0.0088	0.6939	0.0483	0.0256	0.0115				
4	0.6479	0.0251		0.0334	1.2135	0.2112	0.0584	0.0359				
5	0.2542	0.0019	0.0021	0.0046	0.1072		0.0238	0.0250		0.0031		
6	0.3714	0.0063	0.0001	0.0493	0.1653		0.0270	0.0566				
7	0.2695	0.0053	0.0002	0.0469	0.0409		0.0298					
8	0.4286	0.0106	0.0013	0.0180	0.1184		0.0438	0.0260				
9	0.2840	0.0016	0.0006		0.0926	0.0010	0.0268	0.0217			0.0001	0.0003
10	0.3353	0.0120		0.0099	0.1964	0.0000	0.0376	0.0166				
11	0.1900	0.0033	0.0026	0.0056	0.1767	0.0021	0.0538	0.0536	0.121		0.0097	
12	0.2225	0.0017	0.0004	0.0277	0.0851	0.0026	0.0205	0.0705	0.031	0.0007		



Ward No	Residential	Commercial	Industrial	Public & Semi Public	Agriculture	Green and open space	Transport & Communication	Water bodies	MSP	Hazardous	Kavu	Quarrying
13	0.2667	0.0002		0.0280	0.0876	0.0039	0.0209	0.0621	0.106			
14	0.1760	0.0250		0.0167	0.0307		0.0245	0.0207		0.0029		
15	0.1764	0.0200	0.0046	0.0210	0.0277	0.1385	0.0508					
16	0.3541	0.0117	0.0011	0.0204	0.2472	0.0055	0.0299	0.0107		0.0007	0.0010	
17	0.2825	0.0002		0.0035	0.1422	0.0000	0.0087	0.1197				
18	0.5162	0.0619	0.0002	0.2023	0.0634	0.0330	0.0824	0.0250		0.0006		
19	0.1122	0.0114	0.0034	0.0099	0.0054	0.0131	0.0143	0.0117				
20	0.4232	0.0128	0.0002	0.0045	0.0805		0.0229	0.0712				
21	0.0622	0.0303	0.0007	0.0011	0.2453	0.0077	0.0376	0.0781				
22	0.0893	0.0061	0.0012	0.0188	0.0090	0.0053	0.0208					
23	0.4432	0.0307	0.0001	0.0362	0.2773	0.0038	0.0387	0.0168		0.0005		
24	0.3665	0.0121		0.0062	0.0459	0.0099	0.0276				0.0117	0.0029
25	0.3916	0.0015		0.0262	0.0254		0.0202				0.0001	
26	0.6225	0.0016	0.0027	0.0076	1.0286	0.0021	0.0332	0.0097				
27	0.5643	0.0043		0.0090	0.0076	0.0036	0.0255					
28	0.1713	0.0014		0.0108	0.0346		0.0105					
29	0.3054	0.0000	0.0003	0.0040	0.9309	0.0006	0.0241					
30	0.2639	0.0034		0.0313	0.1908		0.0155					
31	0.4759	0.0026	0.0657	0.0018	0.1970		0.0446	0.0724				
32	0.3724	0.0003	0.0011	0.0063	0.3852	0.0005	0.0438	0.1223				
33	0.4193	0.0042		0.0742	0.3798	0.0072	0.0307	0.0030				
34	0.3132	0.0037	0.0001	0.0183	0.4058	0.0097	0.0371	0.1166				0.0046
35	0.3017		1.0479	0.0008	1.3050		0.0698	0.0467		0.0499		0.1035
36	0.2973	0.0020	0.0025	0.0016	0.1797	0.0776	0.0255	0.0008				0.0828
37	0.5798	0.0012	0.0017	0.0008	1.1129	0.0042	0.0374		0.218			
Total	**12.2315**	**0.3275**	**1.1435**	**0.8603**	**14.169**	**0.6738**	**2.0771**	**1.3034**	**0.4775**	**0.0850**	**0.0228**	**0.2288**

10.2.0 Land use concentration

The Concentration Pattern of a land use gives an idea about where that particular land use is concentrated within the Municipality. The concentration pattern of a land use can be ascertained by the concentration index of the land use which is calculated as follows.

Concentration index (C.I) of a particular land use in the municipality

= (Area of that land use in a ward) / (Total area of the ward)

———————————————————————

(Area of that land use of the Municipality) / (Total area of the Municipality)

The Concentration Index may be greater than one, equal to one or less than one. Wards with any particular land use concentration index greater than one indicates that the land use under consideration is highly concentrated in that area. Table 10.3 shows the land use concentration index of various types of land uses, ward wise. This concentration of different categories of land uses are studied in detail in the following paragraphs.

Table 10.3 Ward wise concentration index of major land uses

Ward Name	Ward No	CI of Resi	CI of Commercial	CI of Industrial	CI of Public	CI of Agriculture	CI of Green & open spaces	CI of Transport	CI of Water bodies
Padincharemukku	1	0.319	0.017	0.007	0.142	1.991	0.289	0.221	0.145
Noorengal mukku	2	0.306	0.381	0.029	1.698	0.558	1.604	7.718	2.465
Cheruparamba	3	0.565	0.366		0.345	1.651	2.414	0.415	0.297
Kalladimukku	4	0.800	1.156		0.587	1.293	4.733	0.424	0.416
Kattungal	5	1.655	0.462	0.146	0.427	0.603		0.911	1.526
Govt.College	6	1.509	0.952	0.006	2.848	0.580		0.647	2.159
Munduparamba	7	1.886	1.376	0.013	4.667	0.247		1.227	
Cholakkal	8	1.820	1.685	0.061	1.087	0.434		1.095	1.037
Karuvala	9	1.819	0.378	0.042	0.000	0.512	0.121	1.013	1.303
Moonampadi	10	1.515	2.032		0.638	0.766	0.000	1.000	0.706
Kavungal	11	0.844	0.541	0.126	0.353	0.677	0.166	1.407	2.234
Kalampadi	12	1.319	0.374	0.024	2.336	0.436	0.275	0.716	3.924
MSP School	13	1.273	0.041		1.897	0.361	0.336	0.586	2.779
Thamarakuzhy	14	1.634	8.660		2.209	0.246		1.340	1.804
Kottakunnu	15	1.104	4.676	0.306	1.865	0.150	15.743	1.871	

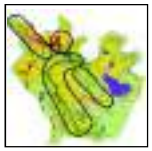


Table 10.3 Ward wise concentration index of major land uses

Ward Name	Ward No	CI of Resi	CI of Commercial	CI of Industrial	CI of Public	CI of Agriculture	CI of Green & open spaces	CI of Transport	CI of Water bodies
Cherattukuzhy	16	1.425	1.759	0.046	1.168	0.859	0.400	0.710	0.405
Chemmankadavu	17	1.395	0.039		0.247	0.606	0.000	0.254	5.544
Korangode	18	1.440	6.448	0.005	8.027	0.153	1.672	1.354	0.654
Cheenithodu	19	1.711	6.516	0.556	2.152	0.071	3.618	1.285	1.676
Mylappuram	20	1.891	2.134	0.009	0.285	0.311		0.603	2.984
Kottappadi	21	0.369	6.707	0.046	0.090	1.257	0.825	1.315	4.348
Valiyangadi	22	1.630	4.191	0.229	4.871	0.143	1.747	2.234	
Varangode	23	1.436	3.711	0.003	1.670	0.776	0.225	0.739	0.510
Paithiniparamba	24	2.086	2.576		0.500	0.226	1.025	0.926	
Athikarithodi	25	2.314	0.332		2.198	0.129		0.703	
Kynode	26	1.001	0.097	0.046	0.173	1.428	0.061	0.314	0.147
Konompara	27	2.523	0.724		0.574		0.294	0.673	0.147
Alathurpadi	28	2.059	0.632		1.851	0.358		0.742	
Muthuvathparamba	29	0.663	0.003	0.007	0.122	1.744	0.023	0.308	
Kolmanna	30	1.436	0.694		2.422	0.896		0.498	
SpinningMill	31	1.520	0.314	2.245	0.080	0.543		0.839	2.170
Pattarkadavu	32	1.098	0.036	0.035	0.266	0.980	0.027	0.761	3.383
Karaparamba	33	1.255	0.465		3.159	0.981	0.390	0.542	0.084
Panakkad	34	0.947	0.413	0.002	0.786	1.058	0.531	0.661	3.307
Bhoothanam Colony	35	0.283	0.000	10.527	0.011	1.058		0.386	0.411
Podiyad	36	1.219	0.304	0.109	0.094	0.636	5.775	0.616	0.029
Perumparamba	37	0.814	0.061	0.025	0.016	1.349	0.106	0.309	

a) Residential:

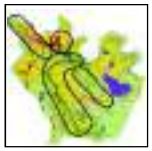
Residential land use costitutes 36.40% of the municipal area..Its distribution is shown in fig 10.3.



Fig 10.3 Spatial distribution of Residential Land use



Fig 10.4 Concentration pattern of residential land use



The residential pockets are developed mostly in places with easy accessibility and proximity to facilities. The location of civil station in the town centre and the working population due to this has also caused development of areas near the town centre. The strict development control measures as stipulated in the master plan in force have prevented the encroachment of residential areas into agricultural lands. Even though the density in the already developed residential areas is not high providing scope for accommodating more population . The land value poses restriction on this forcing people to seek other options such as shifting to the dry agriculture lands or to nearby LSGs. The concentration pattern of residential land use is shown in fig. 10.4. Higher concentration of residential land use is seen in Munduparamba.

b) Commercial:

Commercial area constitutes only 0.97% of the Municipal area, the spatial distribution of which is shown in fig. 10.5.

The figure shows that the commercial centers have developed along the major transport corridors. The most important commercial nodes are Kunnummal, Kottappadi and Kizhakkethala. The concentration pattern of commercial land use is shown in fig. 10.6.



Fig .10.5 Spatial distribution of Commercial Land use.



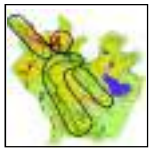
Fig 10.6 Concentration Pattern of Commercial land use

c) Industrial:

Industrial land constitutes 3.78% of the Municipal area, but this figure is deceptive. Even though the land under the ownership of the Kerala State Industris Development Centres (KSIDC) has been marked as industrial land, only a small portion of it is actually put to this use. Only two industries of medium scale are functioning here. The remaining land continues under



Fig 10.7 Spatial distribution of industrial Land use



dry cultivation . The major share of land under industrial use is occupied by the large scale industry `Malappuram Co-operative Spinning mill` located in ward 31, Spinning Mill. All the other industries are small scale or micro level and service industries scattered around in the residential areas. The spatial distribution of industrial land use and its concentration pattern are shown in fig 10.7 & 10.8 respectively.



Fig 10.8 Cconcentration Pattern of Industrial land use

The higher concentration in wards of Bhoothanam Colony and Spinning mill is due to KSIDC land and the Spinning mill in the respective wards.

d) Public and semi public:

Offices, educational institutions, hospitals and religious and cultural institutions are grouped under this category. Malappuram municipality is the administrative headquarters of the district. There is a large number of government offices concentrated in the central area due to the location of Civil Station at Kunnummal.

The educational facilities are well distributed in the town except for the North West quadrant which is devoid of any educational institutions. This is due to the very low population density in this area and lack of accessibility. The spatial distribution of educational facilities is shown infig. 10.9. Most of the health institutions are concentrated in the southern part of the town along the important roads. The Government Ayurveda hospital is located at a faraway place from the town centre, the access to which is a constraint due to the difficult terrain. The spatial distribution of health institutions is shown in fig. 10.10.

The distribution of religious institutions is almost like that of educational institutions. It is shown in fig. 10.11.

The total extent of land occupied by public and semi public use comes to 2.56% of the Municipal area. The spatial distribution of public and semi public use is shown in fig. 10.12 and its concentration pattern is shown in fig. 10.13.



Fig 10.9 Spatial distribution of educational facilities

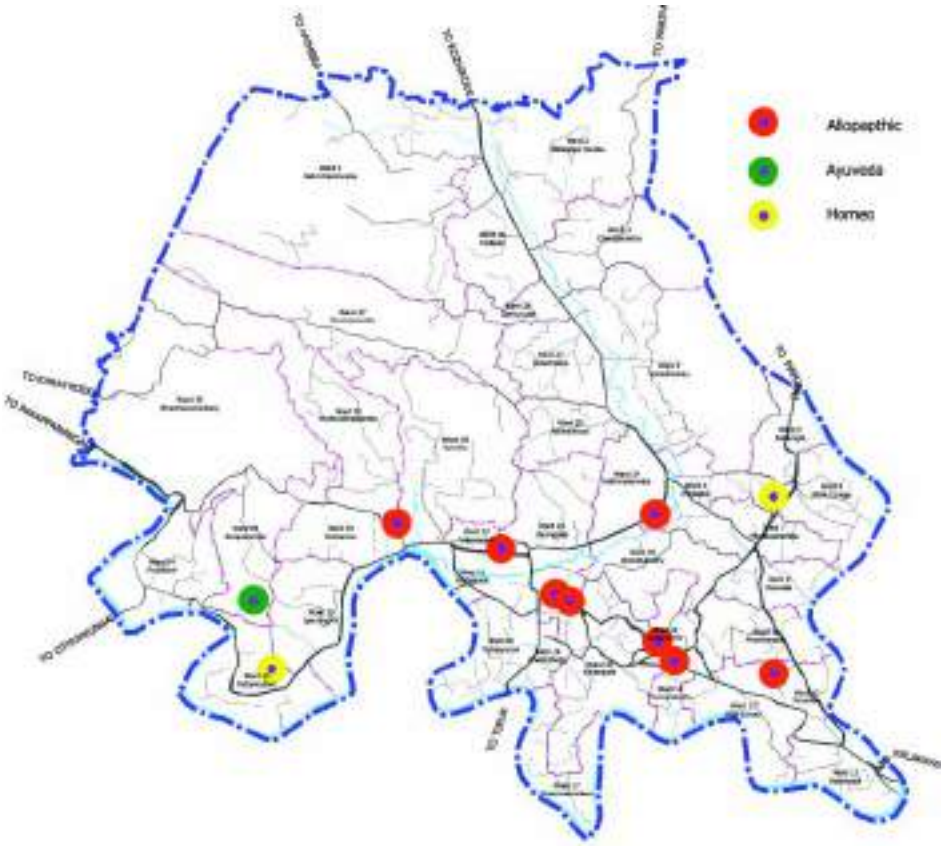


Fig 10.10 Spatial distribution of health institutions



Fig 10.11 Spatial distribution of religious institutions

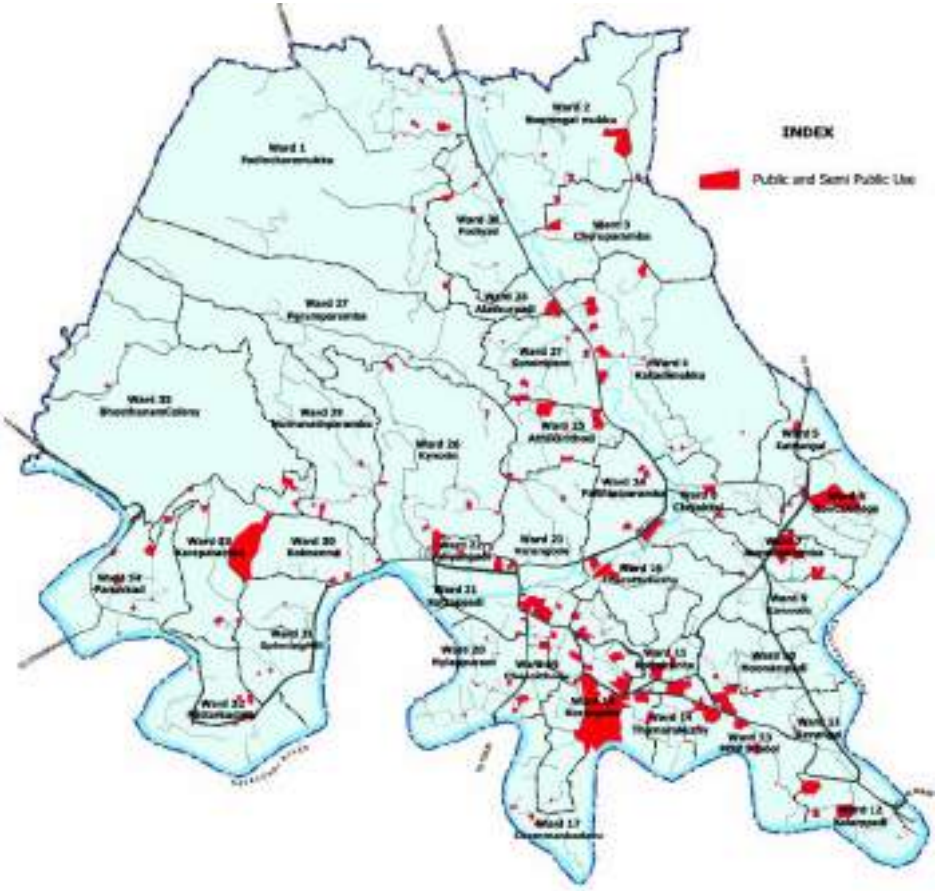


Fig 10.12 Spatial distribution of public & semi public use



Fig 10.13 Concentration pattern of public & semi public use

e) Recreational:

The recreational facilities constitute 2.01% of the Municipal area. They include Stadium, open air theatre, community halls, Public libraries and cinema halls. Indira Priyadarsini indooor stadium (near MSP) is the only stadium in Malappuram municipality which is meant for sports and other cultural activities. All the above mentioned recreation facilities are concentrated in and around the town centre. The spatial distribution of recreational facilities is shown in fig. 10.14.

f) Park and Open spaces:

There is only 1 park of DTPC in Malappuram municipality at present. It is located at Kottakkunnu with an area of 4 acres. The play ground at Kottappady and MSP ground near Kavungal are the two open playgrounds in Malappuram municipality which is now being used mainly for sports. The spatial distribution of Park and Open spaces is shown in fig. 10.15.

g) Transportation:

The area covered by transportation network comes to 6.18% of the Municipal area. The total length of roads in the municipality comes to 163.62km and the road density is 4.87 km/sq km. the town has good road connectivity, but except for the major transport corridors like National highway and State highways the roads in the municipality are very narrow and characterized by poor geometry and surface quality. The important terminals include the KSRTC bus stand at Kunnummal and the Municipal bus stand at Kottappady. The spatial distribution of transport facilities is shown in fig. 10.16.

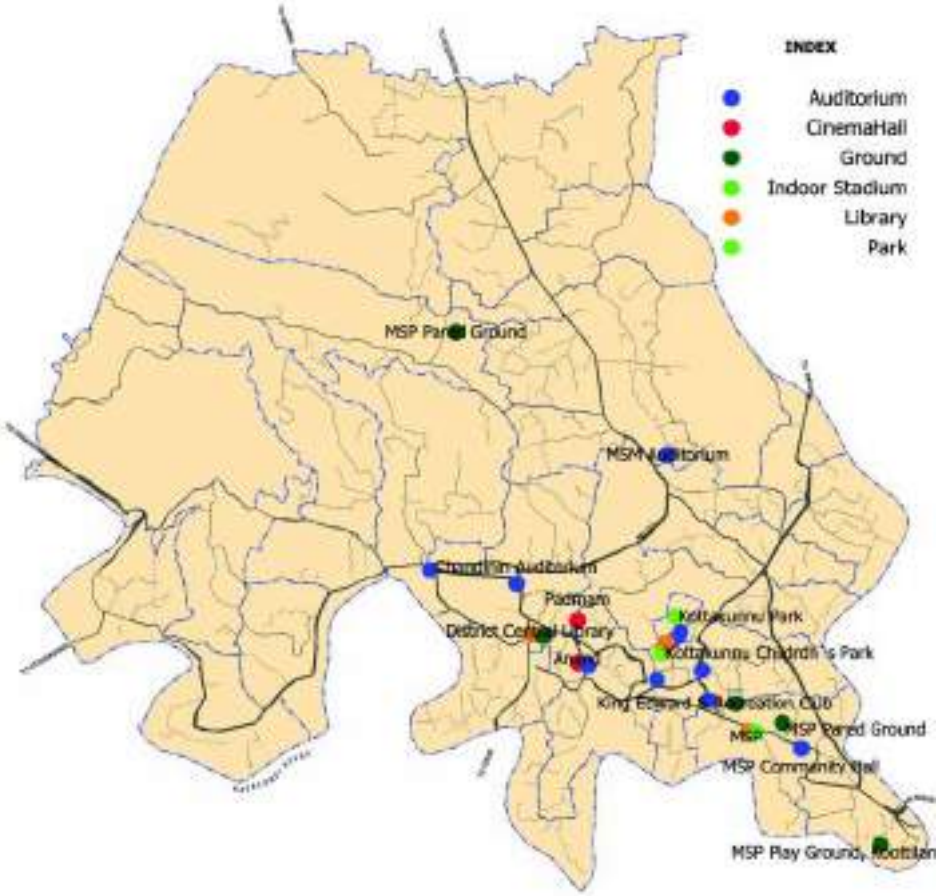


Fig 10.14 Spatial distribution of recreational facilities



Fig 10.15 Spatial distribution of Park and Open spaces

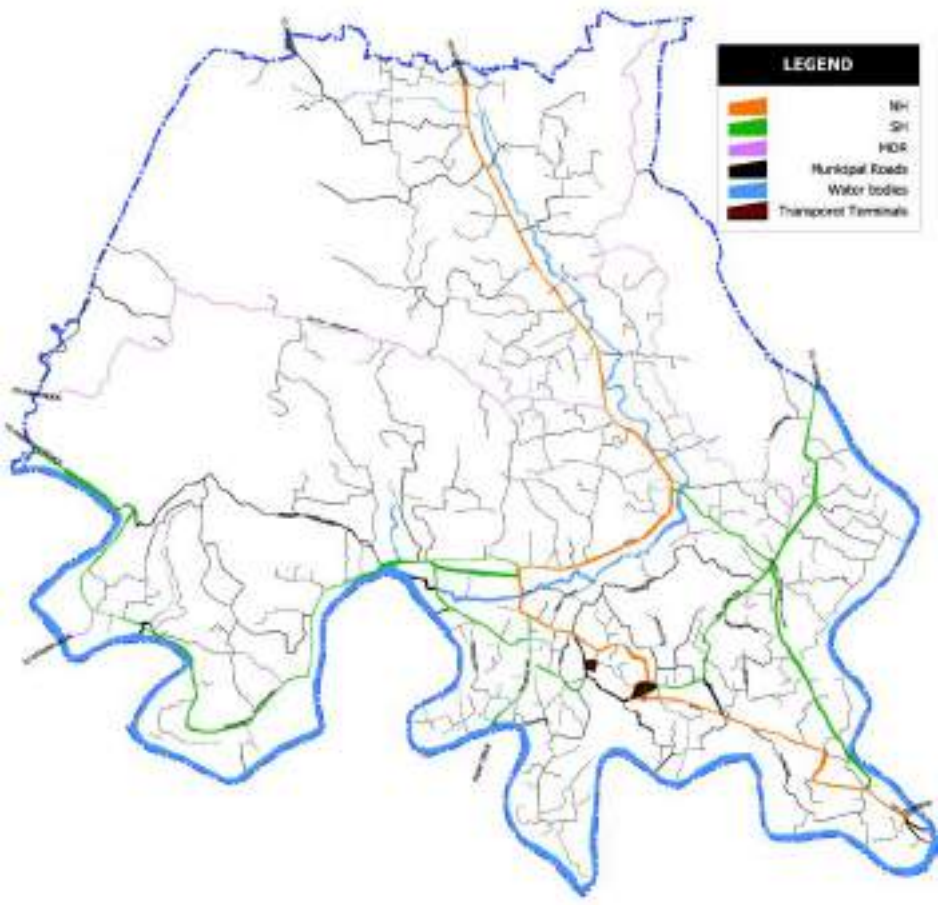


Fig 10.16 Spatial distribution of transport facilities

h) Agricultural:

The major share of land in the municipality is occupied by agriculture. The dry and wet agriculture jointly constitute 42.17% of the total municipal area. The paddy lands exist mainly adjacent to the NH 213, a considerable portion of which has been filled for commercial and educational purposes. The Valiyathodu, the main source of irrigation to the paddy lands flows parallel to NH and the paddy on the other side of it are comparatively preserved. The extent of paddy land comes to 102.97 Ha which is 3.06% of the municipal area. The spatial distribution and the concentration of paddy lands are shown in fig. 10.17 and 10.18 respectively.

The dry agriculture is seen distributed in the entire municipal area except at the core of the town. Still a higher concentration is seen in the North West quadrant and on the eastern boundary. These areas are characterized by undulating terrain and low population density. Coconut is the most important crop in the municipality. This constitutes 15.38% of the total municipal area. Besides this coconut is grown in the residential premises also. The spatial distribution of coconut plantations is shown in fig. 10.19.

The mixed crop (active and non active) include Tapioca, plantains, vegetables etc and constitute 23%, the spatial distribution of which is shown in figure 10.20. The rubber cultivation has not yet been very popular in the municipality even though the terrain and soil types are suitable for that. The rubber plantations constitute only 0.724% of the municipal area. The spatial distribution of agriculture land is shown in figure 10.21. The total area covered by dry cultivation comes to 39.1%.



Fig 10.17 Spatial distribution of Paddy lands



Fig 10.18 Concentration pattern of Paddy lands

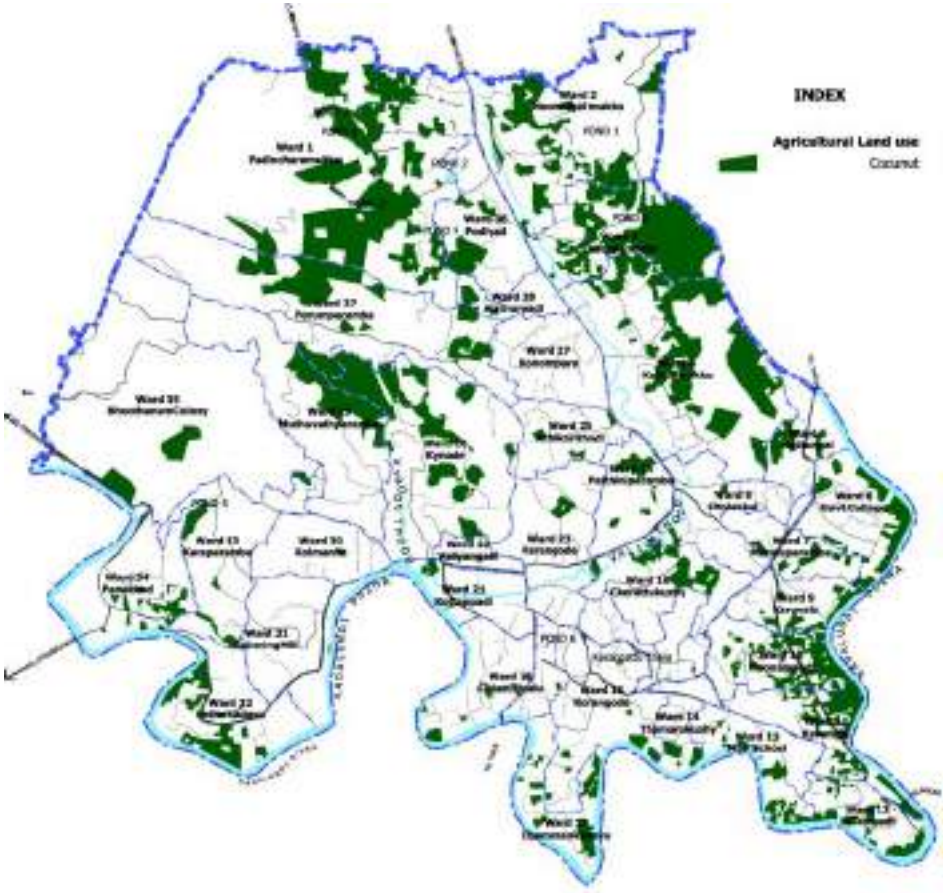


Fig 10.19 Spatial distribution of coconut plantations



Fig 10.20 Spatial distribution of mixed crops



Fig 10.21 Spatial distribution of Agriculture land

i) Special land uses:

The area occupied by the Malabar Special Police (MSP) is marked as special land use.Malappuram is the head quarters of the MSP. Besides that, training to the police personnel is provided here. Residential, Educational, Health. Recreation, Commercial and other incidental facilities are accommodated in the main campus near Kavungal. There is another campus of the MSP at Perumparamba which accommodates the firing range and training camp. The total area under this use comes to 47.7Ha which is 1.42% of the municipal area. The spatial distribution of Special area is shown in fig. 10.23.

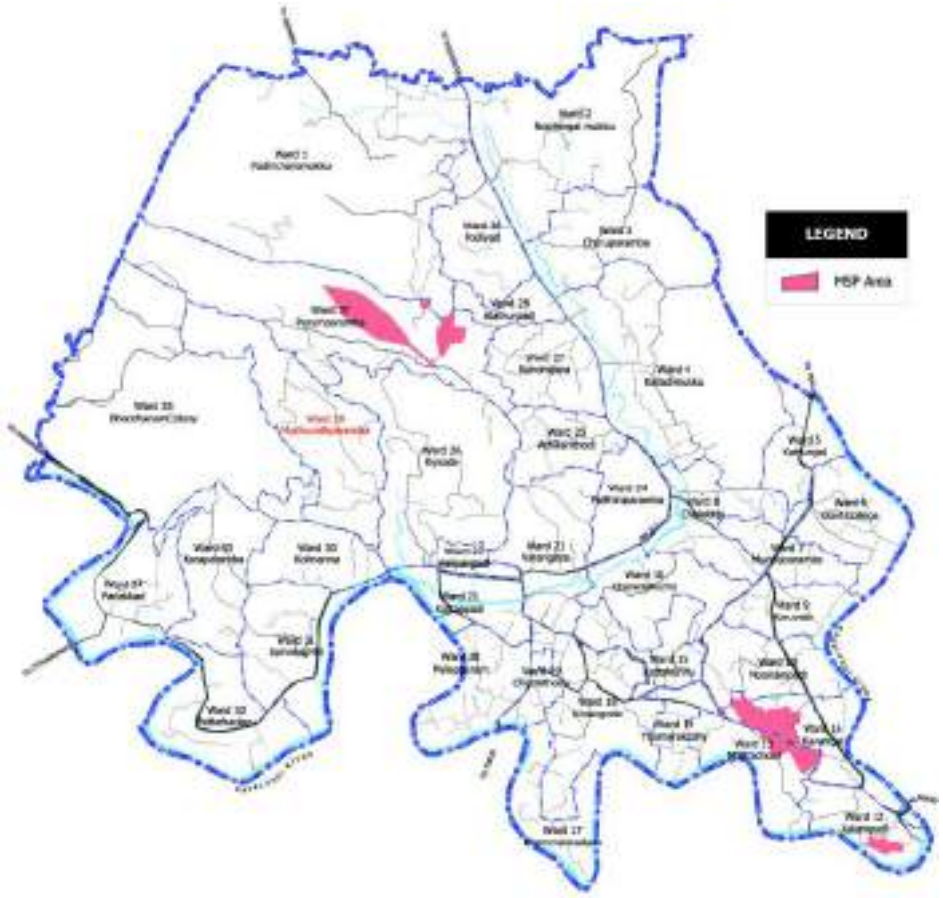


Fig 10.22 Spatial distribution of Special area

10.3.0 Comparison of Land use – 1971 & 2010

The master plan in force was prepared based on the land use 1971. The revision is based on the physical survey conducted in 2010. The area and percentage of land under each category in the years 1971 and 2010 are compared in the following table.

Table 10.4 Land use Comparison in area & percentage- 1971 & 2010

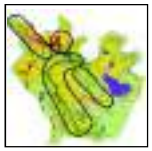
SL No	Land use	Area in sq Km	% of municipal area-1971	Area in sq Km	% of municipal area-2010
1	Residential	12.11	36.04	12.2315	36.4
2	Commercial	0.06	0.18	0.3275	0.97
3	Industrial	0.01	0.03	1.1435	3.40
4	Public & semi public	0.29	0.86	0.8603	2.56
5	Land under MSP	0.89	2.66	0.4775	1.42
6	Park & open spaces	0.04	0.12	0.6738	2.01
7	Transport & telecommunication	0.27	0.8	2.077	6.18
8	Area under dry	15.53	46.21	13.14	39.11
	cultivation				
9	Water bodies	1.15	3.43	1.3034	3.88
10	Paddy fields	3.03	9.09	1.029	3.06
11	Rocky area (quarrying)	0.22	0.58	0.22848	0.68
Total		**33.6**	**100**	**33.6**	**100**

The increase in residential land use over a period of around 40 years is only nominal. This does not mean that there is no increase in number of households. The density of population has increased from 952 persons/ sq km in 1971 to 1741persons/sq km in 2001. This indicates the division of house plots into smaller sizes.

The increase in percentage of industrial land use is due to the land owned by KSIDC being shown as industrial. The actual extent of land put to industrial use has not increased considerably. The land under public and semi public use has been increased from 0.86% to 2.56%. This is due to the establishment of government offices, educational buildings and hospitals. The park and open spaces shows an increase of 1.89% with the coming up of the park at Kottakkunnu. Another major improvement is in the transport sector. Large numbers of roads have come up in the municipality with wide coverage even though they are very narrow. The area under dry cultivation has been reduced from 46.21% to 39.1% due to the residential and educational development. But it was possible to limit this due to the restrictions imposed on construction activities in this area. Another notable reduction is in the extent of paddy fields. The 9.09% in 1971 became 3.06% in 2010 due to the filling up of paddy lands along the NH for construction purposes.

10.4.0 Inference

The study of the land use pattern of the municipality shows that there is enough scope for development in the future. The environmental quality of the place has not been degraded much due to the development activities. The depletion of agricultural land is not very severe in the municipality even though some of the paddy fields have been filled up for commercial or institutional purposes.



CHAPTER 11 DISASTER PRONENESS

11.1.0 Introduction

Disaster mitigation has become a priority area in the country. It is well identified that development cannot be sustainable unless disaster mitigation is built into the development process. Further it is considered that investments in mitigation are much more cost effective than the expenditure on relief and rehabilitation in the absence of mitigation measures. The Yokohama message emanating from the International Decade for Natural Disaster Reduction in May, 1994 underlined the need for an emphatic shift in the strategy for disaster mitigation. It was inter-alia stressed that disaster prevention, mitigation, preparedness and relief are four elements which contribute to and gain from the implementation of the sustainable development policies. These elements along with environmental protection and sustainable development, are closely inter related, and it was therefore, recommended that Nations should incorporate them in their development plans and ensure efficient follow up measures at the community, sub-regional, regional, national and international levels. At present there is a well set out policy and institutional set up in the country for disaster preparedness running from the national level to the district level.

11.2.0 Disaster prone areas in Malappuram

Malappuram municipality has no known history of droughts, cyclones or earthquakes and such disasters are not anticipated due to the geographical location, geological and topographical features. Malappuram municipality often faces flooding of Kadalundi River during monsoon for a few days. Heavy runoff due to the peculiarities in terrain is the major cause for this.



Fig. 11.1 Areas prone to landslide in the Municipality

The municipal area has a very undulating terrain. Some of the hilly tracts have slopes exceeding 45°. The soil condition in this area is a matrix of lateritic soil and boulders of igneous origin. There have been no major landslides in the immediate past. But this is due to the heavy tree cover in the area. Now, slowly human activities are spreading to these areas and are a cause for concern since tree cover shall be lost gradually prompting landslides. Hence regulatory measures are to be taken for mitigating this disaster proneness in the municipal area.

11.3.0 Inference

Some of the areas are prone to flooding and landslides. Mitigation measures should be suggested in this development plan for addressing these issues.

CHAPTER 12 SECTORS OF ECONOMY

12. A Industry

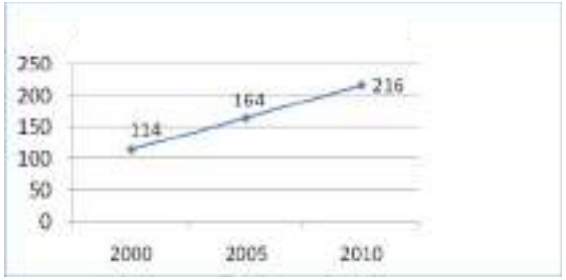
12.A.1 Existing Industrial Base



Industrial land use constitutes 3.78% of the total municipal area. There is one large scale (Malappuram co-operative spinning mill) and two medium scale industries (Sai Annapurna Bio protein Pvt. Ltd and Tar mixing unit) in Malappuram municipality. About 250 acres of land in the western part of the municipality is under the ownership of KSIDC for industrial purpose. The existing two medium scale industries are in this area. There are 216 small scale industrial units in the municipality. The number of small scale industries has increased over the past few years.



The variation in the number of industrial units is shown in Fig. 12.A.1.

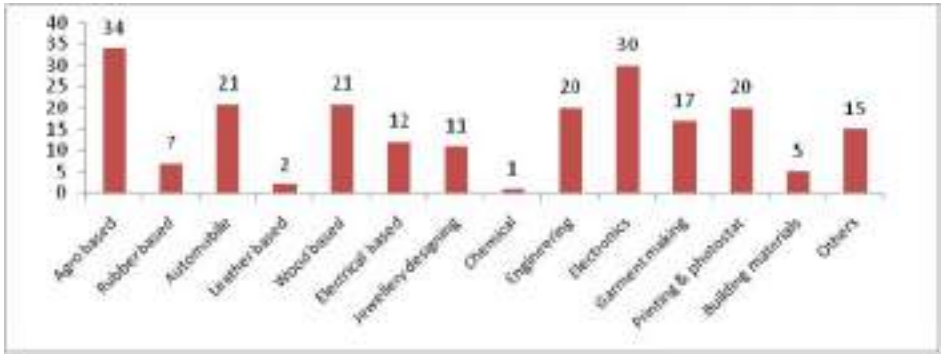


Source: District Industries Centre, Malappuram

Fig.12.A.1 Variation in number of industrial units

The small scale industries are further classified into Agro based, Electronics based, Automobiles, Wood based, Engineering based, Printing & Photostats, Garment making, Electrical based, Jewellery designing, Rubber based, Building materials, Leather based, Chemical and Others. The number of units in each class is given in Fig. 12.A.2.





Source:Economic&StatisticsDepartment

Fig. 12 A.2 Industries in various categories

More number of units is in Agro based, Electronics, Automobiles, Wood based and Engineering classes. There is a predominance of agro based industries in the Municipality (Agro based industries include banana chips making units, Flour & oil mills and manufacturing of other food products etc).

12.A.2 Spatial Distribution

Fig 12.A.3 shows the spatial distribution of industrial land use in Malappuram municipality.



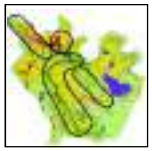
Fig.12.A.3 Spatial distribution of industrial land use

The concentration of industrial land use is high in wards 35 and 31. The land under KSIDC increases the concentration index in ward 35. Even though KSIDC owns the land, there are only two units at present in this area. The high concentration in ward 31 is explained by the presence of spinning mill in this ward. The concentration index is relatively low in the remaining wards. Even among these wards, some industrial activity co-exists with commercial land use along the major traffic corridors of the town.

12.A.3 Problems and Potentials

The municipality has a large number of people working outside the country. The major problem experienced by the town in this sector is the lack of entrepreneurship due to a wide spread culture of migration to Middle East in search of employment. The town has not attracted any large scale industrial investment for a long time in spite of accessibility and availability of land.

The draft Industrial and Commercial Policy, 2011 of the Government of Kerala envisages bringing in the state in top three positions in per capita income in the country (the state is in the seventh position at present). NRI remittances create demand for trade, commerce and service in the state. However, recent developments in West Asian region and North Africa demanding employment for local population is expected to bring in drastic changes in employment structure in those countries severely affecting the out migration of people for employment from the state and especially from Malappuram. So, there is an urgent need to create a strong economic base (and thus employment) in the region. The role of MSMEs



in employment generation is well established. The draft policy highlights the need to promote agro based industries in the state. The Malappuram town has all the required elements for growth of MSME's in this sector viz., agricultural produces, land suitable for industrial purpose and an existing base, however small, of such industries.

12.A.4 Inference

The existing industrial base of the town is not very strong, mainly due to lack of entrepreneurship and cultural orientation towards out migration to Middle East for employment. However, the town has potential for growth in agro based industrial units which is a need of the hour in view of the anticipated changes in the employment pattern in the Middle East and elsewhere.

12.B Trade and Commerce

12.B.1 Present scenario



Malappuram (M) is not as commercially developed as some of the other towns in the district. Commercial facilities are seen mainly as ribbon development along the major transport corridors in Malappuram (M). Only around 33 ha (0.97 % of the total municipal area) is under commercial land use in the municipality. This is nearly only one third of the area prescribed by the UDPFI guidelines. The commercially developed area comprises of Kunnummal, Kottappadi and Kizhakkethala. The municipal market is located at Kottappadi. The market has an extent of 0.34 ha and comprises of stalls selling vegetables, poultry, meat, grocery and fish. The area is congested and the entire population of the town depends on this centrally located market. Location of bus terminals has influenced the development of certain commercial nodes. In Malappuram (M) most of the commercial nodes are characterized by inadequate space for efficient circulation of pedestrian and vehicular traffic.

12.B.2 Hierarchy in the district

Hierarchy of settlements is obtained based on the number and order of facilities.

The facilities include

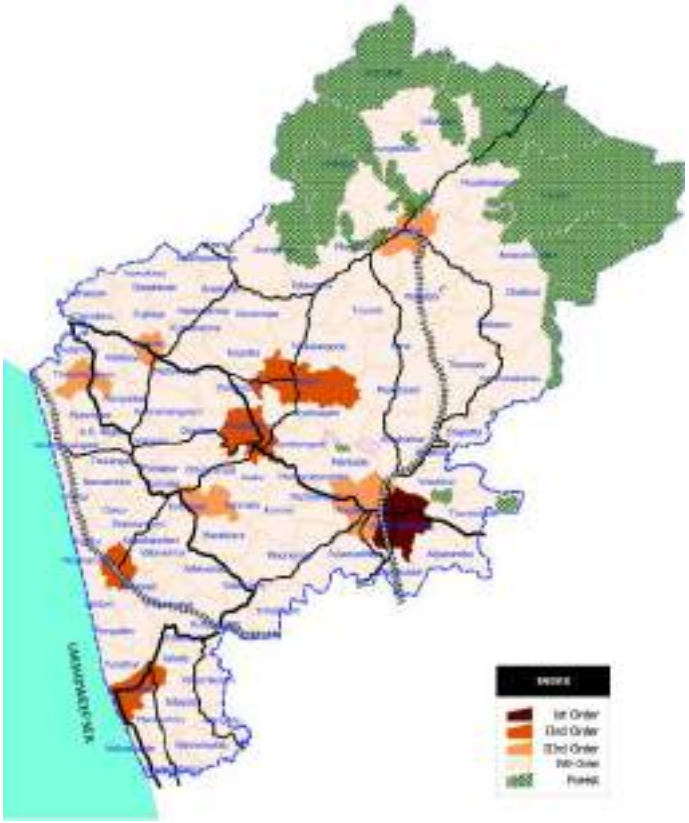
1. Educational facilities
2. Health Facilities
3. Market
4. Facilities in Agriculture and allied sectors
5. Physical infrastructure facilities
6. Transportation facilities

Hierarchy of settlement in the district is shown in fig.12.B.1.

In Malappuram District, Malappuram (M) is a second order Settlement and Perinthalmanna Municipality is the only First Order Settlement.

12.B.3 Important centres and nodes

Commercial nodes are located along the straight stretch of road. The nodes are characterized by high concentration of commercial units. Nodes are identified on all important intersections of roads where there is a concentration of commercial activity and in case of linear development,



Source: District Urbanization Report

Fig.12.B.1 Hierarchy of settlements in Malappuram District

commercial activity or physical development for a distance of 250m. Most important commercial nodes in Malappuram (M) are Kunnummal, Kottappadi, and Kizhakkethala. Important nodes and their hierarchy in Malappuram (M) are shown in Table.12.B.1.



Table 12.B.1 Hierarchy of Nodes

Sl No.	Commercial centers	Hierarchy
1	Kunnummal	1st order
2	Kottappady	1st order
3	Kizhakkethala	2nd order
4	Monampdi	3rd order
5	Munduparamba	3rd order
6	Police station	3rd order
7	Alathurpadi	4th order
8	Machingal	4th order
9	Konompara	4th order
10	Varangode	4th order

Source: District Urbanization Report

12.B.4 Spatial Distribution

Fig.12.B.2 shows the spatial distribution of commercial centers and nodes. The map shows that the commercial facilities are distributed along the major transport corridors.

12.B.5 Street Vendors

Street Vendors are a common sight in many towns. The National Policy on Urban Street Vendors, 2009 recognizes the positive role of street vendors being an integral and legitimate part of the urban retail trade and distribution system for



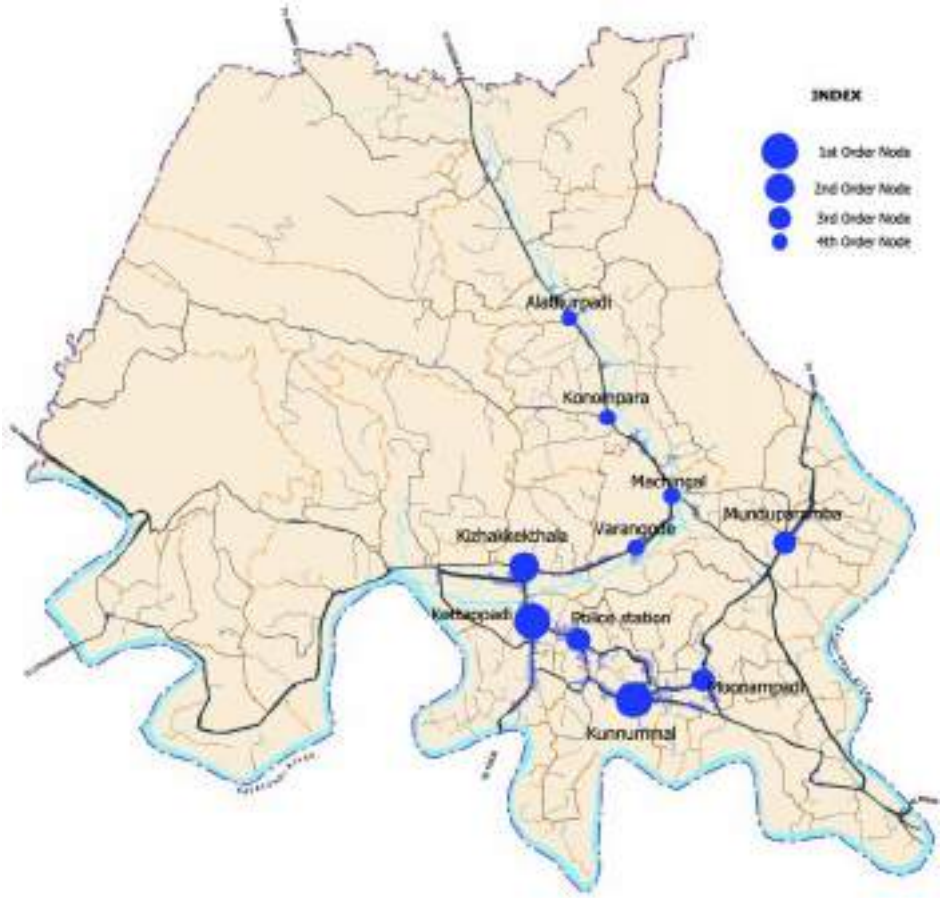


Fig 12.B.2 Spatial Distribution of Commercial nodes

daily necessities of the common man. The policy views street vending as a source of self employment to the poor which gives affordable and convenient services to a majority of the urban population.

There are about 30 street vendors throughout Malappuram (M). Majority of them are teashops, stationary, electronic goods etc. Higher concentration is seen in

1. Kunnummal, kottappady and kizhakkethala area
2. Near Kottakkunnu area
3. Near Collectors Bungalow

Tendency of Street vendors is to settle in areas where there is constant movement of people, especially near bus terminals.

12.B.6 Problems and Potentials

Malappuram (M) is a second order settlement in the district. It is not as commercially developed as some of the other towns of the district. Commercial facilities are seen mainly as ribbon development along the major transport corridors. Problems faced by the town are insufficient space for parking and for loading & unloading. Kottappady daily market which is the main centre for vegetables, fruits and fish commodities is very congested**.** The impetus given to the trade and commerce by NRI remittances in the municipality is not evident to the full extent due to lack of proper facilities like shopping malls, adequate parking space etc.

12.B.7 Inference

Malappuram (M) is not a main commercial centre in the district. Commercial nodes within the town are mostly characterized by congestion due to vehicular and pedestrian traffic beyond the capacity of the existing facilities. The town needs a faster commercial development to catalyze the economic development.

12.C Tourism

12.C.1 Present Scenario



Kottakkunnu recreational and amusement park is the only well developed tourist destination in the town. Another initiative in tourism sector is the construction of walkway along the river shore. Even though the municipality has a serene environment and an 18 km long water front, the tourism potential of the town is not well utilized. On an average nearly 110000 people visit Kottakkunnu park in a year. These people are mostly from the municipality and surrounding LSG's. The town doesn't attract domestic tourists from other districts in general. The foreign tourists are also non-existent in the town.

12.C.2 Important heritage sites





PARANAMBI THANAM at Kottappadi - Varakkal Paranambi, who was the Army chief of the Samoothiri Raja, had lived in this building. Presently this building is functioning as an Educational building of Arunodaya Vidhy Nikhethan. It is situated at Kottappadi. Besides this there are no listed heritage sites of importance in the town.

12.C.3 Problems and Potentials

The municipality has immense potential for development of tourism sector with a clean and bountiful environment. The town has water frontage of 18 km which is ideal for development of water sports and other related activities. The town lacks in tourist infrastructure. The marketing efforts are minimal. A two pronged strategy of development of tourist sites along with adequate marketing efforts shall boost the sector to a great extent in the town.

12.C.4 Inference

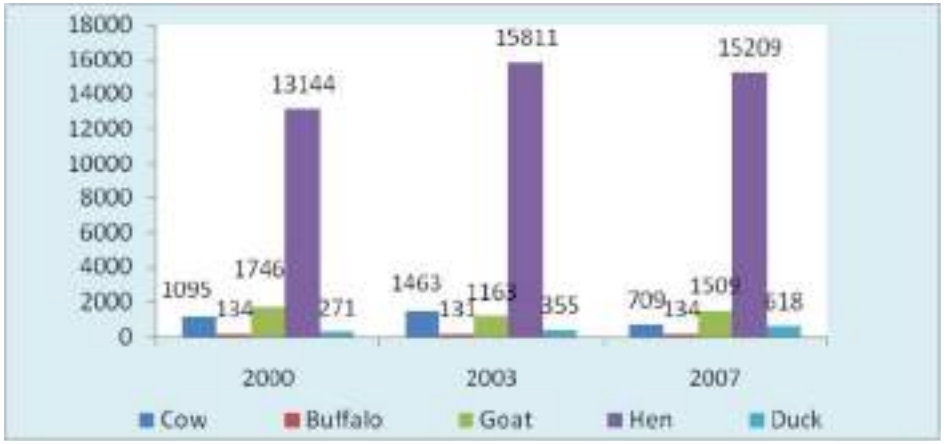
The tourism sector in the municipality is under developed. However, the town has great potential for development in this sector.

12.D Animal Husbandry

12.D.1 Population



The main livestock are cattle, buffaloes, goat, hen and duck. Trend in the increase in number of livestock is shown in Fig.12.D.1.



Source: Animal husbandry Department

Fig 12.D.1 Change in livestock population

The above graph indicates a considerable decrease in the number of livestock, especially cow, during 2003 to 2007. Hen also form a major part of livestock population. There is a considerable decrease in the number of grazing animals, which might be due to the reduction in green pastures.

12.D.2 Production

a) Meat

Even though the livestock population is showing a decline, produces from livestock does not follow such a trend. Eating habits of people have changed and there is an increase in demand for meat products. Monthly consumption details of livestock produces is shown in Table 12.D.1

There is no authorized slaughter house in Malappuram municipality, but the quantity of meat consumption per month is 32660Kg.This indicates the presence of a considerable number of unauthorized slaughters in Malappuram (M).

Table 12.D.1 Consumption of live stock produces

Product	Consumption per month
Milk	116539liters
Egg	377520 No's
Meat	32660kg

Source: Animal Husbandry Department

b) Milk



There is only one Dairy Farm at Munduparamba with 8 cattle in Malappuram (M). There is one milk co-operative society at Melmuri and number of Milma outlets near Kunnummal, Collector's Bunglaw and at Kottappady. The demand for milk is at constant rise and as per the data obtained the availability of milk per month is 81980 litres only and the monthly consumption is 116539 litres. The gap in supply is met by import from Tamil nadu.

12.D.3 Physical Infrastructure

The District Veterinary Centre which is a referral hospital is located in Malappuram (M).There is no Veterinary Clinic in the municipality.

12.D.4 Problems and potentials

The municipal area with its large extent of dry cultivation area, availability of water, rising demand for live stock produces etc has good

potential for development of this sector. However, the infrastructure facilities available in the sector are minimal and needs enhancement.

12.D.5 Inference

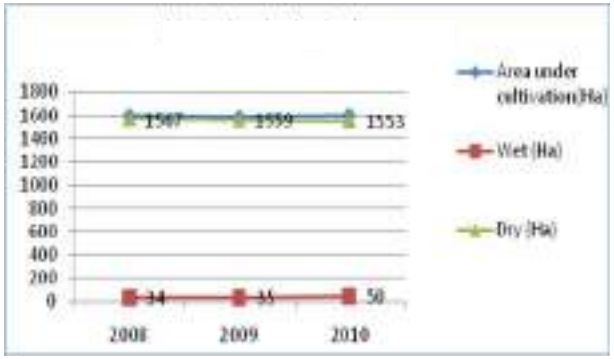
Animal Husbandry sector is weak in Malappuram (M). However, there is a possibility for developing the sector with creation of adequate infrastructure in the sector.

12.E Agriculture

12.E.1 Area under cultivation



Agricultural land use covers nearly 42% of municipal area. In Malappuram municipality the major agricultural crop is coconut, which covers about 15.89% of the total land area. Other than coconut, Paddy, areca nut, rubber, cashew etc are also cultivated. Analyzing the area under cultivation for the past three years in Malappuram municipality, the result obtained is fluctuating. The area under cultivation for 2010, 09 and 08 is shown in Fig.12.E.1.



Source: Economics & Statistics department

Fig.12.E.1 Variation in area under cultivation

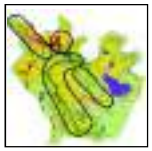
12.E.2 Important crops and production

Important crops in Malappuram (M) and its production is shown in Table 12.E.1.

Table 12.E.1 Important crops and production

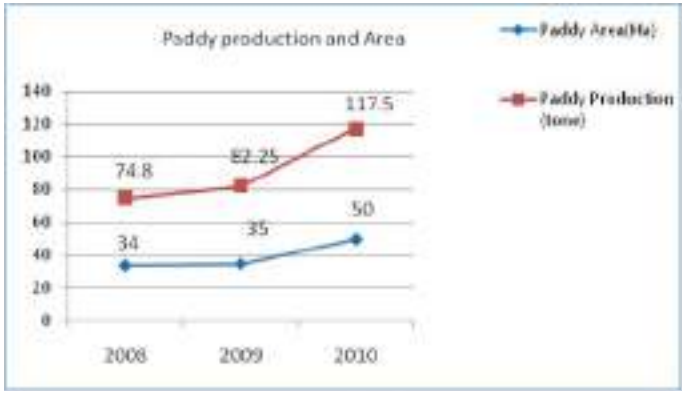
Type of crop	Area under cultivation(Ha)			Production(kg)			Productivity(kg/ha)		
	2008	2009	2010	2008	2009	2010	2008	2009	2010
Paddy	34	35	50	74800	82250	117500	2200	2350	2350
Coconut	1100	1120	1125	4620000	4704000	3937500	4200	4200	3500
Arecanut	316	300	290	8848000	8400000	6380000	28000	28000	22000
Banana	26	30	15	1625000	1875000	975000	62500	62500	65000
Vegetable	50	40	50	1500000	1200000	1500000	30000	30000	30000
Tapioca	20	20	25	500000	500000	625000	25000	25000	25000
Pepper	5	5	5	10000	10000	10000	2000	2000	2000
Cashew	40	30	25	40000	30000	25000	1000	1000	1000
Ginger	5	8	10	55000	88000	110000	11000	11000	11000
Turmeric	5	6	8	50000	60000	80000	10000	10000	10000

Source: Economics & Statistics Department



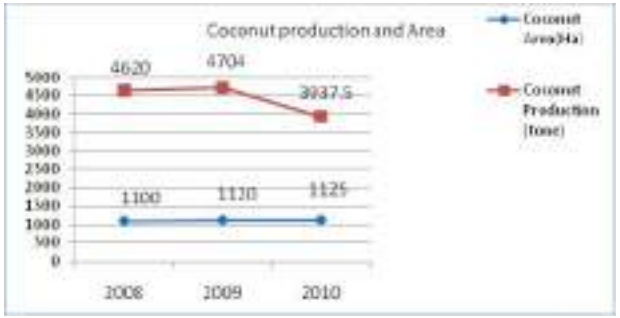
Figures 12.E.2 and 12.E.3 shows the variation in agriculture produces with respect to time. Paddy production and area under cultivation has increased. The coconut production has decreased during 2009-10, at the same time the area under cultivation slightly increased.





Source: Economics & Statistics Department

Fig.12.E.2 Paddy production and area





Source: Economics & Statistics Department

Fig.12.E.3 Coconut production and area

12.E.3 Spatial Distribution

The spatial distribution of agricultural area is shown in Fig. 12.E.4.

Agriculture land is concentrated mainly in the western and north-eastern areas of the town. Concentration is higher in wards 1,2,3,26,29 and 35.



Fig.12.E.4 Spatial distribution of Agricultural land

Paddy constitutes about 3.71% of municipal area. It is concentrated along NH 213. The spatial distribution of paddy land is shown in fig.12.E.5.

Mixed crop (active and non active) constitutes about 24.92% of municipal area. Fig 12.E.6 and 12.E.7 shows the spatial distribution of coconut cultivation and mixed crops respectively.



Fig.12.E.5 Spatial distribution of Paddy land

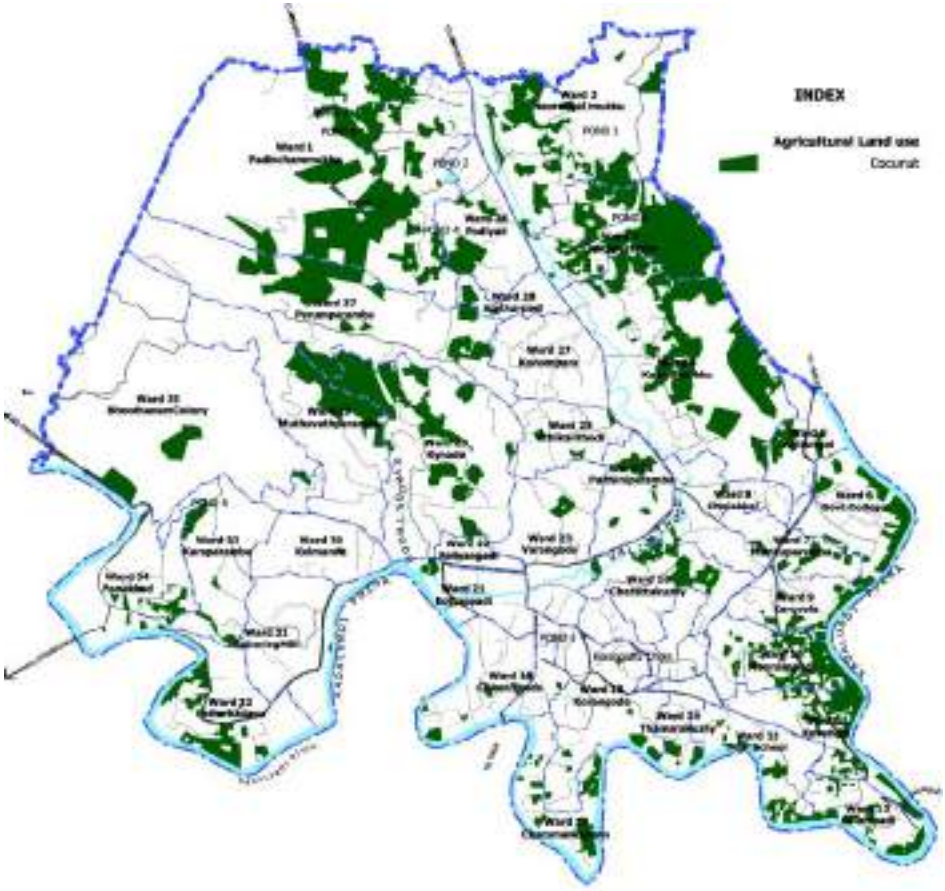


Fig.12.E.6 Spatial distribution of Coconut cultivation

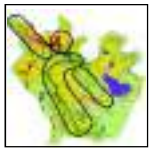




Fig.12.E.7 Spatial distribution of mixed crops

12.E.4 Irrigation Facilities

The source wise area irrigated has increased. The percentage of area irrigated is given in table 12.E.2.



Table 12.E.2 Area under irrigation

	2006	2007	2008
Total area irrigated (ha)	50	80	160
Area under cultivation (ha)	1601	1594	1603
Wet area (ha)	34	35	50
Dry area (ha)	1567	1559	1553
% area irrigated (total)	3.12	5.02	9.98

Source: Economics & Statistics department

12.E.5 Agriculture inputs and Marketing Facilities

Agriculture input units include fertilizer shops, units supplying Machineries, Seed farms etc. There is one fertilizer shop in the municipality. The town is devoid of supply of other inputs. There is no organised market for agricultural produces in the town besides the municipal daily market.

12.E.6 Problems and potentials

The irrigation facilities in the municipality are minimal. Even though a large area is under cultivation, agriculture has not become organised and is not being done on a professional basis. The infrastructure facilities are also not commensurate with the area under cultivation. There is tremendous scope for export oriented floriculture and horticulture due to the proximity to Calicut Inter National Air Port.

12.E.7 Inference

Agriculture land covers 42% of the total land area. Coconut is the major cultivation in the municipality. Agriculture produces are mostly imported to the town from Tamil Nadu. Majority of the workers are entering into tertiary sectors making agriculture production uneconomical due to unavailability of labourers. There is no organised market for selling agriculture produces within the town.

12.F. Fisheries

12.F.1 Introduction



The municipality has no coast line and hence fishery is not an important sector of economy of the municipality. Even though the municipality has 18 k.m. of river front, the fish catch from the river is not significant due to non-perennial nature of the river.

12.F.2 Present Scenario

The project "matsya kerala" launched by the Fisheries department covers places like Malappuram where there is no scope for marine fisheries. The thrust is on fresh water and ornamental fish species. Under this scheme seeds are supplied to the farmer. Mainly four types of fishes, Catla, Rohu, Mrigal and Grass Carp, are promoted in this project. There are 98 ponds and 10 quarry ponds registered with the Fisheries Department in the Municipality under this project. The total extent of ponds under fish farming comes to 5.92 Ha. The production figures are not available since there are no organised marketing of the produces.

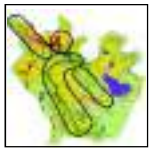


12.F.3 Problems and potentials

The municipality, with number of ponds and quarries with availability of water, has scope for fresh water fisheries and ornamental fisheries. But very few people are interested in this activity and lack of entrepreneurship is the major lacuna in development of this sector.

12.F.4 Inference

Lack of entrepreneurship and presence of organised marketing facilities seriously hamper the development of fishery sector in Malappuram Municipality.



CHAPTER 13 PHYSICAL INFRASTRUCTURE

13.A Traffic & Transportation

13. A.1 Introduction



Malappuram town being almost in the geographical centre of the district is an important transit point connected by road. The town has considerable through traffic which is more than inter town and intra town traffic. The undulating terrain of the town calls for particular attention while formulating a traffic and transportation plan for the town.

13.A.2 Characteristics of transport network

13.A.2.1 Roads

- Existing Road network

Malappuram town has good road connectivity. Being in the centre of the district, the traffic routes running in the north-south and east-west directions meet at the town. The north-south corridor is provided by NH 213 running from Palakkad to Kozhikkode. The east –west corridor running from Tirur to Manjeri (SH) joins the national highway at Kottappadi junction and takes off at Kunnummal junction. Another State Highway connecting Parappanangadi to Malappuram meets the National Highway at Kizhakkethala. In effect both the traffic in north-south and east-west directions use the same stretch of the road for more than one km and that too through the centre of the town. A fraction of this traffic is bye passed by the Machingal – Munduparamba – Kavungal bypass. Other major roads in the municipality are

(i) Hajiyarpally –Edayipalam Road
(ii) Konompara – Karathodu Road
(iii) A.K Road
(iv) Melmuri MSP camp Road and
(v) Jubilee Road

The existing road network is shown in Fig.13.A.1.

The roads in the town are maintained by PWD (NH, SH and MDR only) and municipality. The length of roads available in the municipality and their classification are given in table 13.A.1.

Table 13.A.1 Length of Road network

Category	Length, km
N.H.	10.53
S.H.	17.30
M.D.R.	12.52
Municipal	123.27
Total	163.62

The road density in the municipality comes to 4.87 km per sq.km which is comparable to other similar towns in the state.

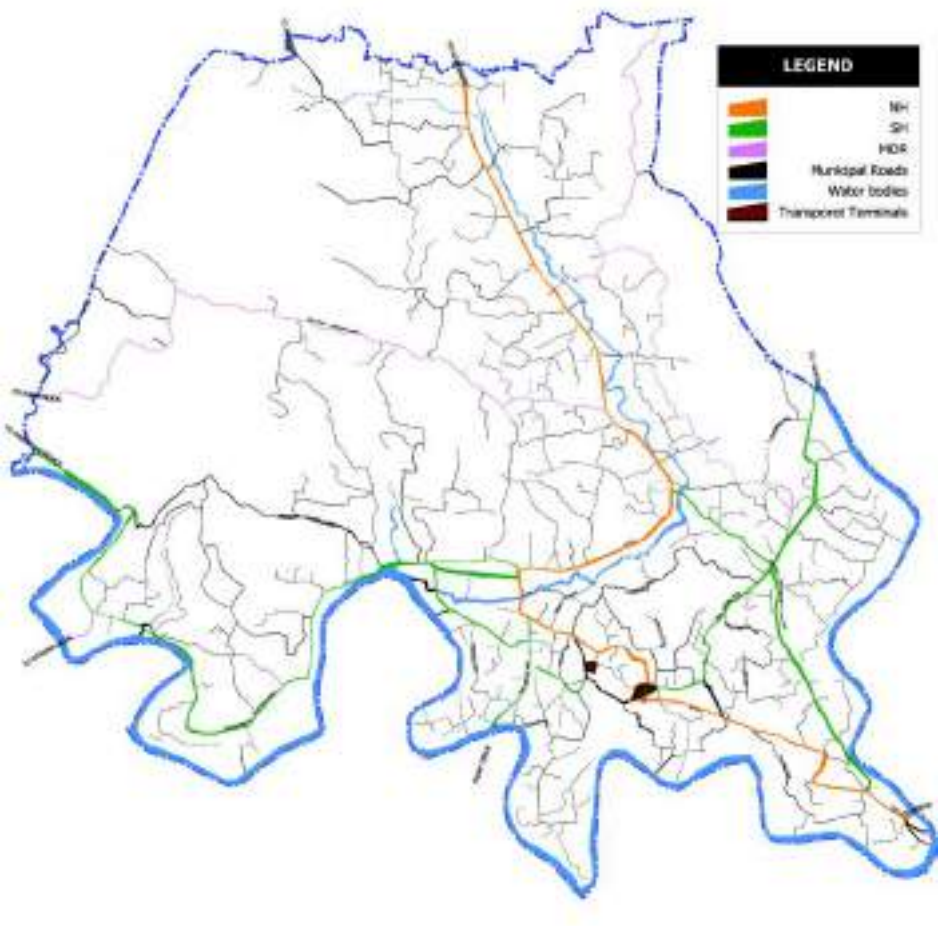


Fig.13.A.1 Existing Road Network

- Transport terminals

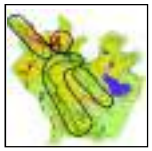


The town has two bus terminals. One is owned by KSRTC and is exclusively used by them and is located near Kunnummal junction. This stand mainly caters to the inter district operations and a few interstate and intra district operations. The other bus stand is operated by the municipality. This stand located near to the municipality in A.K. Road caters to all the private buses passing through and operated from the town. The bus stand attracts through traffic to the centre of the town adding to congestion and thus is ill located.

- Bottlenecks and missing links



The major bottlenecks in the road network are near kottappadi junction and the stretch between Collector's Bungalow and Kunnummal junction. The stretch between Police station and Kottappadi junction has public buildings like Taluk Hospital, School, mosque, market and stadium (all in a distance of 300-400 m) opening to the National Highway. The road stretch between Collector's Bungalow and Kunnummal junction runs along the contour and hence has very dense ribbon development. Besides these congestions in the national highway,



more than 50 % of the municipal roads are less than 3 m wide showing poor quality of service. Some missing links are identified in the municipal road network during the physical survey. The connections from National Highway to Kottakkunnu Park, missing links in residential area at Melmuri, Konompara etc are the important missing links.



- Other Aspects



The road density figure of 4.87 km per sqkm is deceptive. More than 50 % of these roads are less than 3 m wide. The road coverage is reasonably good within the municipality but the lesser width is a major problem. The draft transport policy for the state realizes this bottle neck in the case of urban roads and prescribes advance action to widen the existing arterial and sub-arterial roads to 4⁄6 lane standards with provision for pedestrian walking and crossing facilities, cycle tracks and off street parking. Due to the undulating topography of the town, straight stretches of roads with properly developed junctions are not possible. In a town like Malappuram the network has to follow the topography and this is a serious constraint in building an efficient road network in the town.

13.A.2.2 Railways

There is no Rail network through the Malappuram municipality. There are two rail links in the Malappuram district (Nilambur- Shornur and Shornur – Manglore) with a length of 91Km. Nearest Railway Stations are Angadipuram and Tirur which are 18Km and 28 Km away from the Malappuram town respectively.

13.A.2.3 Air transport

The nearest air port to the town is Calicut Inter National Airport, which is only 25 km away. The proximity to the air port is not being fully utilized by the residents of the town, especially in export of local produces to the Middle East.

13.A.2.4 Water transport

Even though the town has 18 km of water frontage, the river is not being used for navigation. This is mainly due to the well developed road network and non-perennial nature of the river.

13.A.2.5 Existing traffic characteristics

The Town & Country Planning Department has entrusted the study on existing traffic characteristics of Malappuram town to NATPAC. The following are the excerpts from the traffic study report of NATPAC.

- **Traffic V-C studies**

Capacity utilization of the road stretches was measured by volume-to-capacity ratio (V/C Ratio). The following road sections were found to be overloaded than the carrying capacity.

Table 13.A.2 Road Sections with V/C Ratio >1

Sl. No.	Name of Road section	V/C Ratio
1	Konompara-Machingal on NH 213	1.18
2	Machingal- Kizhakkethala on NH 213	1.28
3	Kizhakkethala-Kottapady on NH 213	1.60
4	Kottapady – Police station on NH 213	1.87
5	Police station-Kunnumal on NH 213	2.09
6	Kunnumal-Collector's Bungalow on NH 213	1.12
7	Collector's Bungalow-Koottilagady on NH 213	1.00
8	Munduparamba-Kattungal on Manjeri road	1.17
9	Kizhakkethala–Hajiyarpalli on Parappanngadi	1.23
10	Hajiyarpalli - Panakkad/ Tirur road junction	1.19
11	Tirur road	1.2
12	A K road	1.02

All these sections are in either NH/SH or link between NH & SH.

- **Speed and Delay studies**

From the Speed and delay survey, a maximum speed of 56 km/hr was obtained between Collector's Bungalow to Koottilangadi road section on NH-213 without any delay. The speed however was quite minimal between Kottappady to Tirur Road Town limit (21 km/hr) and 27 km/hr between the stretch, Kunnummal junction to Collector's Bungalow of NH 213 due to heavy parking of vehicles and pedestrian interference during peak and off peak periods. The average speed on Manjeri road was only 24 km/hr.

Major delay of 75 seconds was noted between Moonampady Jn to Munduparamba Jn on Manjeri road due to bus stop at the bell mouth of the junction and unorganized parking of two wheelers & four wheelers. 34 seconds of delay observed between Kottapady Jn and town limit of Tirur road due to unorganized parking of Light commercial vehicles (LCV) and passenger autos at auto stand.

- **Turning movement at intersections**

Turning movement surveys at 10 major intersections in the study area were conducted to ascertain the peak hour demand. The observations are given in Table 13.A.3.

Table 13.A.3 Peak hour traffic flow at majo inter sections in Malappuram

Sl. No.	Name of Junction	Peak Hour	Peak hour Traffic
1	Konompara junction	9.00 am - 10.00 am	1312
2	Machingal junction	09.00 to 10.00 am	1942
3	Kizhakkethala	9.45am - 10.45 am	2900
4	kottappady	9.15am - 10.15am	4071
5	Police station junction	11.00 am - 12.00 am	4177
6	Kunnummal	5.30 pm - 6.30 pm	2214
7	Collector's Bunglow Junction	3.45 pm - 4.45pm	1958
8	Moonnampady junction	4.15 pm - 5.15 pm	1515
9	Munduparamba junction	4.45pm - 5.45 pm	1886
10	Kavungal junction	4.00 pm - 5.00 pm	2062

- **Pedestrian Survey**

Pedestrian surveys were conducted at major locations where the pedestrian cross movements were found to be high. Locations selected for pedestrian survey and peak hour pedestrian demand is shown in Table.13.A.4.



Table 13.A.4 Peak pedestrian volume

Sl. No.	Name of location	Peak time	No. of pedestrians		
			Up	Down	Total
1	Kizhakkethala Junction				
	On NH 213		197	210	446
	On Parappanangadi road		196	249	406
2	Kottappady Junction				
	In front of Girl's school		415	225	640
	On Tirur road		320	327	647
3	In front of Taluk hospital &				
	L P school		697	538	1235
4	Kunnummal Junction area				
	On NH 213 near KSRTC		574	563	1295
	On Palakkad road		668	627	1137
	On Manjeri road		498	459	957
5	Manjeri road -On		334	364	698
	Amusement park road area				
6	Moonampady junction On Manjeri road		228	196	424

Safe passage of pedestrians is an urgently felt necessity in Malappuram town.

- **Junctions**

The main junctions in Malappuram (M) are

1. Konompara junction
2. Machingal junction
3. Kizhakkethala junction
4. Kottappady junction
5. Police station junction
6. Kunnummal junction
7. Collector's Bungalow junction
8. Moonampady junction
9. Munduparamba junction
10. Kavungal junction
11. Hajiyarpalli junction



Junctions like Kunnummal, Kottappady, Collector's Bungalow and Moonampady junction experience heavy congestion due to lack of space for parking and the nearness to Bus terminals. During the peak periods, especially in the evening, the situation becomes even worse causing traffic block at these junctions.

- **O-D survey**

The objective of this survey is to determine the origin and destination details of through-traffic, inter-city and intra-regional passenger and goods movement across the external cordons. An analysis of the traffic movements will provide the proportion of bye-passable traffic along with the major external interaction areas.

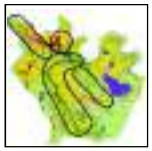
For a meaningful analysis of O-D survey data, the study region was divided into six traffic zones and outside study region was divided into 9 traffic zones, which included the immediate surrounding areas within the District, adjoining Districts and neighboring States. Base year inter-city travel characteristics of passenger and goods movements were obtained by conducting origin-destination survey of a sample number of motor vehicles passing through all major outer cordon locations in Malappuram town.

- **O-D of passenger trips**

The maximum daily traffic volume was observed at Koottilangadi survey station on NH 213 and followed by Tirur road outer cordon point on State Highway 17. The O-D pattern of inter-city passenger traffic revealed that Study region to outside study region trips constitutes nearly 27.7% of the total trips.

Origin - destination matrix of inter-city car trips in Malappuram

O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
1	-	-	-	-	-	-	222	63	634	-	1,236	317	-	-	-	2,472
2	-	-	-	-	-	-	95	-	222	-	159	95	-	-	-	571
3	-	-	-	-	-	-	63	-	32	-	63	32	-	-	-	190
4	-	-	-	-	-	-	222	-	412	32	63	-	-	-	-	729
5	-	-	-	-	-	-	63	-	32	32	127	-	-	-	-	254
6	-	-	-	-	-	-	95	95	32	32	222	32	-	-	-	508
7	660	127	-	159	-	32	-	-	761	222	412	95	-	-	-	2,468
8	190	32	-	63	32	-	-	-	412	222	95	63	-	63	-	1,172
9	1,110	127	95	32	-	63	602	317	-	-	317	95	-	-	-	2,758
10	32	-	-	-	-	-	190	159	-	-	127	-	-	-	-	508
11	824	159	32	127	32	-	349	-	507	159	-	507	-	-	-	2,696
12	222	32	32	-	-	349	32	-	127	-	476	-	32	-	-	1,302
13	-	-	-	-	-	-	-	-	-	-	-	63	-	-	-	63
14	-	-	-	-	-	-	-	32	-	-	63	-	-	-	-	95
15	-	-	-	-	-	-	-	-	32	-	32	-	-	32	-	96
TOTAL	**3,038**	**477**	**159**	**381**	**64**	**444**	**1,933**	**666**	**3,203**	**699**	**3,392**	**1,299**	**32**	**95**	**-**	**15,882**



Origin - destination matrix of inter-city two wheeler trips in Malappuram

O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
1	-	-	-	-	-	-	692	41	977	122	570	814	41	-	-	3,257
2	-	-	-	-	-	-	122	41	122	-	204	122	-	-	-	611
3	-	-	-	-	-	-	81	-	41	-	41	81	-	-	-	244
4	-	-	-	-	-	-	570	-	244	-	41	81	-	-	-	936
5	-	-	-	-	-	-	81	-	41	-	41	-	-	-	-	163
6	-	-	-	-	-	-	81	-	163	-	-	-	-	-	-	244
7	977	244	122	611	81	-	-	-	448	-	163	122	-	-	-	2,768
8	41	41	-	-	-	-	-	-	41	-	-	41	-	-	-	164
9	1,588	41	81	244	41	285	651	41	-	-	244	41	-	-	-	3,257
10	41	41	-	41	-	41	41	122	-	-	163	-	-	-	-	490
11	936	285	122	122	-	-	41	-	489	-	-	529	-	-	-	2,524
12	448	204	122	41	-	-	-	-	81	-	326	-	-	-	-	1,222
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	**4,031**	**856**	**447**	**1,059**	**122**	**326**	**2,360**	**245**	**2,647**	**122**	**1,793**	**1,831**	**41**	**-**	**-**	**15,880**

Origin - destination matrix of inter-city passenger autorickshaw trips in Malappuram

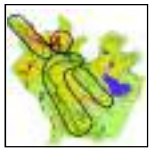
O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
1	-	-	-	-	-	-	472	177	1,358	-	768	827	-	-	-	3,602
2	-	-	-	-	-	-	59	-	177	-	295	295	-	-	-	826
3	-	-	-	-	-	-	118	-	-	-	-	-	-	-	-	118
4	-	-	-	-	-	-	354	-	413	-	118	118	-	-	-	1,003
5	-	-	-	-	-	-	59	-	177	-	-	118	-	-	-	354
6	-	-	-	-	-	-	59	-	-	-	59	-	-	-	-	118
7	354	177	182	295	59	59	-	-	413	-	59	177	-	-	-	1,775
8	118	-	-	-	-	-	-	-	59	-	-	-	-	-	-	177
9	1,771	177	-	413	59	118	236	59	-	-	354	59	-	-	-	3,246

Origin - destination matrix of inter-city passenger autorickshaw trips in Malappuram

O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
10	59	59	-	-	-	-	-	-	-	-	59	-	-	-	-	177
11	708	177	-	-	-	59	177	-	177	-	-	-	-	-	-	1,298
12	945	236	-	59	59	59	59	-	118	-	59	-	-	-	-	1,594
13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	**3,955**	**826**	**182**	**767**	**177**	**295**	**1,593**	**236**	**2,892**	**-**	**1,771**	**1,594**	**-**	**-**	**-**	**14,288**

Origin - destination matrix of inter-city bus trips in Malappuram

O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
1	-	-	-	-	-	-	87	76	63	83	56	49	7	-	-	421
2	-	-	-	-	-	-	14	7	-	21	14	35	-	-	-	91
3	-	-	-	-	-	-	14	-	-	7	21	28	-	-	-	70
4	-	-	-	-	-	-	83	49	14	7	35	7	7	-	-	202
5	-	-	-	-	-	-	14	-	7	14	42	-	-	-	-	77
6	-	-	-	-	-	-	14	7	7	-	49	7	-	-	-	84
7	85	7	14	56	7	7	-	-	63	14	-	-	-	-	-	253
8	63	14	7	63	-	7	-	-	21	42	-	-	-	14	-	231
9	70	7	-	21	-	14	42	14	-	-	-	-	-	-	-	168
10	97	7	14	7	7	7	7	63	-	-	-	-	-	-	-	209
11	49	7	14	28	35	21	-	-	-	-	-	14	-	-	-	168
12	76	21	35	14	7	7	-	-	-	-	7	-	-	-	-	167
13	14	-	7	-	7	-	-	-	-	-	-	-	-	7	14	49
14	7	-	-	7	-	-	-	7	-	-	-	-	7	-	-	28
15	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	7
TOTAL	**461**	**63**	**91**	**196**	**63**	**63**	**275**	**223**	**175**	**188**	**224**	**140**	**28**	**21**	**14**	**2,225**



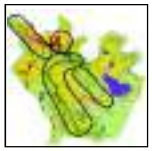
Origin - destination matrix of inter-city mini bus trips in Malappuram																
O/D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
1	-	-	-	-	-	-	25	6	12	25	12	6	-	-	-	86
2	-	-	-	-	-	-	6	6	12	-	6	6	-	-	-	36
3	-	-	-	-	-	-	12	-	-	-	12	6	-	-	-	30
4	-	-	-	-	-	-	12	6	-	6	6	-	-	-	-	30
5	-	-	-	-	-	-	-	-	-	-	12	6	-	-	-	18
6	-	-	-	-	-	-	6	-	6	-	6	-	-	-	-	18
7	20	6	6	6	6	12	-	-	-	-	-	-	-	-	-	56
8	-	6	-	12	-	-	-	-	-	12	-	-	-	-	-	30
9	6	6	-	6	6	6	-	-	-	-	-	-	-	-	-	30
10	12	-	-	6	-	-	-	6	-	-	-	-	6	-	-	30
11	6	12	6	-	6	-	-	-	-	-	-	-	-	-	-	30
12	12	6	-	12	-	-	-	-	-	-	-	-	-	-	-	30
13	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	12
14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	**56**	**36**	**12**	**42**	**18**	**18**	**61**	**24**	**30**	**55**	**54**	**24**	**6**	**-**	**-**	**436**

Source: NATPAC report

- **O-D of goods transportation**

The maximum goods carrying vehicles were observed at Pilakkal survey point (1439) followed by Tirur road. A total of 3961 goods vehicles were used for transporting 11,646 tonnes of various commodities through the outer cordon points in Malappuram town. Most of the trips were generated from other states which passes through Malappuram town.

Details of inter-city goods traffic in Malappuram town													
Sl.No	Type of vehicle	Trucks			Mini-trucks			Mini-autos			MAT		
		Trips	Quantity	Load	Trips	Quantity	Load	Trips	Quantity	Load	Trips	Quantity	Load
	I. Trucks												
1	Food Grains	87	434.70	5.00	19	9.49	0.50	80	40.04	0.50	5	67.90	13.58
2	Sugar	10	38.64	3.86	0	-	-	10	8.01	0.80	0	-	-
3	Tea & Coffee	10	19.32	1.93	9	13.95	1.55	0	-	-	0	-	-
4	Provision	29	72.45	2.50	19	31.62	1.66	10	5.51	0.55	0	-	-
5	Edible Oil	19	115.92	6.10	9	2.79	0.31	10	5.01	0.50	0	-	-
6	Fruits & Vegetables	48	198.03	4.13	75	116.72	1.56	100	48.95	0.49	0	-	-
7	Tapioca & Plantain	10	33.81	3.38	9	10.23	1.14	10	6.01	0.60	0	-	-
8	Ply wood	19	246.33	12.96	9	11.63	1.29	20	10.01	0.50	0	-	-
9	Cotton Materials	19	96.60	5.08	0	-	-	20	10.01	0.50	0	-	-
10	Petro/Kerocin	29	72.45	2.50	19	97.65	5.14	0	-	-	5	33.95	6.79
11	Gas/Gas cylinder	29	72.45	2.50	9	13.95	1.55	0	-	-	10	46.08	4.61
12	Cement	203	1864.38	9.18	9	41.85	4.65	10	7.01	0.70	5	61.84	12.37
13	Live Stock	39	212.52	5.45	28	6.51	0.23	10	1.50	0.15	0	-	-
14	Fertilizer	10	91.77	9.18	19	44.64	2.35	0	-	-	5	67.90	13.58
15	Furniture	29	37.67	1.30	28	25.11	0.90	30	22.02	0.73	0	-	-
16	Timber	68	194.17	2.86	93	134.39	1.45	100	137.34	1.37	5	50.93	10.19
17	Tyre& Tube	19	82.11	4.32	0	-	-	10	2.00	0.20	0	-	-
18	Leather Goods	10	9.66	0.97	9	9.02	1.00	10	3.00	0.30	0	-	-
19	Motor car/Scooters	0	0.00	0.00	9	6.05	0.67	0	-	-	10	89.73	8.97
20	Iron&Steel	87	443.88	5.10	19	46.50	2.45	140	58.56	0.42	8	110.82	13.85
21	Bakery Items	68	144.90	2.13	37	12.56	0.34	40	18.02	0.45	0	-	-
22	Electric Goods	29	144.90	5.00	37	48.83	1.32	30	11.31	0.38	5	44.62	8.92
23	Machinery	10	24.15	2.42	9	6.98	0.78	10	0.30	0.03	10	90.21	9.02
24	Drugs/Chemicals	29	144.90	5.00	9	9.30	1.03	20	2.50	0.13	0	-	-



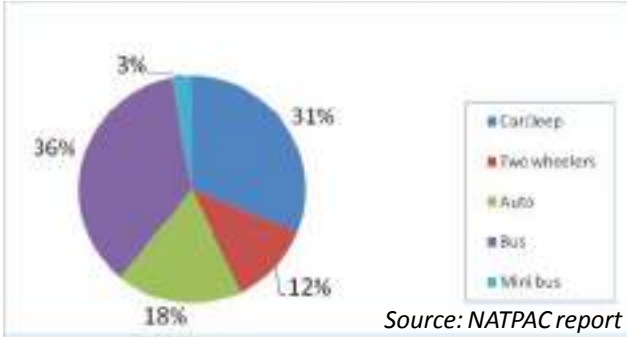
Details of inter-city goods traffic in Malappuram town													
		Trucks			Mini-trucks			Mini-autos			MAT		
Sl.No	Type of vehicle	Trips	Quantity	Load	Trips	Quantity	Load	Trips	Quantity	Load	Trips	Quantity	Load
25	Paint&Dyes	10	38.64	3.86	9	8.09	0.90	0	-	-	0	-	-
26	Stationary items	87	124.61	1.43	19	25.11	1.32	20	1.90	0.10	10	77.60	7.76
27	Sanitery items	19	51.20	2.69	9	5.12	0.57	10	6.01	0.60	5	32.98	6.60
28	Drinks/Liquor	0	0.00	0.00	9	51.15	5.68	0	-	-	0	-	-
29	Cattle Feed	19	62.79	3.30	19	32.55	1.71	30	10.01	0.33	10	72.27	7.23
30	Plastic Goods	39	96.60	2.48	28	49.29	1.76	70	30.53	0.44	5	26.19	5.24
31	River Sand	68	323.61	4.76	19	51.15	2.69	20	50.05	2.50	0	-	-
32	Gravel	68	323.61	4.76	28	97.65	3.49	0	-	-	0	-	-
33	Tiles/Marbles	29	77.28	2.66	47	79.98	1.70	0	-	-	8	104.28	13.03
34	Fish	29	102.40	3.53	28	42.78	1.53	40	17.02	0.43	0	-	-
35	Rubber &Rubber Goods	19	25.12	1.32	9	11.16	1.24	0	-	-	0	-	-
36	Egg	10	48.30	4.83	9	9.30	1.03	20	11.01	0.55	0	-	-
37	Parcel	68	142.00	2.09	19	12.09	0.64	20	7.01	0.35	5	51.41	10.28
38	Building Materials	216	1308.93	6.06	168	530.10	3.16	10	2.50	0.25	0	-	-
39	Coconut and Copra	10	14.49	1.45	19	23.25	1.22	10	2.00	0.20	5	56.26	11.25
40	Others	77	328.44	4.27	140	285.32	2.04	170	58.56	0.34	15	90.02	6.00
41	Empty	197	0.00	0.00	402	-	-	431	-	-	63	-	-
42	Total	1875	7863.72	4.19	1464	2,013.82	1.38	1521	593.69	0.39	194	1,174.96	6.06

Source: NATPAC report

- **Modal Split**

- **Modal split of passenger traffic**

The inter-city passenger transport in Malappuram town is predominantly met by road based KSRTC buses, private buses, mini-buses, and a host of personalized vehicles like four wheelers, two wheelers etc. Analysis of O-D survey revealed the following results.



Source: NATPAC report

Fig.13.A.6 Modal Split of inter-city daily passenger trips in malappuram

The number of passengers using cars is almost same as people travelling by bus. This shows lack of preference to public transport system. The quality of service and reliability of the public transport systems are to be improved to mitigate this problem.

- **Modal split of goods traffic**

A total of 5607 goods vehicles were found to be involved in carrying goods traffic to and from the study region. Modal split of inter-city goods traffic in Malappuram study area is shown in Table 13.A.5

Table 13.A.5 Modal split of goods traffic

SL No	Mode of travel	Number of vehicles	Quantity carried(Tons)
		Per cent	Per cent
1	Truck	37.10	67.52
2	Mini Truck	28.98	17.29
3	Auto	30.09	5.1
4	Multi Axled	3.83	10.09
	truck (MAT)		
	Total	100	100

Source: NATPAC report

- **Freight transport**

Considering the composition of goods traffic, maximum volume of 1975 tonnes were observed in the case of Cement (16.96%) and followed by 1842 tonnes of Building materials (15.81%) during the O-D survey.

- **Parking survey**



Parking surveys were carried out on major road sections of Malappuram study area to obtain the peak parking demand and parking duration of various categories of vehicles on these road sections. Table.13.A.6 Shows peak parking accumulation observed on major corridors.

The highest accumulation (141 vehicles) is seen in the section between Kunnumal junction to Collector's bungalow junction on NH 213. This was followed by Tirur road from Kottappady junction to Monnampady junction with 126 vehicles. Majority of the vehicles parked at most of parking corridors were found to be for short duration of less than 30 minutes. Taxi cars and Jeeps were found to be parked more than 3 hours at their stands.

- **Major Corridors**

Malappuram town is a major transit centre connected by road. The National Highway 213 from Kozhikkode to Palakkad passes through the heart of Malappuram town. A bypass for NH213 has been provided from Machingal to Kavungal, which passes through the southern side of the Malappram town. Two State Highways, Manjeri and Parappanangadi roads connect the town with other major parts of the district.

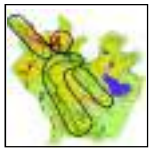


Table.13.A.6. Parking accumulation at different road sections in Malappuram Town

Road section	Peak parking time	Car/ jeep	Two wheeler	Auto (P)	Jeep (stand)	M. Truck	Goods auto	Total
1. Kizhakkethala jn – Kottapady jn.	10.30 am	16	16	2	2	1	1	38
Kottapady jn – Police station jn.	11.00am	8	42	41	0	0	3	94
Kunnumal jn.-Collector's bunglow	3.30 pm	28	64	40	0	1	8	141
2.Manjeri road from Kunnumal-Moonampady	3.00 pm	29	38	35	0	0	3	105
3.Thirur road from Kottapady jn.-Gulf tower	10.30 am	20	78	22	0	0	6	126
4.Parappanangady road from Kizhakkethala – Pass port office area	3.00 pm	11	18	6	0	0	2	37
5. Kizhakkethala jn. area	5.00 pm	15	20	6	0	8	3	52
6. Kunnumal jn. area	11.00 am	6	22	2	0	0	1	31
7. A K road from Police station jn.-M. office area	11.00 am	14	39	8	3	0	5	69
8.Alathurpady area	4.00 pm	6	23	7	2	0	4	42

Source: NATPAC report

13.A.2.6 Parking facilities

Facilities for parking of private vehicles as well as public carriers are vital for the smooth functioning of the traffic system of any town. In most of our towns commercial buildings have come up without adequate parking facilities due to various reasons. The vehicles coming to these commercial centers are forced to park in the public roads seriously reducing the carrying capacity of these roads. The draft transport policy for the state states that *"For existing buildings /commercial complexes built without providing adequate parking space, such parking facilities will be built off-street by the local bodies at suitable locations and recover costs from the building owners."* Further the policy outlines the initiatives required by the government by saying *"Open and multi-storied parking facilities will be constructed by the government at important terminals, market centres multi-modal logistic centres to promote inter-modal."*

In Malappuram town there are no designated parking spaces for private vehicles. So the vehicle owners park on the road on a first come first basis creating chaos. However there are some designated areas for public carriers.

Taxi Stands are available at Kunnummal, near municipal bus stand, at Kottappadi, and at Kizhakkethala.



There are a number of Auto Stands in the municipality. The following are the major auto stands:-

- Collector's Bungalow junction
- Kunnummal junction
- Near municipal bus stand
- Kottappadi
- Kizhakkethala junction
- Varangode
- Alathurpadi
- 27th mile
- Near KSRTC stand
- Munduparamba bypass junction



- Munduparamba college junction
- Chennath road
- Hajiyarpalli
- At Panakkad on Parappanangadi road
- At Panakkad on Othukkungal road
- Mylappuram

Goods carrying auto rickshaw is also popular in Malappuram town catering to the goods movement in small quantities. They have parking facilities at Kottappadi near village office, near fish market, at Munduparamba near KSEB, near Govt. College, at Kunnummal and at Kizhakkethala.

13.A.2.7 Truck terminals

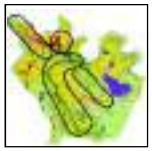
There are no Truck terminals in the municipality. The trucks and other goods vehicles are operating from a road side facility at Kizhakkethala on the NH. The need for truck terminal (without allowing kerb parking) is strongly felt.



13.A.2.8 Identification of gaps in network

The major gaps in the traffic and transportation system of Malappuram town identified are as follows:-

- Even though the road coverage is reasonably good, the width of the arterial and sub arterial roads are inadequate to meet the current traffic volume leave alone the future requirements.
- The intra city traffic needs to be diverted from the National Highway as far as possible to make the national highway meet its purpose.
- In some of the prime residential areas, the road network faces the problems of lack of adequate width and missing links.



- The municipal bus stand is ill located. The bus stand attracts all the through bus traffic to the town centre adding to the congestion.
- Serious inadequacy of parking space for private vehicles is another gap in the system

13. A.2.9 Inference

The coverage of road network is good except for some missing links. But, the width of most of the roads is not adequate even for the present traffic volume. The section of the National Highway passing through the town is overcrowded. The situation in the State Highway is also not different. There are number of junctions in the municipality with volume exceeding their capacity, which require immediate improvements in geometry. Safe passage of pedestrians in the town centres, Kunnummal and Kottappadi is another issue to be tackled. The number of people travelling by car, two wheelers and autos combined exceeds that by public transport. This adds congestion and environmental damage. The quality and reliability of public transport needs to be enhanced. There is a dearth of parking spaces for private vehicles in the municipality causing kerb parking affecting the carrying capacity of the roads. A proper truck terminal is needed for the development of trade and commerce in the town.

13.B Water supply

13. B.1 Important sources, treatment facilities, distribution system and consumption



Majority of the Municipal population depends on domestic wells and Municipal water supply for drinking purpose. Major source of Municipal water supply scheme in Malappuram municipality is Kadalundy River. According to socio economic survey, the various sources of water were identified as in figure 13.B.1.

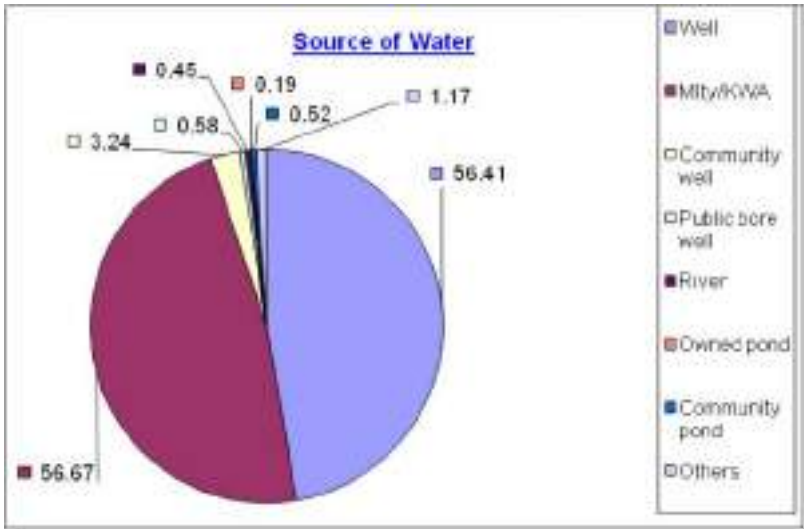


Fig. 13.B.1 Sources of water supply



Municipal water supply distribution depends on four intake wells in Kadalundy River. They are located at Mannarkundu, Nambrani, Chamakkayam and at Hajiyarpalli. These four wells cater to three villages of Malappuram municipality. Total quantity of water supplied is 11.5 MLD including wastages. The number of people benefitted by municipal water supply is 49727. There are about 8540 domestic, 676 non domestic and 3 industrial connections. Besides there are 210 street taps also. Municipal water supply scheme covers about 80% of municipal area.

There are three overhead (OH) and ground level (GL) tanks each in the municipal area. Location of water tanks and their capacity is described in table 13B.1.

Table 13.B.1 Location of water tanks and their capacity.

SL No	Location of Tank	Type of tank	Capacity of tank
1	Kottakkunnu	OH	10 LL
2	Spinning mill	OH	3.5 LL
3	Ihtilparamba	OH	2 LL
4	Spinning mill	GL	3.5 LL
5	Perumparamba	GL	4 LL
6	Kottakkunnu	GL	3 LL

Source: KWA

About 4.5mld water is pumped from Mannarkundu intake well to the old treatment plant, then to OH tank at Kottakunnu and distributed to Malappuram and Melmuri villages. In addition to this, 4.5mld water from Nambrani source is pumped to Kottakunnu OH tank. Hence demand of entire Malappuram and part of Melmuri villages are being met by these

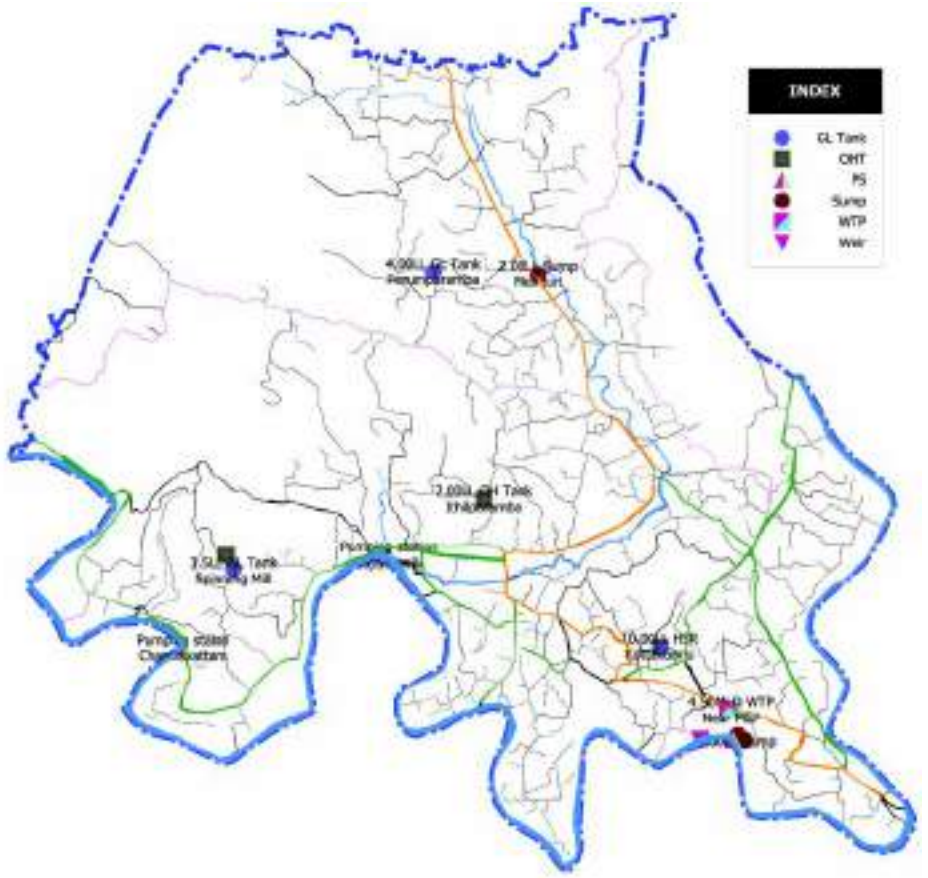
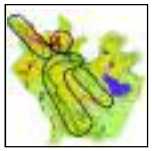


Fig 13.B.2 Location of water tanks.

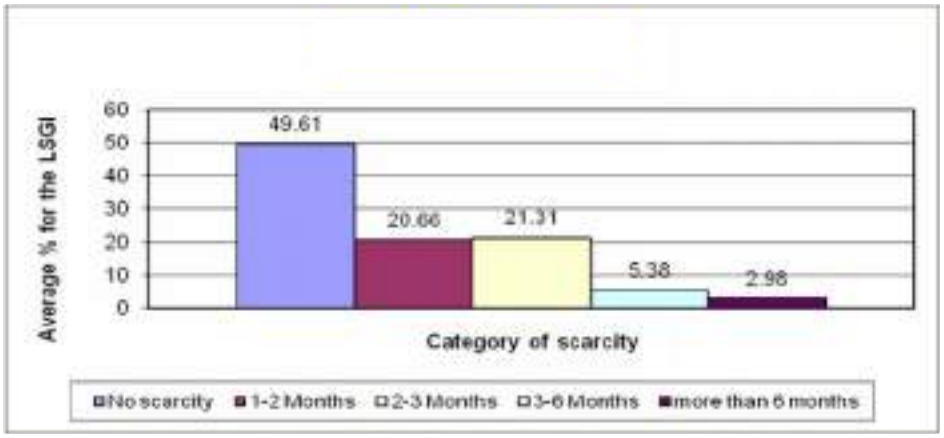


two sources. 2MLD water is pumped from Chamakkyam source to spinning mill OH tank and distributed to Panakkad village. And 0.5MLD water is pumped from Hajiyarpalli to Ithilparamba OH tank and distributed to Melmuri village.

13. B.3 Scarcity

Shortages in water supply do exist in some wards of Malappuram municipality. According to the data collected in the socio-economic survey about 50% of the houses are not facing water shortage. Certain wards like 3, 6, 25, 30, and 35 are facing water shortage.

The nature of scarcity as per socio economic survey is shown in fig. 13.B.3



Source: Socioeconomic survey 2010

Fig.13.B.3 Nature of water scarcity

Spatial distribution of water scarcity is shown in Fig.13.B.4.



Fig.13.B.4 Spatial Distribution of water scarcity based on socio economic survey



Fig.13.B.5 Spatial Distribution of water scarcity based on Secondary data

The above map shows that ward 17,18,19,23, 25, 33, 35, 36 and 37 are experiencing the maximum water scarcity (period of scarcity greater than 6 months).

Most of the houses have water sources within their yard. The distance to the source is given in figure 13.B.6.

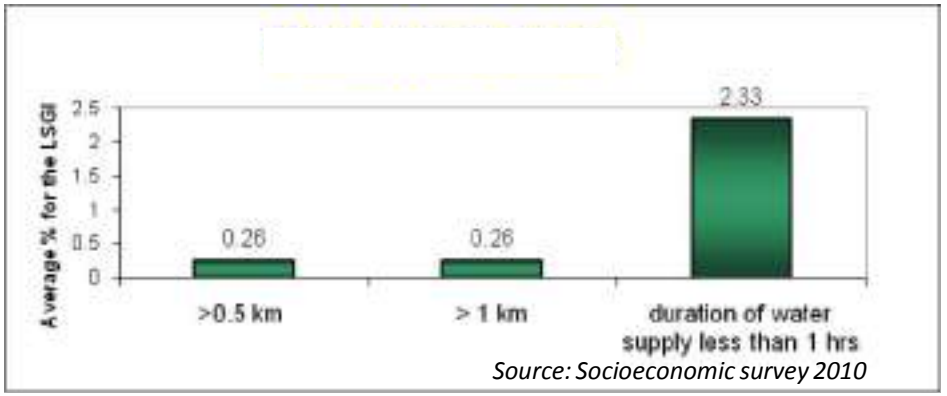
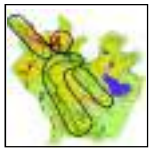


Fig 13.B.6 Distance to water sources

Yield from the four sources is 11.5MLD. The capacity of the water treatment plant is 9MLD. Assuming a per capita consumption of 135 lcpd, the total quantity of water to be pumped for a population of 58491 is approximately 8 MLD. This shows that as per standards the water requirement is fulfilled by the existing distribution system.

13. B.3 Problems and Potentials

As per socio-economic survey conducted the residents of the municipality attached high priority of development to water supply, which indicates that people are not satisfied by the present availability of water.



Even though standards are met in majority of the area, the people's expectation regarding quantity and quality of water is high as experienced throughout the state. Major source of municipal water supply for Malappuram municipality is Kadalundy River. Constructing a number of weirs in the Kadalundi River shall solve the problem of availability of water. Another major problem is the efficiency of distribution network i.e., pipe lines. Most of the pipe lines are very old and require frequent maintenance.

13. B.4 Inference

As per planning standards the quantity of water supplied is sufficient. The priority for development at neighborhood and ward level includes the development in water supply; therefore the sector needs more attention.

13.C Sanitation

The factors affecting sanitation by the municipality, i.e,drainage, solid waste management and sewerage are discussed in this chapter



13.C.1. Drainage

- **Existing drainage network**

The drainage network in the municipality is not an efficient one. The valiya thodu bisecting the municipality is the major drainage channel. This channel drains to the Kadalundi River. Even though the arterial channel is well formed (but badly maintained), the rest of the drainages available cannot even be called a network. The drains in the municipality have a total length of 25.26 km at present, which means only around 15 % of the roads have road side drains. A haphazard distribution of segments of drains without inter connectivity characterizes the drainage system in the municipality. Due to the peculiarities in terrain, this doesn't cause flooding. The storm water somehow reaches either the valiya thodu or the Kadalundi River. But, the storm water causes serious damage to the road surface every year.



Fig.13.C.1 Existing drainage network

- **Identification of gaps in the network**

Fig 13.C.1 highlights the gaps in the network. A cluster of drains without inter connectivity or a hierarchical pattern does not form a network. This should be made to a network by correcting the geometry of existing drains and adding the missing links.

- **Inference**

The drainage network of the municipality needs total revamping.

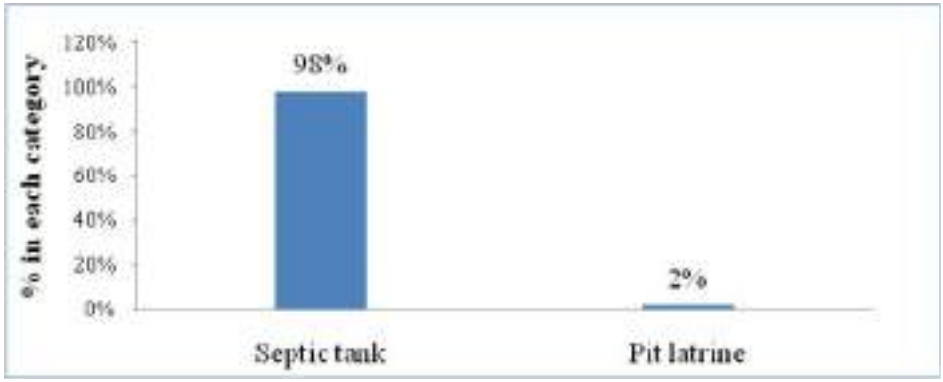
13.C.2 Sewerage system

- **Existing system**

Malappuram Municipality has no sewerage system at present. However, a few of the commercial establishments and residences let out their waste water to the storm water drainage channels causing health hazards.

- **Treatment facilities**

Socio economic survey of Malappuram municipality shows that about 98% of people are using septic tank. And only 2% of the people depend on Pit latrine. This indicates that there is no problem of unhygienic practices of night soil waste disposal. The sullage generated from kitchen and bathrooms etc, is let out into the open mostly through storm drains. The waste water is disposed without any treatment.



Source:Socioeconomic survey 2010

Fig 13.C.2 Methods of night soil disposal

- **Inference**

The Municipality doesn't have any facility for the treatment of waste water at present which poses a serious threat to the public health and environmental quality.

13.C.3 Solid waste disposal

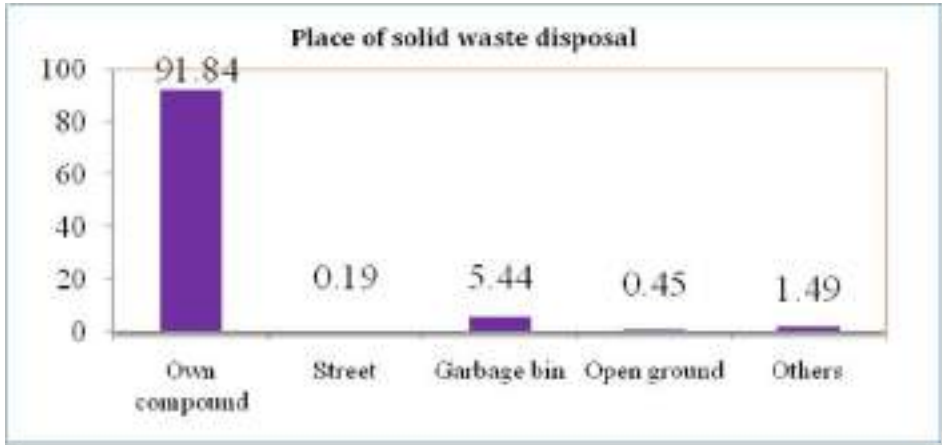
- **Generation and collection**



Solid waste is mostly generated from households, shops, small scale industries and streets. There is a solid waste collection system for the town since 2005. Kudumbasree units collect the waste by individual door to door collection system and the collected

waste carried to the treatment plant at Puliyattummel which is 12 km away from the town centre. This system covers 80% of the municipal area.

As per the secondary data collected total quantity of solid waste generated in Malappuram Municipality is 16.57 tons, of which 13.5 tons/ day is being collected. This shows that almost 81% of waste generated is collected. The places of solid waste disposal identified by the socio-economic survey is shown in figure 13.C.3.



Source:Socioeconomic survey 2010

Fig.13.C.3 Places of solid waste disposal

91.84% of people are disposing the waste in their own compound and 5.44% in the garbage bins. Collection of waste generated is as important as its treatment, but not well attended to in the municipality.

- **Existing treatment facilities**

The solid waste consists of both bio and non bio degradable substances. Segregation of waste at source has been difficult. The collection is carried by bin system and non bin system. The bin system is catered by means of Tippers and pickups. In the non bin system, dumper placers are located at the two market areas of the town (one at Kottappady and the other at Kunnummal). The carriage vehicles carry the wastes to the plant at Puliyattummel which is 12 km away from the town. The present yard has an area of 2.4 acre. The present input of the plant is 10 to 15 tons of combined waste (decomposing wastes & plastics). The method adopted in the plant for massive processing of decomposing waste is windrowing. Periods of 49 days are proposed for windrowing for the simplicity of material handling. Plastics and other wastes are deposited in a pit of size 15X10X5 meters. The non biodegradable wastes are not treated or recycled at present.



- **Inference**

The total solid waste generated is not treated properly, especially plastic wastes. The waste collection system is not efficient and segregation at source is not being attempted.

13.D Energy



Energy is the resource input by which the human civilization grows. Energy can be in various forms, of which electrical energy is the most adopted form of energy. Electricity has become a fundamental necessity for the development of any society and level of consumption of electricity is often considered an indicator of development.

13. D.1 Energy consumption: source wise break up

The major energy consumption is the electrical energy generated from hydro electric project. No other non-conventional energy is fed into the main grid. Petroleum products like diesel and petrol, biomass etc are also used.

13. D.2 Energy consumption: sector wise breakup



Since the energy consumption is mostly electrical energy, the consumption of electricity by various categories is considered.

- **Electricity**

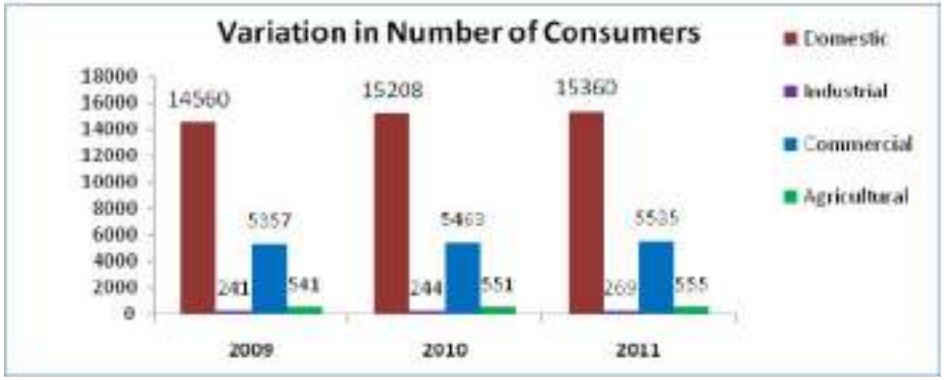
The Kerala State Electricity Board is the single licensee responsible for power distribution in the municipality. The details of number of power consumers in Malappuram municipality are shown in Table.13.D.1

Table 13.D.1 Details of power consumers in the municipality

Category	2009	2010	2011
Domestic	14560	15208	15360
Commercial	5357	5463	5535
Agriculture	541	551	555
Industrial	241	244	269

Source:KSEB

The number of power consumers is highest in domestic category, which is showing a constant increase from 2009 to 2011. The numbers of commercial, agricultural and industrial consumers have also increased. The trend in number of consumer is shown in Fig.13.D.1.



Source:KSEB

Fig 13.D.1 Variation in number of consumers

The figure shows that there is a increase in number of various catagories of consumers.

The power consumption details for various categories are shown in Table.13.D.2.

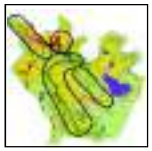
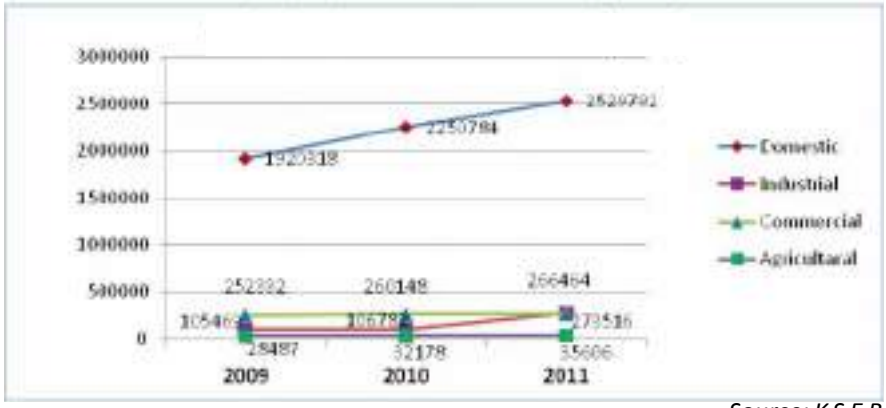


Table 13.D.2 Consumption of power by various category of users

Category	2009(Kwh)	2010(Kwh)	2011(Kwh)
Domestic	1920318	2250784	2529792
Commercial	252332	260148	266464
Agriculture	28487	32178	35606
Industrial	105469	106782	273516

Source: K S E B

The consumption in all categories in Malappuram municipality has increased in 2010 compared to the previous years.



Source: K S E B

Fig 13.D.2 Variation in Consumption of power by various category of users

Total length of HT and LT lines in Malappuram municipality is 68.16 km and 285 km respectively. The total number of Transformers in Malappuram municipality is 126. There are no areas of frequent power cuts or low voltage. The distribution of power is only by over head lines and underground lines are not used causing various inconveniences in the town centre.

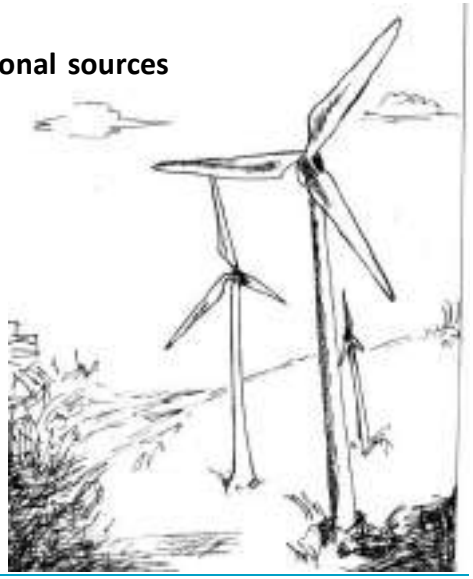
- **Petroleum**



Petrol and Diesel are the major products considered. There are 5 Petrol Pumps in Malappuram Town. The total capacity of storage of petrol is less than the diesel; this shows a higher use of diesel vehicles. The number of petrol pumps is satisfactory and they are distributed along the major road networks.

Almost 73% of the houses are using LPG. There is 1 LPG godown functioning in the municipal area which serves the municipal area and surrounding areas (Morayur, Pookottur, Anakkaym, Ramapuram, Chattiparamba and Cholakkal).

- **Bio-mass and non-conventional sources**



27 % of the population depend on bio-mass for their domestic needs. However, the fuel being sourced from their homestead garden lands, the consumption details are not available. The non-conventional sources of energy are not being used except for a few roof top solar water heaters.

13. D.3 Problems and Potentials

Malappuram town does not have major energy problems. But it has to depend on other districts for the energy requirement especially in the case of electrical energy. Malappuram district does not contribute much to the generation of electrical energy. No other non-conventional energy sources except solar energy are being utilized. Even in the case of solar energy, the use is limited to a few roof top solar water heaters. There is a tremendous potential for the development of harnessing solar energy. The town has potential for development of bio gas plants also with a healthy cattle population. The distribution of petroleum products are at a satisfactory level.

13. D.4 Inference

The distribution of electrical energy is sufficient. There is an immediate need for tapping solar energy and promoting bio-gas in order to reduce spiraling consumption of fossil fuels.

CHAPTER 14 SOCIAL INFRASTRUCTURE

14.A EDUCATION

14.A.1 General



The Malappuram district as a whole is considered to be educationally backward. However, with new found riches and exposure to urban cultures from the Middle East, the people of the district has become very eager in providing quality education to their offspring lately. This is evident from the results of various entrance examinations to professional courses where pupils from the district score high and wide. Among the students in self financing colleges both within the state and outside also the share of the district is considerable. The case is not different in Malappuram town also.

14.A.2 Existing Facilities



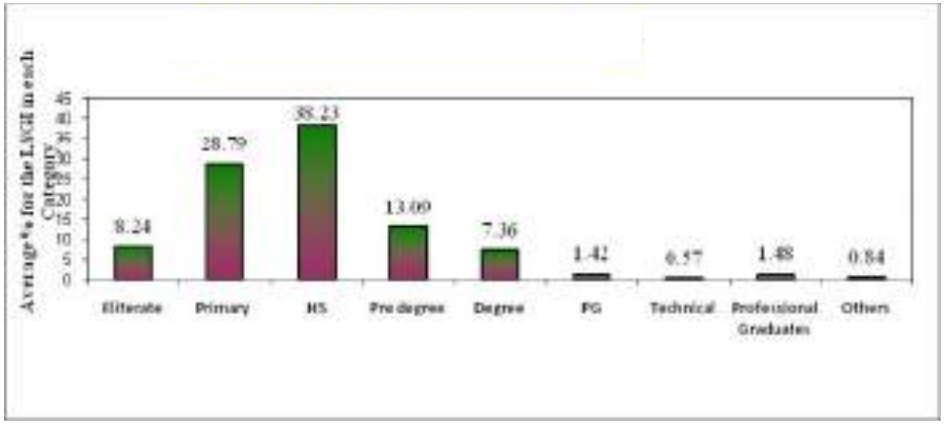
The literacy rate of Malappuram municipality is 94.15% as per census 2001 which is higher than the literacy rate of Malappuram district, which is 89.4%. The literacy rate of Manjeri, Perinthalmanna and Tirur municipalities are similar to Malappuram municipality. In Malappuram municipality the male literacy rate is 96.48% and female literacy rate is 91.96%. Detail of literacy rate is given in Table.14.A.1.

Table 14.A.1 Literacy rate of towns in Malappuram district

Name of Municipality	Literacy rate (2001)
Malappuram	94.15%
Manjeri	93.46%
Perinthalmanna	93.16%
Tirur	92.02%
Ponnani	84.59%
Kottakkal	88.12%
Nilambur	89.13%

Source: Census 2001.

The socio-economic survey reveals the educational profile of the people of Malappuram municipality as depicted in Fig 14.A.1.



Source: Socioeconomic survey 2010.

Fig 14.A.1 Educational profile of people in Malappuram municipality

The above figure indicates that majority of people are educated up to 10th standard. Considering the Technical and Professional courses, only few people have attained technical or professional education.

õ Schools

There are 31 schools in Malappuram municipality, in which 14 are Lower Primary, 4 are Upper Primary and 12 are High Schools. Out of these 6 schools have Higher Secondary classes. The number and type of schools is given in Table 14.A.2.



Table 14.A.2 Number of schools in Malappuram municipality

Sl no.	Type	Number
1	Preprimary	1
2	LP	14
3	UP	4
4	HS (without HSS)	6
5	HSS (with HS)	6

Source: Education department

õ Existing students, teachers and courses

There are 31 schools in Malappuram municipality. The total number of students studying in these schools is 23097 and the number of teachers is 786. From socio-economic survey analysis it was obtained that the total population to be served within the age group of 0-15 is 23730. Total number of students in schools up to 10th standard is 13434. This means nearly 60% of the students depend on schools within the municipality.

Considering the nature of schools, majority of schools are aided. Table 14.A.3 shows the total number of schools under each category.

Table 14.A.3 Number of schools in various categories

	GOVT.	AIDED	UNAIDED	TOTAL
LP	5	9	0	14
UP	1	3	0	4
HS	0	0	6	6
HSS	3	2	1	6

Source: Education department

There are in total 9 schools under government ownership, 14 schools are aided and 7 are unaided.

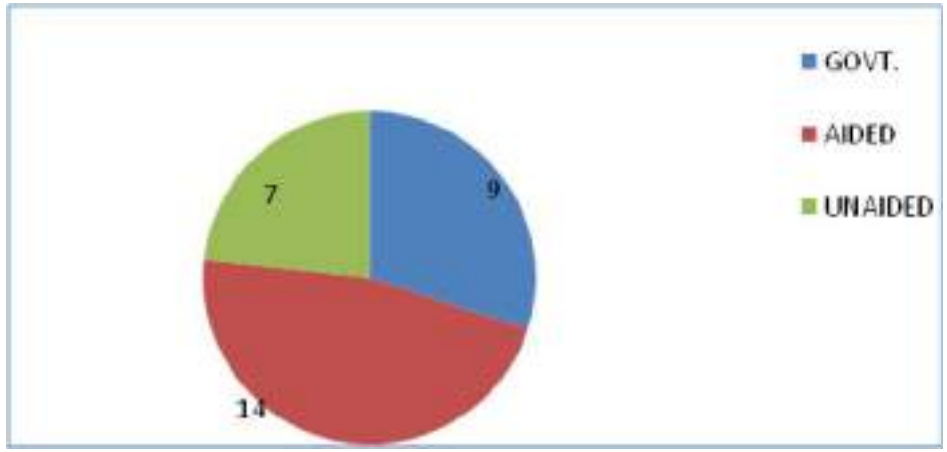


Fig 14.A.2 Schools under various categories

Table 14.A.4 shows the tot al number of students in each category

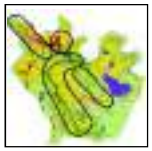
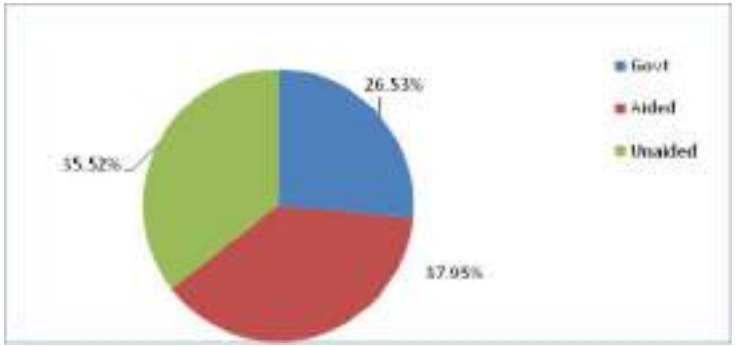


Table 14.A.4 Number of students in each category

	Govt	Aided	Unaided	Total
LP	861	1985	-	2846
UP	689	2781	-	3470
HS	-	-	7238	7238
HSS	4577	3999	967	9543

Source: Education department

At higher secondary level most of the students are studying in government schools. This may be an indication of the academic quality of government schools at HSS level.



Source: Education department

Fig 14.A.3 Percentage of students studying in each category.

Table 14.A.5 shows the total number of teachers in each category of schools.

Table 14.A.5 Number of teachers in various categories

	GOVT.	AIDED	UNAIDED	TOTAL
LP	35	69	-	104
UP	25	78	-	103
HS	-	-	131	131
HSS	120	138	45	303

Source: Education department

Analyzing the teacher - student ratio, 2 out of 4 UP schools have a ratio of 1:40. A.M.U.P.S Munduparamba and A.U.P.S Uphill have more than 1:30. In the same manner 3 out of 6 high schools have a ratio higher than 1:30. M.S.P English medium School Uphill, D.U.H.S Panakkad and M.M.E.T.H.S Melmuri are these high schools. And 2 higher secondary institutions, G.G.H.S.S Downhill and St. Gemmas School Uphill have a higher teacher student ratio.

õ Spatial Distribution

The spatial distribution of schools is given in fig.14.A.4. The schools are spatially well distributed in tune with the distribution of population density.

õ Infrastructure details of schools

At higher institution level the facilities available in schools are satisfactory. There are 12 HS in Malappuram municipality. All of them have separate toilets for girls, computer lab, internet facility, water availability and connectivity. G.G.H.S.S Downhill and G.B.H.S.S Downhill are lacking playground facility.

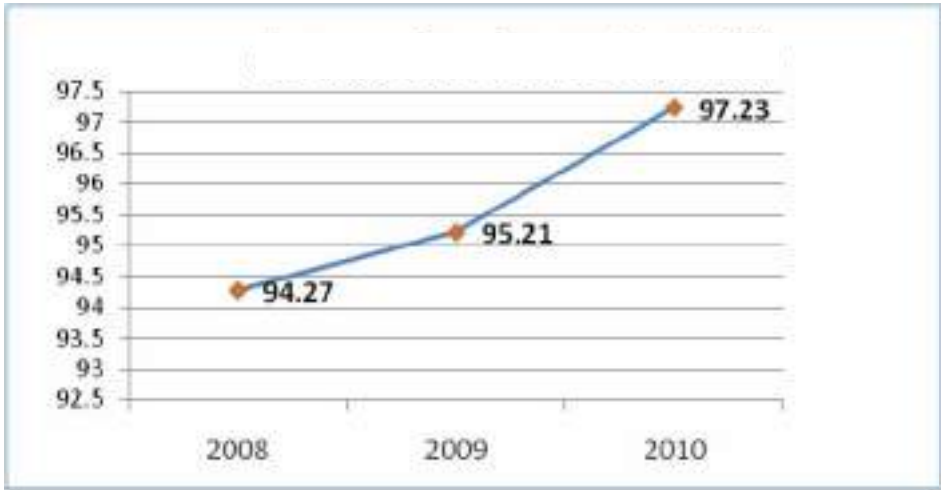
In LP school level, all government schools and 6 aided LP schools out of 9 do not have playground facility. Out of the 14 LP schools only 3 are having playground. In addition to this the only one government UP school at Melmuri lack the same facility. All schools in Malappuram town are electrified. Except 3 LP schools (GMLPS Kolmanna, GMLPS Melmuri south and AMLPS Puthiyamaliyakkal), all other schools have connectivity with motorable road.

õ Study of performance

The average pass percentage in Malappuram municipality in the 10th standard for 2010 is 97.23%. Comparison of the average pass percentage for the past 2 years is shown in Fig.14.A.5.



Fig.14.A.4 Spatial distribution of Educational facilities



Source: Education department

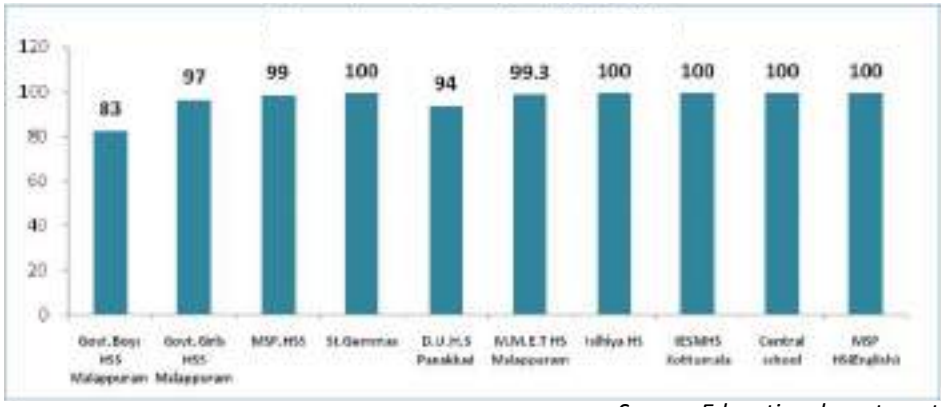
Fig 14.A.5 Average pass percentage over the years

The 10th standard results of High Schools in Malappuram municipality is given in Table 14.A.6.

Table 14.A.6 10th Standard result of schools in Malappuram Municipality

	Govt Boys HSS	Govt Girls HSS	MSP	St. Gemmas	DUHS Panakkad	MMETHS	Islahiya HS	IESMHS Kottumala	Central school	MSPHS (English medium)
2008	71	89	93	100	90	99.7	100	100	100	100
2009	72	93	94	100	94	99.1	100	100	100	100
2010	83	97	99	100	94	99.3	100	100	100	100

Source: Education department



Source: Education department

Fig 14.A.6 Comparison of SSLC results

The pass percentage of Government schools except GBHSS is nearly or above 95% (3 Govt schools have 100% pass) which is a satisfactory result.

14. A.3 Higher and Professional education

õ Colleges



There is 1 Arts & Science College and 3 Professional colleges in Malappuram municipality. Govt College, Munduparamba is the arts & science College and it has PG courses. Professional colleges include one TTI under Government ownership and 2 TTC. The Govt. College, Munduparamba has nearly 700 seats for B.A, B.Sc and B.Com.

õ Other Educational Institutions

Apart from the above mentioned colleges there are about 17 educational institutions which are offering specialized courses. They include institutes which offer computer courses, technical training, driving schools, Spoken English centers and parallel colleges.

õ Comparison with Planning Standards

Table 14.A.7 Comparison with Planning Standards

Sl no.	Pattern	Strength	Standard
1	H. S	700	1 HS for 14,000ppn
2	H.S.S	400	1 HSS for 18,000ppn
3	Arts & Science college	500	1 Arts & Science college for 80,000ppn
4	Professional college	250	1 Professional college for 3,00,000ppn
5	Polytechnic college	150	1 Polytechnic for 37,000ppn
6	I.T.I / I.T.C	300	1 I.T.I / I.T.C for 37,000ppn
7	T.T.C	120	1 T.T.C for 1,30,000ppn

The student strength of HS specified is 700; all High schools except Kottumala IESMHS are having student strength more than 700. Considering the higher educational facilities, the number of colleges is sufficient. As per standards, 2 ITI/ITC are required. There are 3 TTC in Malappuram municipality.

14. A.4 Problems and Potentials

The conventional educational facilities in the town, especially at the school level are commensurate with the population of the town. However,

professional education facilities are meagre in the town. Most of the colleges in the town are offering only the conventional course which is one of the reasons for the increasing demand for colleges outside the district, especially in Coimbatore. With good road, rail and air connectivity and vast tracts of suitable land available within the town, the town has good potential for housing higher level professional institutions and centers of excellence.

14. A.5 Inference

The literacy rate of Malappuram municipality is high compared to the district. This indicates the spread of school education in Malappuram municipality. The teacher- student ratio is more than 1:30 in the case of 2 UP schools, 3 HS and 2 Higher Secondary Schools. Most of the colleges are offering only conventional courses, and there are no professional colleges or higher centers of learning in the municipality.

14.B Health

14.B.1 General



Health is another sector the state of Kerala has achieved remarkable progress which is comparable to that of developed countries. However, at micro level certain problems like quality of services, reach and affordability do exist. Malappuram municipality also follows the general pattern of development of health care institutions elsewhere in the state.

14. B.2 Existing Facilities

- **Health Institutions**



There are 3 government hospitals, 13 private hospitals and 1 co-operative hospital in Malappuram municipality. Government hospitals include Taluk head quarters hospital at Kottappady, Police hospital Malappuram and Govt ESI Hospital Malappuram. There is only one District hospital in the district, which is in Manjeri town. Most of the clinics are managed by the private sector.

There are 17 allopathic health institutions, 5 ayurvedic institutions and 6 homeopathic institutions in the municipality. Among the allopathic medical institutions, there are only 3 hospitals under government ownership. Considering the facilities available in hospitals, there is only one referral hospital in Govt sector and 2 private hospitals having advanced diagnostic facility like CT scan and ECG. Unfortunately there are no super specialty hospitals in Malappuram municipality. Hospitals in Kozhikkode as well as Perinthalmanna have great influence on Malappuram.



There are 5 institutions practicing Ayurvedic system of medicine. Ayurvedic hospital, Patterkadavu is the only one hospital under government ownership in Malappuram municipality. There are 4 ayurvedic hospitals under private ownership.

In homeopathic system of medicine there are 6 institutions. This includes 1 District Homeo hospital, 1 Homeo Dispensary and 1 co-operative Homeo hospital and 3 private Homeo medical centres.

The details of hospitals, its location and category, number of beds and doctors, ownership are given in table 14.B.1



Table 14.B.1 Health care institutions in the municipality.

Category- 1	Clinics (only OP)
Category- 2	Hospitals with 24 hrs service
Category -3	Hospitals with single Operation theatre
Category- 4	Hospitals with more than one OT
Category- 5	Hospitals with advanced diagnostic facilities like CT scan, EEG
Category -6	Super specialty hospitals
Category-7	Referral Hospital (Govt. Sector)

Allopathic system of medicine

Sl. No	Name of Hospital	Location	Category*	Number of beds	Number of Doctors	Govt/Private/Co-operative society
1	Taluk Head Quarters Hospital , Malappuram	Kottappady	7	116	10	Govt.
2	District co-op Hospital , Malappuram	Kunnumal	2	210	18	Co-op Society
3	M.B.Hospital , Malappuram	Varangode	5	70	16	Private
4	ORCHID Hospital , Malappuram	Kizhakkethala	5	100	23	Private
5	Christian Welfare centre , Malappuram	Kunnumal	2	56	6	Private
6	Police Hospital , MPM	Kunnumal	2	36	2	Govt.
7	Moideen Kutty Haji Memorial Hospital	Kottappady	1		1	Private
8	Govt. Hospital E.S.I , Malappuram	Hajiyarpalli	1		1	Govt.
9	MODI Eye Clinic	Kottappady	1		1	Private
10	RELIEF Dental Clinic	Kottappady	1		1	Private
11	SHIFA Dental Clinic	Kottappady	1		1	Private
12	MALAPPURAM Dental Clinic	Kottappady	1		1	Private
13	KILIYAMANNIL Dental Clinic	Kottappady	1		1	Private
14	POLY Dental Clinic	Up Hill	1		2	Private
15	Dr.Venugopal Clinic	Kottappady	1		1	Private
16	AINS Dental Clinic	Kunnumal	1		2	Private
17	INDRA Dental Clinic	Kunnumal	1		2	Private

Ayurvedic system of medicine

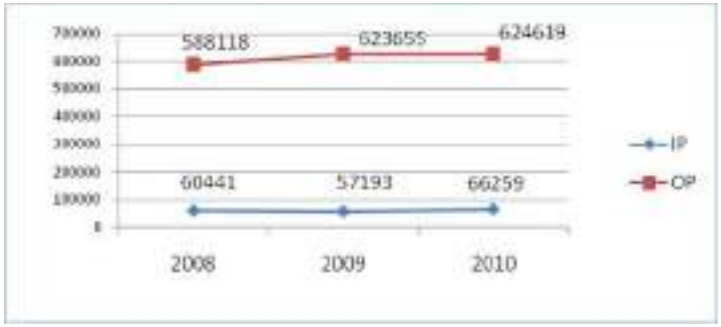
Sl. No	Name of Hospital	Location	Category	Number of beds	Number of Doctors	Govt/Private/Co-operative society
1	Govt Ayurveda Hospital	Patterkkadavu	2	10	2	Govt
2	Multi Speciality Ayurveda Hospital & Research Center	Kottappady	3	14	2	Private
3	Kottakkal Arya Vaidya Sala Agency	Kottappady	1		1	Private
4	Malabar Ayurveda Hospital	Kottappady	1		1	Private
5	Mohan Pharmacy	Kunnumal	1		1	private

Homeopathic system of medicine

Sl. No	**Name of Hospital**	**Location**	**Category**	**Number of beds**	**Number of Doctors**	**Govt/Private/Co-operative society**
1	District Homeo Hospital	Mundupparamba	2	25	3	Govt
2	Govt. Homeo dispensary	Parrerkkadavu	1		1	Govt
3	Fathima Homeo Clinic	Kottappady	1		1	Private
4	Homeo Clinic,(Dr.Leena Amarnath)	Kunnumal	1		1	Private
5	Kma Physiotharapy Research Centre	Mundupparamba	1	6	1	Private
6	Co-op. homeo Hospital	Kunnummal	1		2	Co-op

Source: Secondary data

The fig 14.B.1 shows the variation in the number of IP and OP in the municipality



Source: Economics & statistics department

Fig.14.B.1 Variation in IP and OP.

The number of In Patients and Out Patients is almost constant over the years.

õ Spatial Distribution

There is sufficient number of hospitals in Malappuram municipality in which most of them are private hospitals. Spatial distribution map shows a high concentration of hospitals along the road network, except the Govt Ayurvedic hospital (which is situated on hill top at Mamparambu).

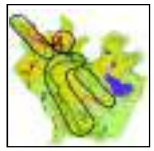




Fig 14.B.2 Spatial Distribution of Hospitals

- **Comparison with planning standards**

As per standards one District Hospital is required for a population of 11 lakh. Malappuram district has a population of 36, 25, 471 as per 2001 census. Therefore at least 2 District hospitals are required in the district. This reinforces the public demand for up gradation of Taluk Head Quarters hospital at Malappuram to District Hospital level.

There is no PHC in Malappuram municipality. As per standards one PHC is required for a population of 20000 with 24 beds. The Taluk Head Quarters Hospital caters to this need also.

As per standards one Nursing home, child welfare and maternity centre is required for a population of 45000 to 1 lakh. Malappuram municipality has a population of 58491 as per 2001 census. Therefore 1 such hospital is required.

There are 13 private allopathic hospitals in Malappuram municipality in which 9 are clinics with OP. Among the private hospitals 3 IP hospitals have bed strength more than 50 and within this one hospital have bed strength equal to 100. As per standards number of beds in private hospital for 1 lakh population is 40. Hence these hospitals are sufficient to serve the people in Malappuram municipality. The number of beds per doctor is satisfactory in private hospitals.

14. B.3 Problems and potentials



Major problem in the health sector is the insufficiency of facilities in the hospitals. There are no super specialty hospitals in municipality. Most of the hospitals are in private sector. Taluk Head Quarters hospital is the only government hospital with IP facility in the municipality. In the absence of any professional college in the municipality at present, there

is a public demand for establishing a medical college in public sector in the municipality. The hospital to be developed along with the medical college shall cater to the tertiary care (super specialty) needs of the population of the municipality.

14. B.4 Inference

There is no super specialty hospital in Malappuram municipality. Hence the people have to depend on hospitals outside the Municipality. Besides, there is no medical college in the town. Major problem in the health sector is the inadequacy of facilities in the hospitals. Most of the hospitals are in private sector affecting the affordability of health care.

14.C Recreational facilities

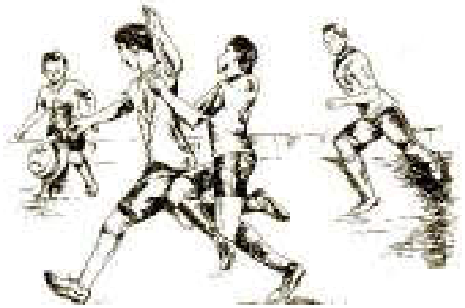
14. C.1 Parks & open spaces

Kotakkunnu amusement park (4 acre) is the only park situated in Malappuram municipality. There are no other public open spaces in the town.



14. C.2 Playgrounds/Stadia

There are 2 playgrounds in Malappuram municipality.



1. Municipal stadium (which is a foot ball ground with surrounding galleries) at Kottappadi and
2. MSP ground at Koottilangadi

Indira Pryadarsini indooor stadium (near MSP) with an area of 0.0405Ha is used for conducting various indoor sports and games.

The spatial distribution of recreational facilities is shown in Fig 14.C.1.

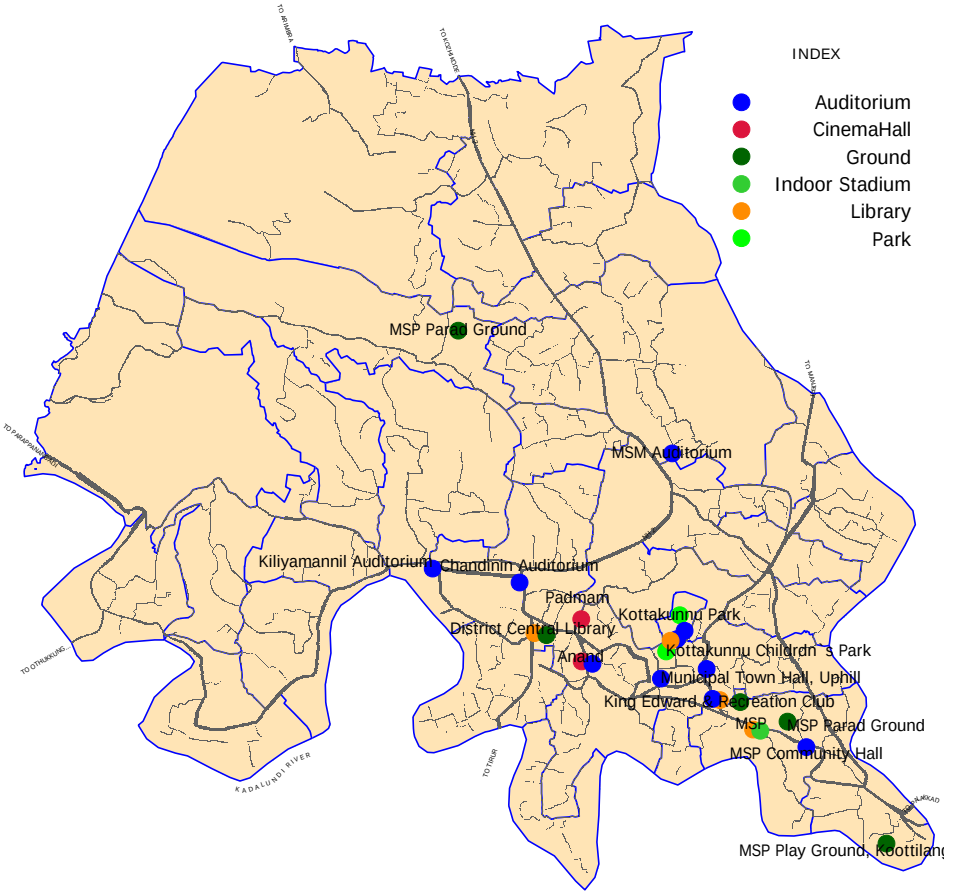


Fig.14.C.1 Spatial distribution of recreational facilities

14. C.3 Theatres and auditoria



There is one open air theatre (1acre) and Art Gallery at Kottakkunnu. There are 2 cinema halls in Malappuram (M).

1. Padmam (1600 seat)
2. Anand (1566 seat)

There are 5 Auditoriums in Malappuram municipality having an average capacity of 500 or more. They are Kiliyamannil, MSM, Chandini, Malabar, and Palace.

14. C.4 Problems and potentials

The recreation facilities are limited in Malappuram Municipality. The only park, i.e.at Kottakkunnu is overcrowded during the peak hours, especially on public holidays. With the fragmentation of residential properties, people have lesser open land attached to their houses and hence need for public open space for recreation is on the rise.

14. C.5 Inference

The recreational facilities in the municipality are not adequate to cater to the present population, leave alone the target population. Besides, spatial distribution of recreational facilities is not uniform. Residents from many of the wards do not have recreational facilities in a walking distance.

14.D Other Civic Amenities

14. D.1 Town hall



There are three community halls in Malappuram municipality. These are used for various public gatherings. The details of halls, their locations and capacity are given in table 14.D.1.

Table 14.D.1 Community halls in Malappuram municipality.

Sl No	Name	Location	Capacity
1	MSP community hall	Kunnummal	200 seat
2	Municipal Community hall	Down hill	500 seat
3	Municipal town hall	Kunnummal	1500 seat

14. D.2 Reading rooms and library



There are 3 Public Libraries in the municipal area. They are

- District central library, Downhill.
- King Edward & recreation club, Uphill
- MSP library, Uphill.

Table 14.D.2 Details of libraries in Malappuram municipality.

Sl No	Name	Location	Capacity
1	District central library	Downhill.	9635 books
2	King Edward & recreation club	Uphill	2795 books
3	MSP library	Uphill	260 books

14. D.3 Crematoria and Burial ground

There is one Crematorium in Malappuram municipality. It is situated at Munduparamba and covers an area of 1.5 acres. There are 17 burial grounds in the municipality attached to the mosques/churches.

14. D.4 Inference

The civic amenities in the town are commensurate with the present population. However, the future additional demands due to increase in population have to be met.

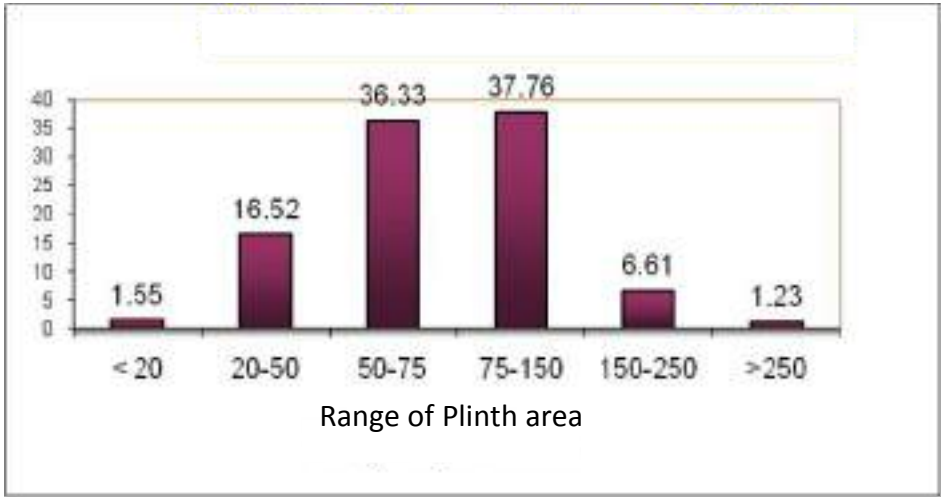
14. E. HOUSING



There are 37 wards in Malappuram Municipality. Almost 36.4% of the total land in the municipality is under residential use. The details regarding the present condition of housing is dealt in this section.

14. E.1 Housing shortage

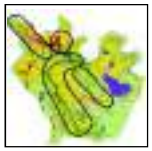
As per census 2001 there are 10353 households in Malappuram Municipality. There are 15172 households in 2010 where as the total number of houses in the municipality is 12665. The plinth area detail of houses is given in figure 14.E.1. According to socio economic survey majority of houses have a plinth area of 75 -150 sqm.



Source: Socio Economic Survey 2010

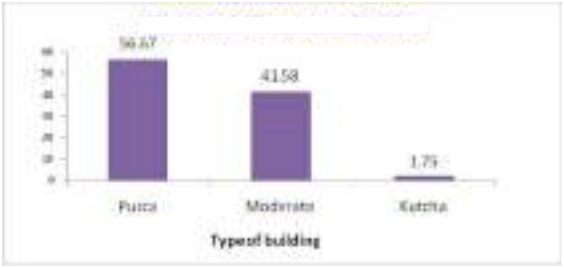
Fig 14.E.1 Houses in various ranges of plinth area.

The housing shortage is calculated by adding the number of kutcha houses to the difference between number of households and number of houses. According to the socio economic survey total number of kutcha houses comes to 1.75% of the total number of houses. The number of kutcha houses which require replacement comes to approximately 221. The total number of houses in the municipality in 2010 is 12665 and the number of Households comes to 15172. Therefore, at present there is a shortage of 2728 houses in the municipal area.



14.E.2 Existing housing condition

From socio economic survey, majority of houses are either pucca or moderate type. Kutcha houses are negligible in number. The percentage share of different type of buildings is given in fig 14.E.2.



Source: Socio Economic Survey 2010

Fig 14.E.2 Percentage types of buildings.

The houses are classified as pucca and moderate depending on the type of roofing provided. Therefore this does not reflect the actual structural stability of the building. The Kutcha buildings are those having cheap roofing, so they are houses that require replacement. The Socio Economic survey indicates that people, at all levels, give high priority for quality housing.

Further the survey reveals that most of the people have their own land for housing. This is shown in fig.14.E.3.



Source: Socio Economic Survey 2010

Fig 14.E.3 Nature of land ownership

14. E.3 Spatial distribution

The spatial distribution of residential area is shown in Fig.14.E.4.



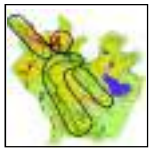
Fig 14.E.4 Spatial Distribution of residential area

14. E.4 Problems and potentials

Almost 36.4% of the total land in the municipality is of residential use. The demand for housing is increasing with time, which is clearly reflected in the change in habitation pattern. Urban amenities like water, electricity and sanitation are found to be adequate.

14. E.5 Inference

There is a possible shortage of approximately 2728 houses in the municipality. The structural condition of most of the houses are satisfactory and only a few existing houses need replacement.



CHAPTER 15 SPECIAL CONCERN AREAS

15.1.0 BPL Index

Below Poverty Line is an economic benchmark and poverty threshold used by government of India to indicate economic disadvantage and to identify individuals and households in need of government assistance and aid. Kerala is one of the few states which has formulated its own criteria.

In Kerala there are 9 parameters, family which lack access to 4 or more parameters are classified as BPL.

Table 15.1 BPL parameters.

1. No land or < 5 cents of land	6. No access to safe drinking water
2. No house or dilapidated house	7. Women-headed HH or presence of widows or divorcee
3. No Sanitation Latrine	8. SC and ST
4. Family without Colour television	9. Mentally retarded or disabled member in the family
5. No regular employed person in the family	

According to 2001 census about 8.07% of the total population is below poverty line in Malappuram municipality. Figure 15.1 shows the concentration pattern of BPL families in the munucipality. BPL index of about 25 wards (wards of 3, 5, 6, 7, 8, 9, 12, 14, 15, 19, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34 and 36) is equal to or greater than one in Malappuram municipality.

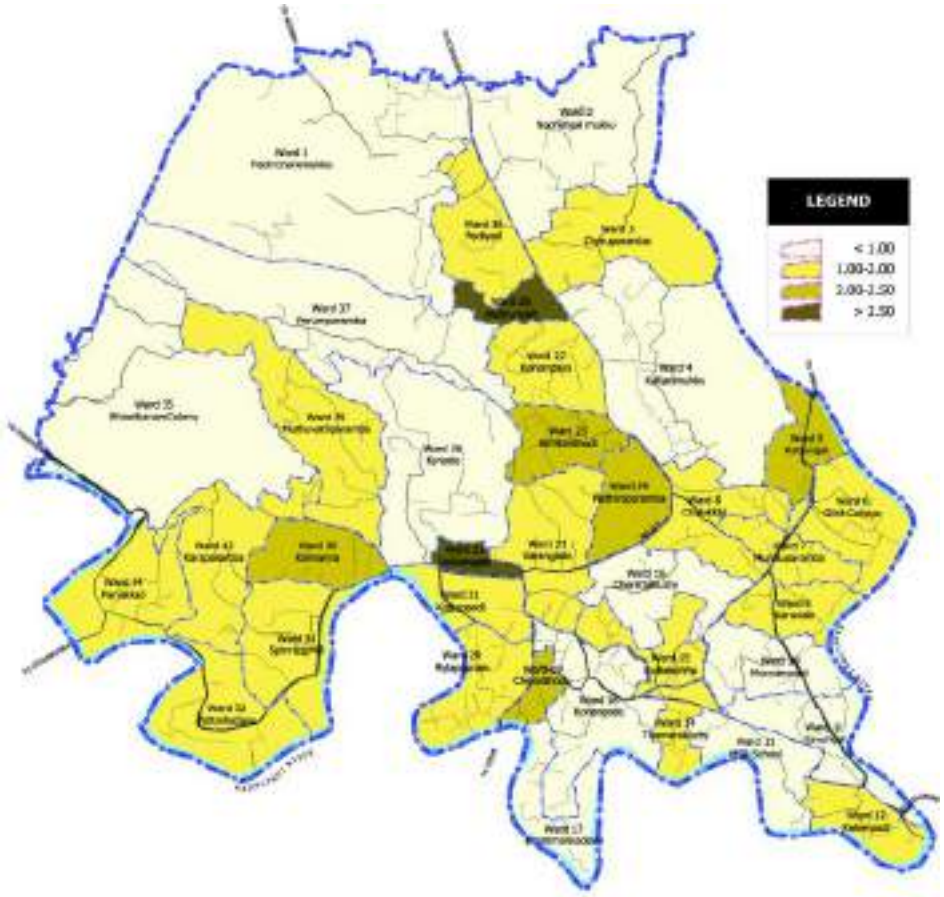


Fig.15.1 Concentration pattern of BPL families

In Malappuram municipality, 4719 households have been categorized as BPL. According to the socio-economic survey conducted, the average monthly household income in the municipality is Rs.7900/-. Whereas the average monthly household expenditure comes to Rs.5900/-. This gives an insight into the economic condition of the people of Malappuram.

15.2.0 SC/ST index

SC population constitutes nearly 4.97 % of the total population in the municipality whereas ST population is very low (nearly 0.1 %) in Malappuram municipality. Percentage of SC population of the district is 15.1. SC/ST index indicates the social backwardness of a region. SC/ST Concentration Index is higher in the south east and western part of Municipal area (wards of 1, 3, 4, 8, 9, 11, 12, 13, 15, 16, 21, 23, 25, and 35). Agriculture labourers and cultivators are distributed more or less in the same area. The concentration pattern of SC/ST population,agriculltural labourers and cultivators are show in fig.15.2,15.3 and 15.4 respectively.



Fig. 15.2 Concentration pattern of SC/ST population



Fig 15.3 Concentration pattern of agricultural labourers

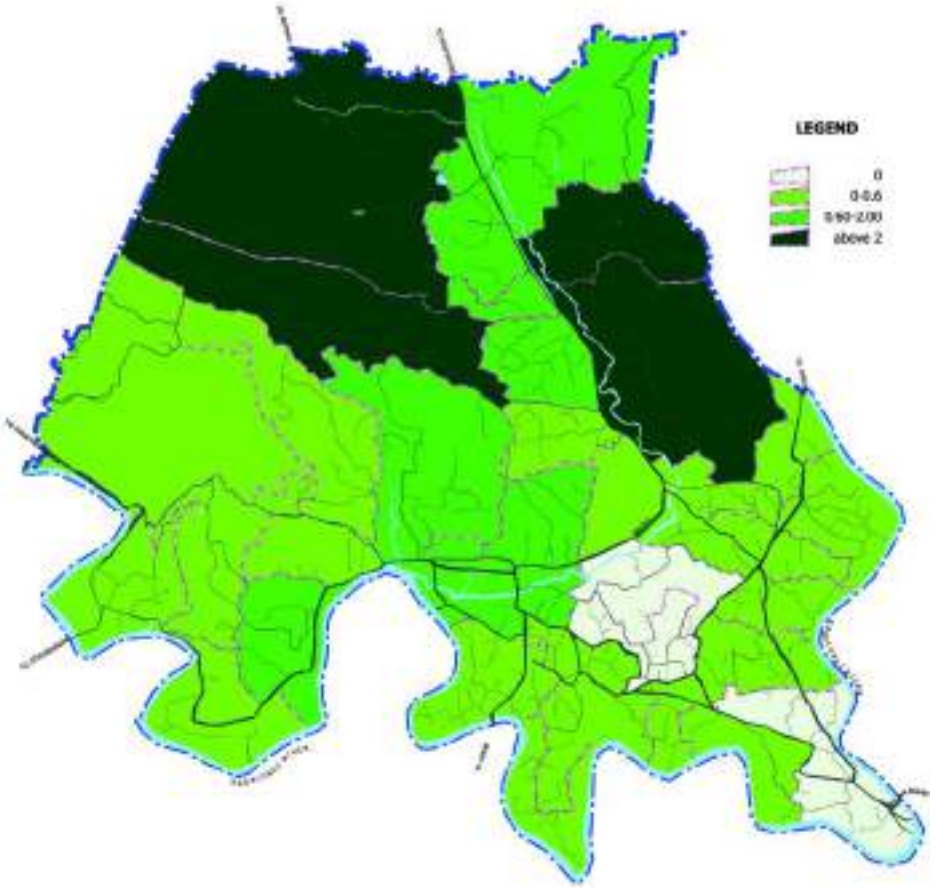
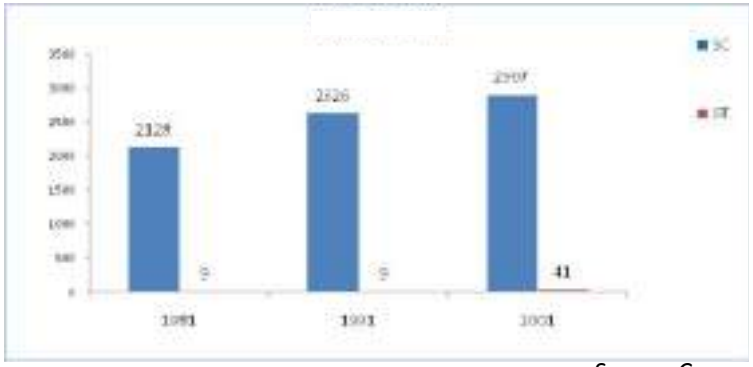


Fig 15.4 Concentration pattern of cultivators

SC and ST population has increased over the past decades. ST population is very less compared to SC population. Sex ratio is 1041 for SC and 519 for ST as per census 2001.

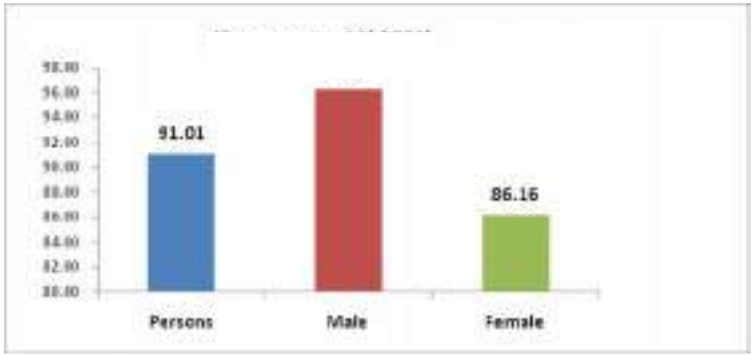


Source: Census

Fig 15.5 Temporal variation of SC/ST population

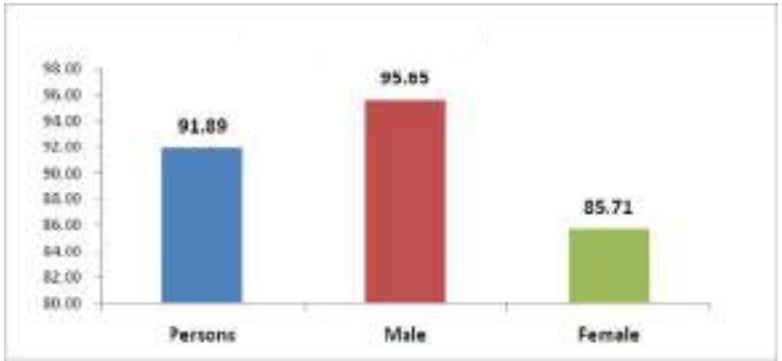
15.3.0 Literacy

Literacy rate of SC population in Malappuram municipality is 91.01 % and that of ST population is 91.89 %. Male literacy rate is more than the female literacy rate. Fig 15.6 and Fig 15.7 shows the literacy rate of SC and ST population in 2001.



Source: Census 2001

Fig 15.6 Literacy rate of SC



Source: Census 2001

Fig 15.7 Literacy rate of ST

15.4.0 Inference

The concentration of SC/ST population is distributed more or less in the same area where there is high concentration of Agriculture labourers and Cultivators.

CHAPTER 16 ENVIRONMENT

16.1.0 Present scenario



The environment of Malappuram municipality is not much polluted compared to similar towns in the state. This is mostly due the fact that the municipal area has no high industrial development. The undulating topography of the town helps in avoiding water logging and flooding. The residential density is also not high compared to similar towns in the state. The water quality is good. Most of the households are using the water from the wells directly without any treatment due to this. Air pollution due to vehicular traffic is limited to a very small area in the town centre. The site for solid waste treatment is far from the inhabited areas. Even though the treatment facilities are not fool proof, this doesn't have a high impact due to uninhabited surroundings. One important problem in the environmental sector in the municipality is the letting out of waste water to the storm water drains without any treatments from some of the residences and commercial establishments.

16.2.0 Sensitive / fragile areas



The environmentally sensitive areas in the municipality include wet lands (paddy), river and the shore area, valiya thodu and hilly terrains with high slopes. The municipality has a total extent of 102.97 Ha of paddy which is the only type of wetland in the municipality. Only a fraction of this area is cultivated. The municipality has a water frontage of 18.5 km. Unbridled sand mining is the major problem faced by the river.



Encroachment of river puramboke is also not unheard of. The arterial drainage channel, valiya thodu often receives waste water from the adjoining residences and commercial establishments. The problem is severe during dry seasons when the carrying capacity of the channel is low. The hilly terrains in the municipality have areas with more than 45^0 slopes. The soil structure in these areas is mostly a matrix of lateritic soil and granite boulders. Some of these slopes are prone to landslides.

16.3.0 Conservation efforts

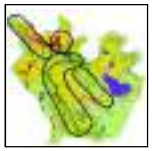
The conservation of paddy and wet land Act is in force in the town which prevents unregulated conversion of paddy and wet land for other purposes. This legislation, though effective in protection of paddy and wet land to a great extent, do not address the issues faced by such environmentally sensitive areas in an urban context. The master plan for Malappuram municipality in force also has strict zoning regulations in this regard. Various measures are available for the protection of the river. Even with all the provisions and regulatory machinery, unauthorised sand mining do take place.

16.4.0 Problems and potentials

The problems faced by the municipality in the environmental sector are the fast depletion of paddy/wet land, illicit sand mining and water pollution due to waste water entering the storm water drains. The low density and a vast area of land under dry cultivation are the strengths of the municipality in the environmental sector. The problems identified have not reached unmanageable proportions and hence can be brought under control.

16.5.0 Inference

Even though the municipality has a serene environmental quality, some problems do exist and hence the authorities need to be vigilant to mitigate the present problems as well as to conserve the environmental quality.



CHAPTER 17 DEVELOPMENT ADMINISTRATION AND FINANCE

17.1.0 Development administration

The major development activities undertaken by the municipality are



1) Construction and Maintenance of Municipal roads
2) Public Health
3) Water supply
4) Sewage disposal
5) Providing economic help for the Construction and maintenance of houses to economically backward communities.
6) Street light
7) Administration of Institutions owned by the Municipality like Schools, Hospitals etc
8) Development of kottakkunnu (along with DTPC)

Besides municipal level activities functions of the various development departments are being controlled by the municipality and state plan schemes of these departments are channeled through the municipality.

17.2.0 Municipal Finance

The financial position of urban local self governments throughout the nation is very precarious except for a few very large urban centres. Most of the urban local self governments, especially the smaller ones like Malappuram are not financially self sustaining. These municipalities often depend on grants from Central and State governments for funding their day to day affairs and fulfilling their constitutional obligations. The major source of income for urban local self governments is the property tax levied on the buildings in the municipality. This source has immense potential, but is not being tapped to the full extent at present. The problems faced in revenue generation through property tax are:-

- Irrational rates
- Reductions given due to various (non-financial) reasons
- Tax avoidance and evasion
- Leakages in collection system
- Improper records keeping and monitoring

Almost all these handicaps can be overcome by digitising the data base and managing this spatial information in a GIS platform with stake-holder interface. The timely detection of unauthorised construction, thus bringing the evaders to the tax net and ensuring compliance of regulations, also can be effectively carried out using remote sensing applications once the GIS data base is in position and regularly updated.

Another source of own revenue for the municipality is from entertainment tax. The scope of this source of revenue is shrinking due to reduction in public interest in cinema theatres.

Reciepts from municipal properties also could be a major source. In fact, the Malappuram municipality has more income under this head than that from rates and taxes. However, the full potential of this source of revenue is not utilised. The municipality has a number of commercially developable plots, the development of which is expected to boost the financial resources of the municipality to the extent of self sustainability. Reciepts from property transferred to the municipality by the state government is also a considerable source of income.

The budget presented in the Municipal Council for the financial year 2010-11 shows a surplus of Rs. 1.02 crore. The anticipated revenue is Rs.59.76 crore and the expenditure is Rs. 58.74 crore.

Annual Financial Statement of Malappuram Municipality for the year 2009-10 is shown below

Revenue Account

SL.No	Item	Receipts (Rupees)
	Opening balance	10423834
1	Municipal Rates& Taxes	15071500
2	Realization Under Special Acts	975500
3	Receipts from Municipal Properties	17451000
4	Municipal Fees	2584000
5	Govt. Grants & Contribution	15998000
6	Receipts by way of Property Transferred by Govt (Non Plan)	9409000
7	Miscellaneous Receipts	672000
	Total	62161000
1	Deduction required in Capital account for municipal developmental activities	19100000
	Total Revenue account excluding the deductions	43061000
	Grand total including Opening Balance	53484834

Source: Malappuram municipality

Capital Account

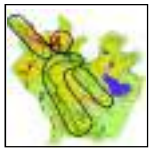
SL.No	Item	Receipts (Rupees)
	Opening balance	34460996
1	Govt. Grants & Contribution	70206000
2	Govt. Grants for the scheme of Family Planning	31976000
3	Municipal developmental activities	19100000
4	Total	121282000
	Grand total including Opening Balance	155742996

Revenue Account

SL.No	Item	Receipts (Rupees)
1	Management & Collection	9840800
2	Public Works	4391000
3	Town planning	385000
4	Education	-
5	Water supply distribution &Drainage	-
6	Public Health	11356700
7	Lighting of Street Light	2015820
8	Municipal Properties	1600000
9	Expenditure on Property transferred by Govt. to Municipality (Non Plan)	6709000
10	Extra Ordinary Expenditure	255000
	Total	36553320
	Closing Balance	43061000
	Grand total including Closing Balance	53484834

Capital Account

SL.No	Item	Receipts (Rupees)
1	Management	3945000
2	Public Works	123800000
3	Education	100000
4	Water supply distribution &Drainage	1060000
5	Poverty alleviation Activities	1250000
6	Family Planning Scheme - Project expenditure	7735400
7	Total	137890400
8	Closing Balance	17852596
9	Grand total including Closing Balance	155742996



Debit Account

SL.No	Item	Receipts (Rupees)
	Opening balance	25226107
1	Deposits	1800000
2	Govt share (Sand sale)	800000
3	Beneficiary Contribution	800000
4	Provident Fund	1500000
5	Pension Fund	3000
6	Returned Advances	250000
7	Library Cess	400000
8	Sale Tax	900000
9	Income Tax	350000
10	KCWWF	175000
	Total	6978000
	Grand total including Opening Balance	18248107

The annual financial statement for 2009-10 is shown in Table 17.1.

Debit Account

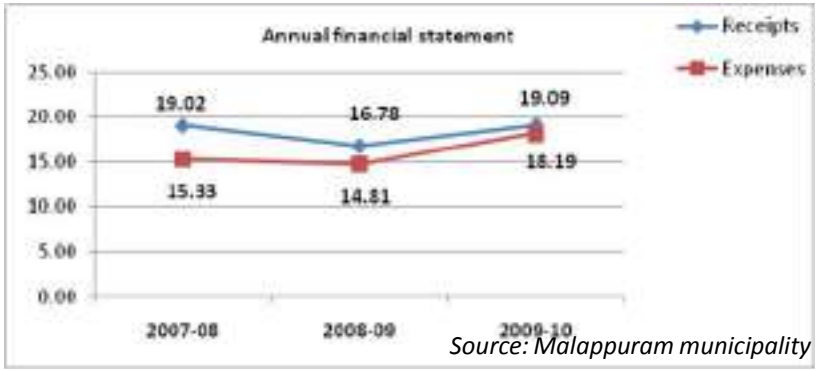
SL.No	Item	Receipts (Rupees)
1	Deposits	1800000
2	Other Deposits	0
3	Govt share (Sand sale)	800000
4	Provident Fund	1500000
5	Pension Fund	3000
6	Returned Advances	250000
7	Library Cess	400000
8	LIC/GIC	1000
9	Sale Tax	900000
10	Income Tax	350000
11	KCWWF	175000
	Total	7479000
	Closing Balance	25727107
	Grand total including Closing Balance	18248107

The annual financial statement for the past 3 years is shown in Fig17.1

Table 17.1 Annual financial statement 2009-10

Financial position 2009-2010					
Item	Opening balance	Receipts	Total	Expenses	Closing Balance
Revenue Head	10423834	43061000	53484834	36553320	16931514
Capital Head	34460996	121282000	155742996	137890400	17852596
Debit Head	-25226107	6978000	-18248107	7479000	-25727107
Total	19658723	171321000	190979723	1.82E+08	9057003

Source: Malappuram municipality



Source: Malappuram municipality

Fig 17.1 Summary of financial statement 2007-08 to 2009-10

The statements show that financial position of the municipality is not very robust. The income is almost stagnant and the expenditure is growing. There is no leverage in the financial affairs of the municipality. Financial statements show that revenue is not utilized to the fullest in the above mentioned years indicating poor financial management.

17.3.0 Governance

The municipal governance has not improved much in the last few years. The available technologies are not utilized to the maximum extent for ensuring efficient and effective governance. The tax administration is still based on manual registers and assessment which causes heavy leakage and non-compliance. Reluctance in use of IT enabled solutions hampers seamless integration of various governance functions and efficient service delivery.

17.4.0 Existing source of funds

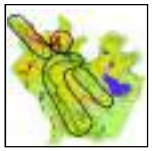
Major sources of revenue income for the municipality are municipal rates and taxes, income from municipal properties and grants (revenue account) from the state government. The municipal rates and taxes contribute 28 % of the revenue income. The income from properties comes to 32.6 % and grant from state government is 30 % of the total revenue income. This indicates the need to concentrate on efficient collection of rates and taxes and enhancing income from properties for the financial health of the municipality. In the capital account, more than 80 % of the funds are provided by the state plan schemes.

17.5.0 Problems and potentials

The major problems faced by the municipality in the finance sector are the leakage in rates and taxes and paucity of funds for developmental activities. The municipality has number of prime real estate in the town which can be developed (through PPP mode or otherwise) for enhancing the income of the municipality.

17.6.0 Inference

The financial position of the municipality is not very strong. The fiscal surplus of the municipality is not an indication of financial health, but of poor financial management. But the municipality has tremendous potential for development of financially remunerative projects for sourcing funds for urban development.



CHAPTER 18 LINKAGES AND SPATIAL STRUCTURE

18.1.0 Linkages

18.1.1 Effect of population growth on various development sectors

The growth in population has an all evasive effect on all the development sectors since development is for the people and by the people. The effect of population growth is direct on sectors like water supply, electricity, housing, traffic & transportation, education, health care etc where there is direct consumption. The rest of the sectors have secondary impact on them.

No perceptible impact is anticipated in Industrial sector due to increase in population since the problems faced by the industrial sector in Malappuram municipality are mostly related to the lack of entrepreneurial impetus rather than anything else.

Population growth shall have impact on trade and commerce only beyond a threshold population. If we analyse the trade and commerce that take place in a town, distribution of basic necessities of life contributes only to a part of it. The rest of the trade depends on surplus income. So, even though there is an increase in trade due to population growth, the trade volume is more elastic towards the surplus income and thus the significant changes are often related to the change in surplus income rather than population growth. The increase in trade due to increase in demand for basic necessities shall not be apparent if the surplus income is reducing. When both the population and the surplus income grows, the trade & commerce take off at an accelerated pace.

In the case of tourism sector, the growth of population has no bearing on the performance of the sector within the town. Similarly, in the case of animal husbandry, agriculture and fisheries also, the town's population has not much influence in these sectors since the produces from these sectors are not locally grown but imported to a large extent.

With growth in population, the human activities increases and it reflects on the transportation needs of the people. The transportation needs grow exponentially with the increase in population. The physical improvements to the transport network shall be attempted with this in view. The demand for water supply, sewerage system, solid waste management system, energy, education, health care, recreational and other civic amenities has direct relation to the increase in population. But physical infrastructure for these services cannot be built incrementally. Hence these facilities are to be developed in a phased manner dove tailing with the respective threshold population. The housing sector also has direct relation to the growth in population. However, development in this sector can be taken up in an incremental manner to an extent.

18.1.2 Land use changes and environment

The changes in land use effect the environment to a great extent. The major land use change thus effecting environment, identified in Malappuram municipality is the depletion of paddy land. There has been a considerable decline in both the area of paddy field and the extent under cultivation. The agricultural production is not a very significant factor to be considered while formulating land use policy in an urban context. But, the paddy land essentially acts as green open space and also functions

as reservoir of water during rains preventing floods and fast run off.Likewise the dry cultivation area also provides the necessary green cover in the municipality. Changes in this land use shall reduce the green cover and hence shall adversely affect the environmental quality. The land use policy decides the compactness of built form in the town. A less compact built form (with more than necessary intrusion of residential, commercial and such other land uses requiring built space to agricultural / open land uses) shall mean wider building foot prints. This calls for putting more land under manmade structures detrimental to environmental quality. Reducing the building foot print is the answer to this problem. Reducing the building foot print also shall mean compact development for which it is easier and less costly to provide basic amenities like water, sewerage system, energy, roads etc. Providing waste treatment facilities are also a lot easier for a compact development. All these have positive impact on the quality of environment. The land use also has profound impact on the micro climate. Lesser foot prints shall reduce the possibility of creating heat islands within a town.

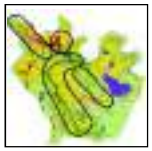
Another issue is that of other environmentally fragile areas. Besides paddy land two such classes are identified in Malappuram municipality. They are the river shore and the hilly terrains with a slope of more than 45°. The changes in land use in these areas need serious consideration. Highly polluting activities in the river shore shall threaten the cleanliness of the river. And in the case of high slopes, uses which doesn't prompt land slide only can be considered in the area.

The distribution of various land uses in the town decides the traffic pattern of the town and hence has environmental ramifications. So, the changes in land use shall be managed in such a way that traffic and transportation needs are optimised causing less pollution from vehicular traffic and less consumption of precious fossil fuels.

18.1.3 Industrial sector – effect on environment, land use and employment

Micro Small and Medium Enterprises (MSME) sector is an important generator of employment. In Malappuram municipality the small enterprises are not concentrated in any particular location. The earlier efforts to earmark separate area for industrial land use (in the master plan in force) has not achieved the results. The industrial (small) units have come up in various locations in the municipality in a scattered manner during the currency of this plan itself due to the entrepreneurs' preference for utilising the land which is already in their possession rather than acquiring the required land in an earmarked industrial area. Considering the tremendous potential for employment creation, the MSMEs have to be promoted. The establishment of small scale units in the residential and commercial areas are to be viewed in this backdrop. However, allowing such industries in residential and commercial areas should not affect the environmental quality of the area. Hence the nature of industries that can come up in such areas should essentially be non-polluting and non nuisance type.

For medium scale and large scale industries, the land available with the KSIDC in the municipal area shall be sufficient. Thus earmarking the parcels of land owned by private individuals who have no inclination to start an industrial unit can be avoided. Besides the land use policy of allowing non-polluting and non nuisance industries of small scale in residential and commercial areas, the development of necessary



infrastructure required for industrial development such as good road connectivity, availability of water and electricity etc also should be attempted to promote industrial development in the municipality.

In the case of large scale industries of non nuisance / non-polluting nature, the locations cannot be earmarked in advance due to the problems associated with the acquisition of land and uncertainty regarding the establishment of such units. In such instances considering the location decisions on a case to case basis only is feasible.

There is an issue as to where a polluting (with pollution abatement measures) / nuisance type industry has to be located in the municipality if it is essential from other (economical / locational / strategic) considerations. The solution is to provide for allowing such industries in the less inhabited areas in the municipality with strict guidelines for site selection prior to establishment of such industry and control of other land uses around such industries after their establishment.

18.1.4 Effect of various sectors on employment

The small industrial sector is considered to be the prime provider of employment in small and medium towns. But in the case of many towns in Kerala, including Malappuram, the employment in industrial sector is not the prominent one. The tertiary sector, mostly various services employ more people than industries. Trade and commerce is an important employment sector, both direct and indirect. However, the employees in this sector are mostly unorganised and hence are not much reflected in the statistics. The fluctuation in employment level is also high in this sector. Tourism, even though not developed in the town as an employment sector, has much potential in creating more jobs. The investment required to create unit employment is low in tourism sector. Another area of interest which can bring in employment to the town is IT related activities. The town has a number of well educated technicians in this area. With a good number of people working overseas, getting BPO assignments to IT units located in the town need to be explored. Eventhough studies based on physical features suggest agriculture,animal husbandry and SSI as thrust areas of employment in the town,the number of cultivators and agricultural labourers are on the decline in Malappuram . This trend is not likely to be reversed. So, increase in productivity with increased technology inputs is imminent in this sector. Organised farming does exist in a few holdings in the municipality. Their potential for creation of further employment is marginal. The case of animal husbandry and fisheries are also the same. The town being the administrative head quarters of the district attract a number of district level offices of the government and some of the private sector concerns. However, the employment in this sector is almost at a saturation level and is not expected to grow at a fast pace. Education and healthcare are the major providers of organised employment in the state. In addition to the direct employment created by these sectors, development in these sectors create number of secondary employment besides making the population more employable. Likewise improvements to the physical infrastructure of the town shall attract employment generating activities to the municipality. So, providing better infrastructure also is a key to the creation of jobs in the municipal area. So tourism, IT, services, education, health care and physical infrastructure are the thrust areas for employment generation in the municipality. The development plan addresses this issue in two ways. One is by providing for improvements to physical infrastructure and creating new infrastructure facilities in the thrust areas. The second approach is by putting in appropriate policy measures for the development of the identified thrust areas.

18.1.5 Changes in traffic & transportation needs due to growth in various sectors

The relation between demand for traffic & transportation infrastructure and different sectors of economy is a very dynamic one. The growth in any sector of economy calls for instantaneous changes in the demand pattern for transportation infrastructure. However, the transportation infrastructure cannot be provided in an incremental manner. Phase wise expansion is the only solution. Hence careful consideration is required in any development plan while dealing with development in major sectors of economy and social infrastructure.

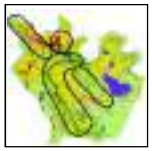
The growth in industrial sector calls for increased freight traffic both in bound and out bound. The medium and large scale industries shall attract freight traffic to particular locations like industrial development proposed by KSIDC. So these locations shall be identified in such a manner that connectivity from the existing network is good so that efforts in expansion of network to meet the additional demand are optimum. The trade and commerce sector also poses the same problem. Here, in bound traffic is likely to be more than the out bound traffic. In the case of both the sectors, since the increase in demand shall be for freight transport, development of a truck terminal is essential. So, a truck terminal, easily accessible from the network is a pre-requisite for development of industries and trade & commerce sectors. The increase in trade and commerce increases the intra city traffic also. So development of trade & commerce meant for local consumption should be decentralised to the maximum extent possible in order to reduce new generation of intra city traffic. These efforts shall decongest the town centre,especially Kottappadi.

Development of education and health care sectors means establishment of institutions of higher order also. This shall increase the passenger traffic. The locational decisions of such institutions shall be taken so that the existing network is suitably used by the additional demand and development of the network is possible in a phased manner. Otherwise the cost of development of new links in the network shall hamper the pace of development in these sectors. This is relevant for Malappuram since new institution of higher order are anticipated to be located away from arterial roads.

The improvements and new addition of recreational facilities shall also result in changes in demand pattern. The trips generated by these developments shall be intra city in nature. Hence the location of new such facilities should be decided keeping the need to segregate through traffic and intra city traffic. Whereas development in tourism sector means an increase in inter city traffic. So the development in tourism sector should be easily accessible from the arterial or sub arterial roads. For example, a new link is needed to connect Kottakunnu to the NH since the existing connection is inadequate to cater to the peak traffic.

18.1.6 Changes in traffic & transportation needs due to change in land use

The land use pattern and the traffic pattern are interwoven inexplicably. The traffic pattern is the dependant variable in the relation and various models try to define this relation. The changes in traffic pattern due to changes in land use can be studied using these models to a reasonable level of accuracy. The land use pattern can change mainly in two ways. One is due to the growth in population and subsequent



increase in economic activities. The other is due to changes or increase in the pace of economic activities due to other impetus rather than population growth. The population growth is mainly reflected upon the residential land use, its geographic spread and densification. The trips generated increases in proportion to the growth in population and the origin of these trips are decided by the spatial distribution and density of residential land use. The change is generally in increase in volume and not in pattern since the various destinations are normally in place in the case of Malappuram municipality since no major shifts in social infrastructure is anticipated.

The land use changes attributable to changes in the pattern of economic activity recast the existing traffic pattern and needs special consideration. The distribution of commercial land use has a great impact on both the intra city and intercity traffic demand. This indicates need to locate commercial land use easily accessible from arterial and sub arterial roads. But the experience in the state in this regard is the occurence of ribbon development which is detrimental to the proper development of roads and result in inefficient use of land. So care shall be taken to prevent ribbon development while considering development of commercial land use along the arterial and sub arterial roads. The attempt to re-route intra traffic away from NH also shall prompt dispersion of commercial use,discouraging ribbon development.

Another issue is the changes in land use due to large scale industries and higher level educational and healthcare institutions. These institutions are big enough to change the land use pattern in their vicinity. However, the location of such institutions cannot be predicted in advance in a development plan unless land is available in public ownership in the present legal regime. The municipality anticipates establishment of a number of such institutions in the coming years. The possible locations of these institutions (in terms of sheer availability of suitable land and not with the intention of acquisition by public agencies) are kept in mind while deciding on the proposed road network so that easy connectivity can be assured to these institutions as and when they are established.

18.1.7 Spatial distribution of trade & commerce: effect on real property values and equitable housing policies

The draft housing policy, 2011 of the Government of Kerala states that *"the International Covenant of United Nations on economic, social and cultural rights, to which India is a signatory, upholds the right to adequate housing as a human right. Article 21 of the Constitution of India which defines the protection of life and personal property encompasses the right to shelter and right to livelihood also which are integral to the dignified living of the individual."* The trend in urban development in the state had been such that more and more people are forced to out migrate from the towns. The draft Housing policy upholds the need for adequate and affordable housing for all. The spatial distribution of trade and commerce activities has a significant impact on the land value in any town. Development of a speculative market on land in the state cannot be ignored. The land banks amassed by private individuals in the state play a vital part in this speculative market. Investments are being made in this market on land for speculative purposes and only a small fraction of the buyers are real users. Due to such multiple transactions, the end user of the land end up paying a highly jacked up price which seriously affects the economic viability of the venture. The increase in land value in commercial zones has a ripple effect on the price of residential plots also.

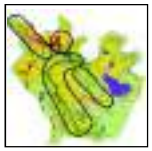
This issue can be addressed in a development plan by ensuring adequate spread of commercial land use and making adequate area available for commercial development so that pressure on commercially developable area is released. This will affect the land value in residential area also since there will not be any un satiated demand for commercial use and the resultant attempts by the trade and commerce activities to intrude into the residential areas. The extent zoned for residential use also should be adequate so that the demand for more houses could be met. Another provision that shall reduce the pressure on land for housing is allowing low density EWS and LIG houses in a restricted manner in areas zoned for dry cultivation etc. These policy interventions through zoning (in extent and zoning regulations) are expected to increase the availability of land suitable for residential purpose and hence reduce demand driven increase in land value.

18.1.8 Tourism and environment

Tourism and environment have a dual relationship. Certain level of environmental quality is a must for healthy development of tourism sector. But, unbridled development in tourism sector can adversely affect the environment. Well developed tourist destinations lose their charm due to deterioration in environmental quality. The Malappuram town has a serene environment to start with which can be utilised for the promotion of tourism projects in the town. The places of tourist attractions are mostly in the environmentally fragile areas in the municipality. So maintaining the environmental quality should be given top priority while formulating new tourism projects. Provision of basic amenities for the anticipated number of visitors is a must. New concepts like e-toilets etc merit consideration in this regard. Waste management practices (for both solid and liquid waste generated by the tourism activities) should be state of art and should not interfere with the biotic systems in any case. Maintaining environmental quality around already developed locations of tourist attraction like Kottakkunnu needs special consideration. Proper waste management systems are to be provided in these locations. Negligence in this regard shall gradually kill the industry and the municipality shall be let alone with a degraded environment and hence should be taken care of in the planning stage itself.

18.1.9 Inclusive growth in various sectors

The eleventh five year plan of the country focused on inclusiveness. This specific focus in the eleventh plan has helped creating awareness and institution building for inclusive growth. The draft approach paper to the twelfth five year plan, released by the Planning Commission of India, aims at *faster, sustainable and more inclusive growth*. Inclusiveness, being a multidimensional concept, is difficult to assess. The concept can be explained in terms of liveability, poverty alleviation, access to health, education, basic amenities etc in general. Housing is the most prominent component of inclusive growth in the context of a development plan. Adequate and affordable housing should be ensured to all by direct intervention and / or policy measures to promote affordable and decent housing for the poor. The road connectivity, availability of water supply, electricity, educational facilities, healthcare facilities, recreational options and other amenities are addressed by the development plan. An equitable distribution of such amenities is targeted by this development plan which shall improve the inclusiveness in urban development. In the trade and



commerce sector, recognising the street vendors as legitimate entrepreneurs addressing the shopping needs of the common man is a big step towards inclusive growth. By this initiative the street vendor is no more a person to be taken off the road for illicit occupation, but someone whose trade is to be facilitated by the public authority in the interests of the common man. The attempt is to share a part of the demand for trade and commerce and the profit there from with the poor who ekes out a livelihood by peddling goods for day to day use. Besides, the common man receives his supplies at reduced prices since the overhead expenses are minimal for the street vendor.

In the industrial sector, allowing micro enterprises in residential and commercial zones is a policy measure for ensuring inclusive growth in the sector. The zoning regulations in general have to be lenient towards the housing needs of the poor, being inclusive. The water scarcity in some wards of the municipality needs serious consideration in the development plan since such areas are inhabited by the marginalised population in general. The spatial distribution of educational and healthcare facilities is also important from the inclusiveness point of view. Access to school and primary healthcare facilities at walkabe distance is essential for bringing in inclusiveness in the growth of these sectors. Ensuring proper sanitation (by giving sanitary toilets, efficient collection of wastes, abatement of waste water logging etc) should be given top priority in alleviating slum like conditions within the municipality.

In the traffic & transportation front, widening of interior collector roads so that mass transport systems like buses can reach the remote habitations, measures for the safe passage of pedestrian traffic etc can be considered as attempts at inclusive growth.

In the energy sector no additional effort is required since the town is almost fully electrified.

Various policy and other measures for creating employment in the town shall also contribute towards inclusive growth.

18.1.10 Energy efficiency and land use

Energy efficiency is a very important consideration in the design of any system that uses energy. The urban system as a whole is a guzzler of energy. The energy requirement of an urban area is much more compared to a rural area of the same size. Conservation of energy is a need of the day due to various reasons such as depletion of fossil fuels, carbon emission and related climate change, depletion of ozone layer etc. The energy saved is considered to be energy produced. The benefits of energy saved by land use planning measures are of long term and hence need careful consideration. The compact nature of development reduces intra city traffic and thus saves fossil fuel. Efficient layout of various land uses based on their compatibility and trip generation characteristics shall result in reduction in use of energy for transportation needs. The compactness and proper layout shall prompt pedestrian traffic also contributing to energy conservation. This also shall help conserve energy in sectors like water supply, electricity etc. The formation of urban heat islands within the municipality can be avoided by appropriate land use measures. This shall cause savings in energy by reduced demand for air conditioning and artificial ventilation.

18.2.0 Spatial structure

The town is at a prominent position in the spatial structures of the district in which the transport network is in the form of a hub and spoke. It forms one of the vertices of the triangle which forms the hub . The activity pattern of the wards in the municipality, their connectivity and the hierarchy of nodes/centers within the town are studied in detail to derive the spatial structure of the town.

18.2.1. Activity Patten :

The term activity pattern is used to indicate the major economic activity of a place or that can be brought there in future. It may be agriculture/ plantation (Primary activity), industries (Secondary activity), Service activities (Tertiary activity) or a combination of these like agriculture and animal husbandry and small scale industries.

The activity pattern can be derived through the integration of the land use concentration pattern, functional character and the urban profile. From the regional setting study the activity pattern of Malappuram (M) is obtained as Agriculture + Animal husbandry + Small scale industries. The determination of activity pattern at ward level is attempted here.

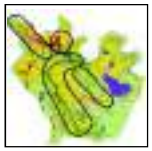
a) Land use concentration pattern

From the study of the land use pattern of the town it is seen that urban activities are concentrated in those wards near the town centre and those along important roads.

Table 18.1 Shows the land use concentration pattern of the wards within the municipality in 26 wards out of 37, the LU concentration is urban.

Table 18.1 Land use concentration pattern of the wards in the Municipality

Ward No.	Ward Name	Urban	Neutral	Water bodies	Agriculture	LU Concent-ration
1	Padincharemukku	0.048	0.378	0.145	1.691	Agri
2	Noorengal mukku	1.419	2.095	2.465	0.613	Urban
3	Cheruparamba	0.103	3.155	0.297	1.595	Agri
4	Kalladimukku	0.142	6.184	0.416	1.479	Agri
5	Kattungal	1.835	0.000	1.526	0.450	Urban
6	Govt.College	1.814	0.000	2.159	0.432	Urban
7	Munduparamba	2.419	0.000	0.000	0.184	Urban
8	Cholakkal	2.098	0.000	1.037	0.324	Urban
9	Karuvala	1.972	0.158	1.303	0.382	Urban
10	Moonampadi	0.265	0.000	0.706	1.546	Agri
11	Kavungal	1.644	0.217	2.234	0.505	Urban
12	Kalampadi	1.774	0.359	3.924	0.325	Urban
13	MSP School	1.993	0.168	2.779	0.269	Urban
14	Thamarakuzhy	2.211	0.000	1.804	0.184	Urban
15	Kottakunnu	2.526	0.125	0.000	0.112	Urban
16	Cherattukuzhy	1.651	0.521	0.405	0.641	Urban
17	Chemmankadavu	1.432	0.000	5.544	0.452	Urban
18	Korangode	2.406	1.251	0.654	0.114	Urban
19	Cheenithodu	2.268	4.728	1.676	0.053	Urban
20	Mylappuram	2.036	0.000	2.984	0.232	Urban
21	Kottappadi	0.770	1.078	4.348	0.937	Agri
22	Valiyangadi	2.444	2.282	0.000	0.106	Urban



Ward No.	Ward Name	Urban	Neutral	Water bodies	Agriculture	LU Concent-ration
23	Varangode	1.749	0.294	0.510	0.579	Urban
24	Paithiniparamba	2.308	1.339	0.000	0.168	Urban
25	Athikarithodi	2.553	0.000	0.000	0.097	Urban
26	Kynode	0.071	0.079	0.147	1.710	Agri
27	Konompara	2.652	0.384	0.000	0.022	Urban
28	Alathurpadi	2.293	0.000	0.000	0.267	Urban
29	Muthuvathparamba	0.061	0.030	0.000	1.727	Agri
30	Kolmanna	1.681	0.000	0.000	0.668	Urban
31	SpinningMill	0.360	0.000	2.170	1.384	Agri
32	Pattarkadavu	0.150	0.036	3.383	1.437	Agri
33	Karaparamba	1.555	0.509	0.084	0.732	Urban
34	Panakkad	0.187	0.413	3.307	1.399	Agri
35	BhoothanamColony	1.033	0.000	0.411	0.971	Urban
36	Podiyad	1.326	7.545	0.029	0.474	Urban
37	Perumparamba	0.358	0.139	0.000	1.530	Agri

b) Functional Character

The functional character is determined based on the land use, population distribution and average plot size within the settlement. It is classified as rural, semi rural, semi urban and urban. At the regional level the functional character of Malappuram (M) is determined as rural. The wards in the municipality are studied in detail with respect to aspects like total area under each land use category,concentration pattern of population, percentage of workers engaged in non-agricultural pursuit, average plot size in the residential/agricultural mix use category etc. The functional character of each ward then derived is given in Table 18.2 and Fig. 18.1.



Fig. 18.1 Functional character of wards in the Municipality

Table 18.2 Functional character of the wards in the Municipality

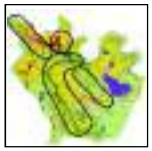
Ward No.	Name of Ward	Functional character
1	Padincharemukku	Rural
2	Noorengal mukku	Urban
3	Cheruparamba	Rural
4	Kalladimukku	Rural
5	Kattungal	Urban
6	Govt.College	Semi Urban
7	Munduparamba	Semi Urban
8	Cholakkal	Semi Urban
9	Karuvala	Semi Urban
10	Moonampadi	Semi Urban
11	Kavungal	Semi Urban
12	Kalampadi	Urban
13	MSP School	Urban
14	Thamarakuzhy	Urban
15	Kottakunnu	Urban
16	Cherattukuzhy	Semi Urban
17	Chemmankadavu	Semi Urban
18	Korangode	Urban
19	Cheenithodu	Urban
20	Mylappuram	Semi Urban
21	Kottappadi	Rural
22	Valiyangadi	Urban
23	Varangode	Semi Urban
24	Paithiniparamba	Semi Urban
25	Athikarithodi	Semi Urban
26	Kynode	Rural
27	Konompara	Urban
28	Alathurpadi	Semi Urban
29	Muthuvathparamba	Rural
30	Kolmanna	Urban
31	SpinningMill	Semi Urban
32	Pattarkadavu	Semi Urban
33	Karaparamba	Semi Urban
34	Panakkad	Semi Urban
35	BhoothanamColony	Urban
36	Podiyad	Semi Urban
37	Perumparamba	Rural

c) Urban Profile

In the context of an urban local body the determination of urban profile can be taken as identification of areas with different levels of urbanization. Depending on the factors such as density of population, proximity to facilities, perspectives in urban development etc. the wards are classified into high and low intensity of urbanization. Only a few wards with low connectivity and population density and where there is no urban activities taking place are termed as less urbanized. This is shown in Table 18. 3 and Fig. 18.2.

Table 18.3 Urban profile

Sl No.	Urbanised	Less Urbanised
1		Padincharemukku
2	Noorengal mukku	
3		Cheruparamba



SI No.	Urbanised	Less Urbanised
4	Kalladimukku	
5	Kattungal	
6	Govt.College	
7	Munduparamba	
8	Cholakkal	
9	Karuvala	
10	Moonampadi	
11	Kavungal	
12	Kalampadi	
13	MSP School	
14	Tamarakuzhy	
15	Kottakunnu	
16	Cheratukuzhy	
17	Chemmankadavu	
18	Korangode	
19	Cheenitodu	
20	Mylappuram	
21	Kottapadi	
22	Valiyangadi	
23	Varangode	
24	Paithiniparamba	
25	Athikarathodi	
26		Kynode
27	Konompara	
28	Alathurpadi	
29		Muduvathuparamba
30	Kolmanna	
31	Spinning Mill	
32		Karaparamba
33	Pattarkadavu	
34	Panakkad	
35	Bhoothanamcolony	
36	Podiyad	
37	Perumparamba	



Fig. 18.2 Urban profile

d) Determination of activity Pattern

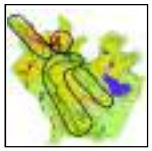
The above three factors are considered together to determine the activity pattern most suitable for each ward. It is obtained as shown in Table 18.4. For 15 out of the 37 wards the most suitable activity is small scale industries/Animal Husbandry; for 12 wards tertiary activity and for 9 wards Primary activity (Agriculture) is most suitable. Fig. 18.3 shows the activity pattern of the wards in the municipality.

Table 18.4 Activity pattern

Ward No.	Name of Ward	Activity pattern
1	Padincharemukku	Primary activity(agr)
2	Noorengal mukku	Tertiary activity
3	Cheruparamba	Primary activity(agr)
4	Kalladimukku	Primary activity(agr)
5	Kattungal	Tertiary activity
6	Govt.College	Small scale industries/Animal Husbandry
7	Munduparamba	Small scale industries/Animal Husbandry
8	Cholakkal	Small scale industries/Animal Husbandry
9	Karuvala	Small scale industries/Animal Husbandry
10	Moonampadi	Agri+SSI+Anm
11	Kavungal	Small scale industries/Animal Husbandry
12	Kalampadi	Tertiary activity
13	MSP School	Tertiary activity
14	Thamarakuzhy	Tertiary activity
15	Kottakunnu	Tertiary activity
16	Cherattukuzhy	Small scale industries/Animal Husbandry
17	Chemmankadavu	Small scale industries/Animal Husbandry
18	Korangode	Tertiary activity
19	Cheenithodu	Tertiary activity
20	Mylappuram	Small scale industries/Animal Husbandry
21	Kottappadi	Primary activity(agr)
22	Valiyangadi	Tertiary activity
23	Varangode	Small scale industries/Animal Husbandry
24	Paithiniparamba	Small scale industries/Animal Husbandry
25	Athikarithodi	Small scale industries/Animal Husbandry
26	Kynode	Primary activity(agr)
27	Konompara	Tertiary activity
28	Alathurpadi	Small scale industries/Animal Husbandry
29	Muthuvathparamba	Primary activity(agr)
30	Kolmanna	Tertiary activity
31	SpinningMill	Small scale industries/Animal Husbandry
32	Pattarkadavu	Primary activity(agr)
33	Karaparamba	Small scale industries/Animal Husbandry
34	Panakkad	Primary activity(agr)
35	BhoothanamColony	Tertiary activity
36	Podiyad	Small scale industries/Animal Husbandry
37	Perumparamba	Primary activity(agr)



Fig. 18.3. Activity pattern



18.2.2 Connectivity pattern

Malappuram town has good road connectivity. Being in the centre of the district, the traffic routes running in the north-south and east-west directions meet at the town. The North - South corridor is provided by NH 213 running from Palakkad to Kozhikode. The east-west corridor running from Tirur to Manjeri (SH) joins the national highway at Kottappadi junction and takes off at Kunnummel junction. Another state high way connecting Parappanangadi to Malappuram meets the national highway at Kizhakkethala. Hajiyar Palli – Edayipalam road, Konompara - Karathodu Road, A.K Road, Melmuri MSP Camp Road and Jubilee Road are the other major roads in the municipality. Majority of the facilities are located along the important roads. The connectivity pattern is shown in Fig. 18.4 There are only a few wards with very low connectivity and this is due to the peculiar topography.

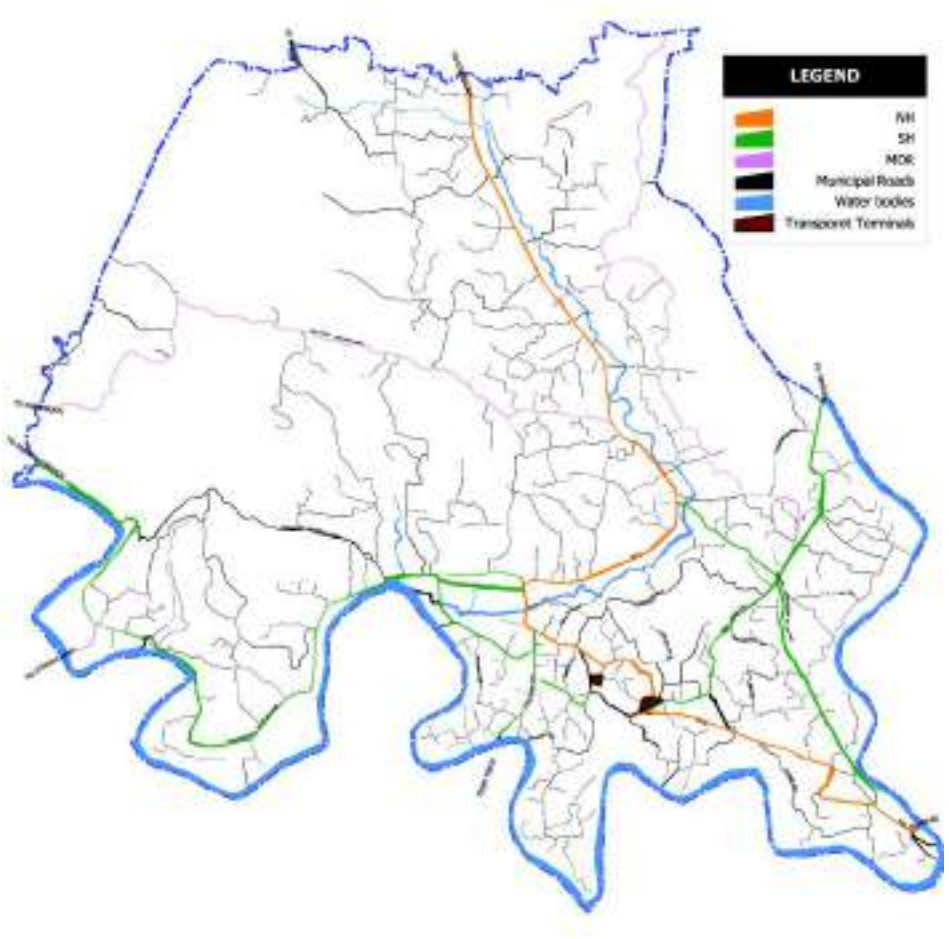


Fig. 18.4 Connectivity pattern

18.2.3 Hierarchy of space/nodes/Centers

Commercial nodes are identified on all important intersections of roads where there is a concentration of commercial activities and in the case of linear development, Commercial activity or physical development for a distance of 250 m. The most important commercial nodes thus identified are Kunnummel, Kottappadi and Kizhakkethala. Many of the educational, health, civic and other facilities are also located at these places. The hierarchy of nodes is shown in fig. 18.5 and the location of the most important facilities are shown in fig. 18.6.

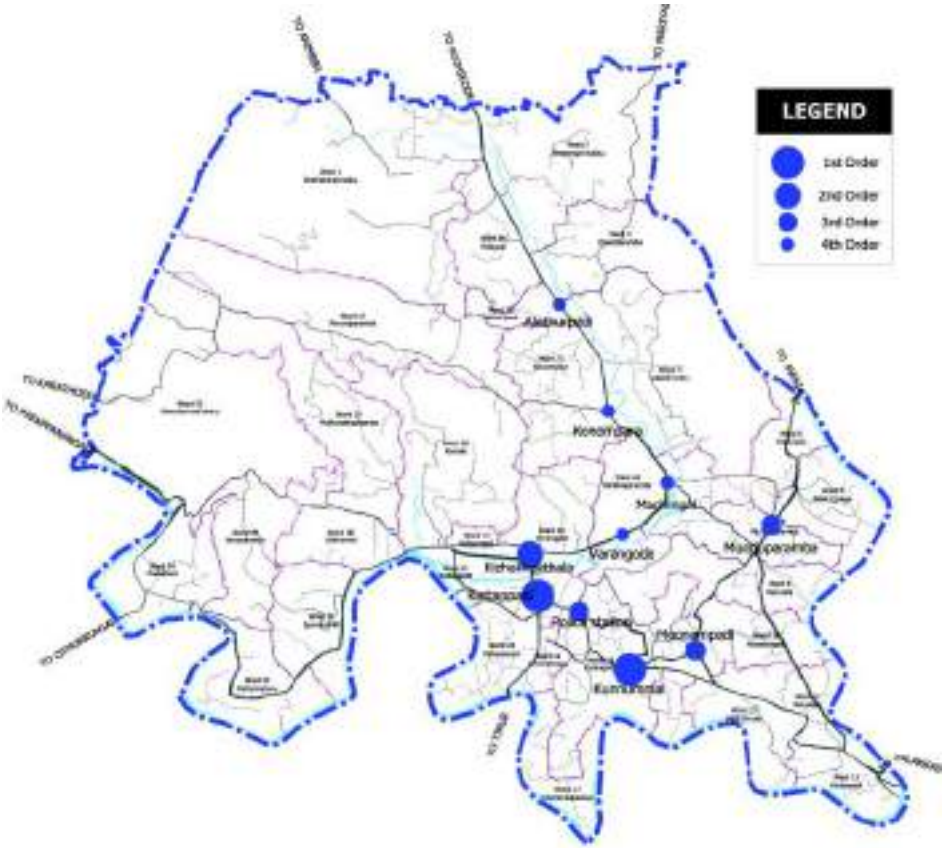


Fig. 18.5 Hierarchy of nodes

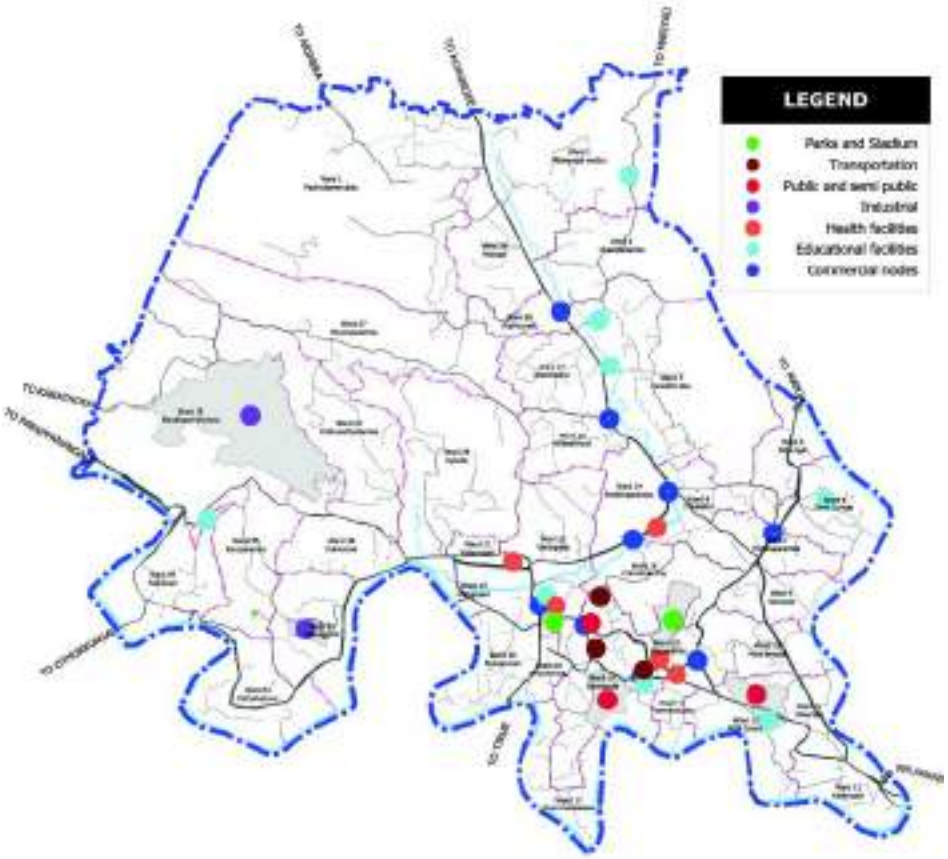
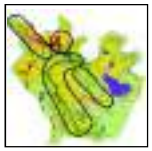


Fig. 18.6 Location of most important facilities



18.2.4 Formulation of spatial structure

The activity pattern, connectivity and hierarchy of spaces are considered together to formulate the spatial structure of the municipality. The spatial structure obtained by overlaying the maps of the above three is shown in Fig.18.7, the highlights of which can be explained as in Fig.18.8. Three pockets of intense residential development are identified in the southern half of the town, these are located along the major transport corridors. Majority of the important facilities are also located here. The town centre which accommodates the civil station, important commercial establishments and the major recreational facilities in the town is analogous to a butterfly. The body of the butterfly accommodates the main function of the town that is the administrative head quarters. The head houses the Kottakkunnu park, the major recreational centre in the town and the most environmentally fragile area. The two wings constitute the vibrant commercial activity zones, the changes in which are reflected in the entire municipality. The northern half of the municipality is characterized by dry agriculture areas. Two such pockets can be identified, one in the North West and the other in the north east portion of the town. An industrial growth centre is carved out of the dry agriculture area on the western part which is connected by one of the important roads in the municipality, the Konompara - Karathode road. Most important of allof these is the interesting spine for the spatial structure of the town, the NH interwoven with the ecologically fragile linear array of wet land and the arterial drainage channel. Another interesting feature adding to the quality of the spatial structure is the 18.5 km long water frontage provided by the Kadalundy River, the elixir of life in the municipality.

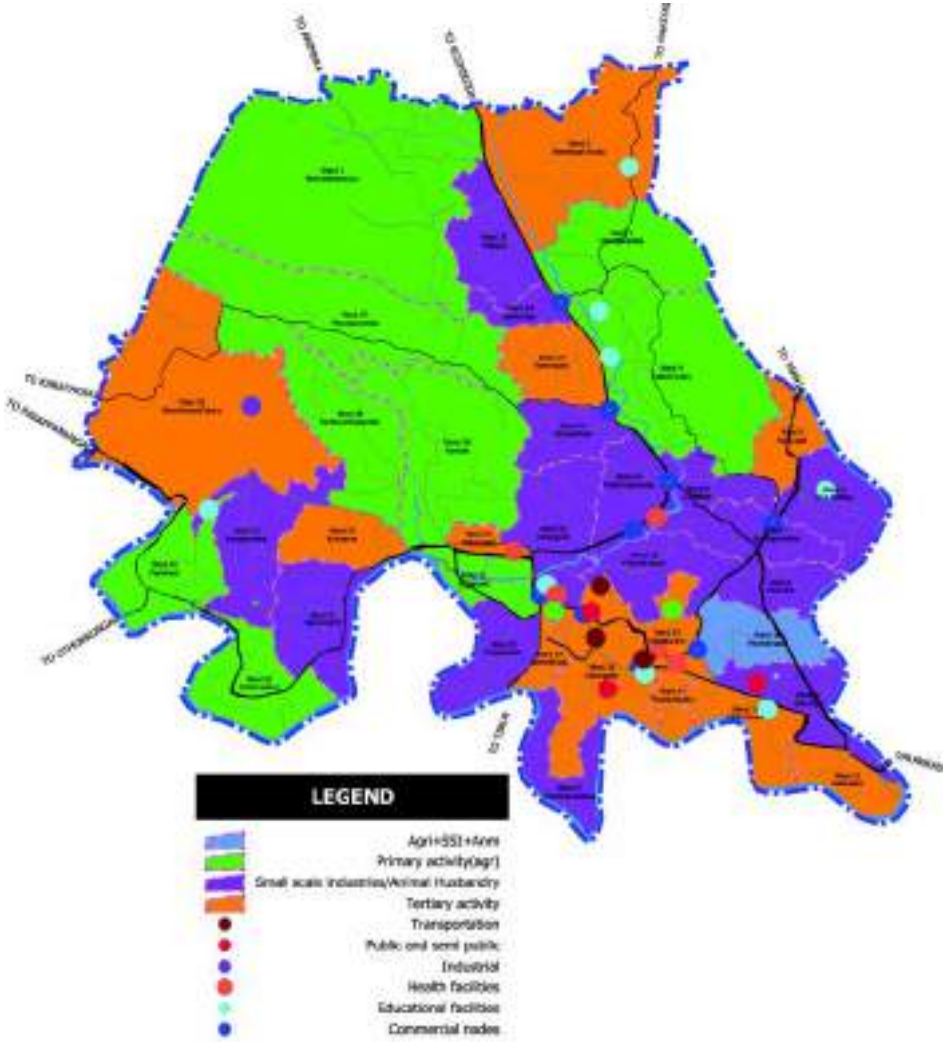


Fig. 18.7 Formulation of spatial structure

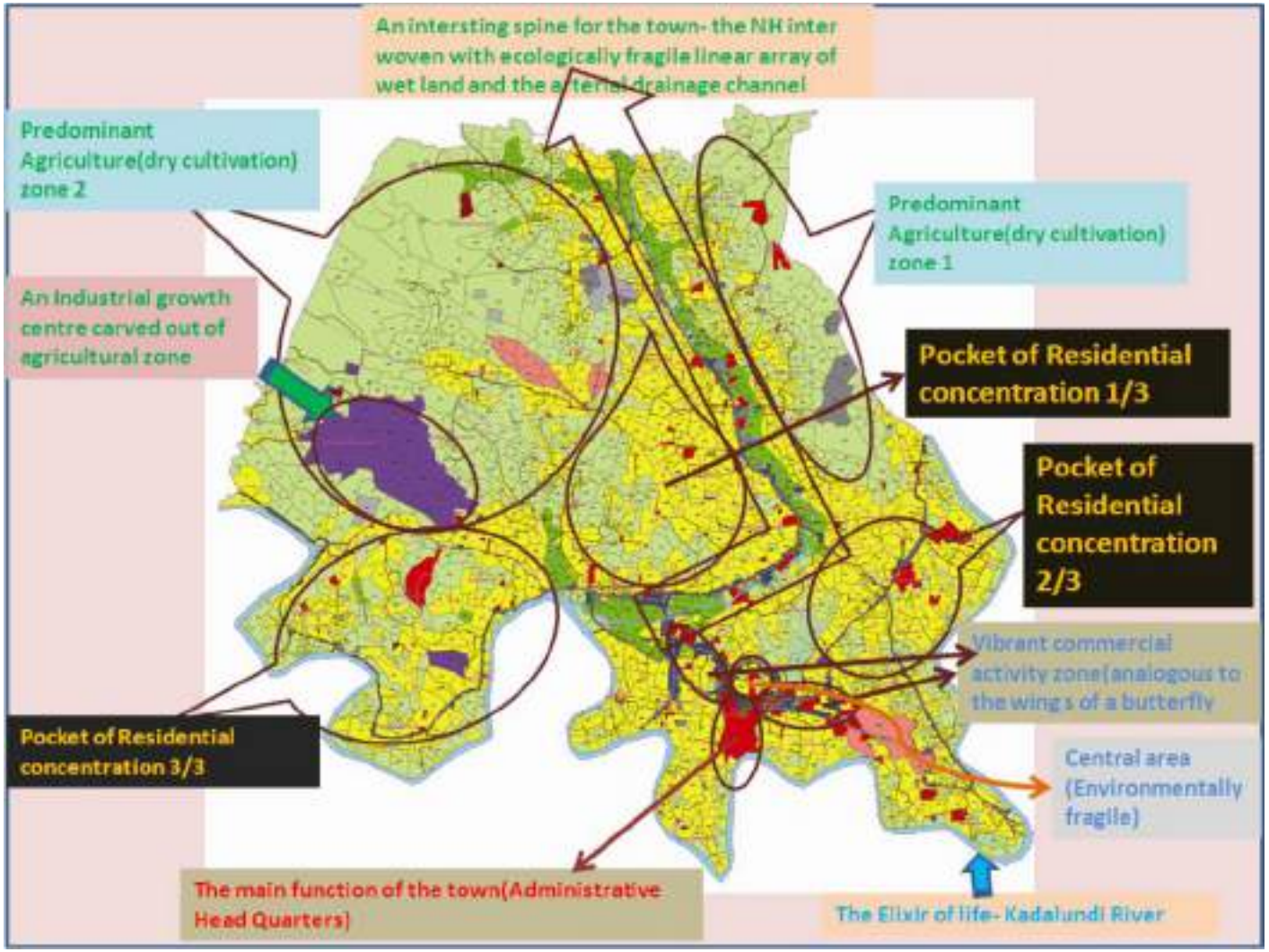


Fig. 18.8 Highlights of spatial structure

18.2.5 Inference

The town has developed a distinct spatial structure due to peculiarities of the topography and implementation of the existing master plan in force.

persons constituting around 2 % of the population of the district, as per census 2001. The decadal growth rate of population is 17.71 % during 1991-2001. Even though this is high compared to the similar towns and state average, does not indicate high rate of urbanization and is only a reflection of the general trend of population growth in the district which is evident from the following facts. The LSGs surrounding the Malappuram municipality have shown a higher rate of growth of population than the municipality. The municipality is (even it is the district head quarters) only third in population size and fourth in population density among the municipal towns in the district. The town has a population density of 1741 persons per sq.km which is low compared to towns of similar status. The population density varies among the different wards from 570 to 5864 persons per sq.km. The most populous wards are near the civil station, valiyangadi and along the major transport corridors. The sex ratio of the municipality is comparable to that of the state at 1041. The literacy rate of the municipality as per census 2001 is 94.2 % which is significantly more than both the district and state averages. The household size in the municipality is 5.65 according to the 2001 census which is more than the state average. The age pyramid is worked out from the socio-economic survey. The percentage of working population is around 50 %, which indicates older population in the coming years. However, the population in the age group 15-20 years is also significant and hence a drastic reduction in work force participation due to change in age structure is not anticipated.

1.4.0 Employment

The percentage of workers in the total population (work participation rate) is very low in Malappuram municipality. The percentage of main workers is 21.5 %, 2.68 % are marginal workers and the rest 75.81 % are non-workers according to the Census 2001. Besides, the share of female workers (only 14.28 % of the total workers) is very low in the town. This is in congruence with the WPR in the district which is lowest in the state. The WPR of Malappuram town is low when compared to other towns in the district as well as similar towns in the state.

The tertiary sector workers have predominance in the occupational structure of the municipality with gradual decline in number of people engaged in agricultural activities and a stagnation of employment in secondary sector.

The spatial distribution of workers has direct correlation with the land use in Malappuram municipality. Both the land uses and type of workers are in congruence indicating lesser commuting for work.

The weak work participation rate is attributable to the habit of majority of the population of the town seeking employment in the Middle East and a severe lack of entrepreneurial efforts.

1.5.0 Economic Aspects

- Industry

The town has not attracted any large scale industrial investment for a long time in spite of accessibility and availability of land. The major problem experienced by the town in this sector is the lack of entrepreneurship due to a wide spread culture of migration to Middle East in search of employment. According to the draft Industrial and

- Fisheries

The municipality, with number of ponds and quarries with availability of water, has scope for fresh water fisheries and ornamental fisheries. But very few people are interested in this activity and lack of entrepreneurship is the major lacuna in development of this sector.

1.6.0 Traffic & Transportation

The coverage of road network is good except for some missing links. But, the width of most of the roads is not adequate even for the present traffic volume. The section of the National Highway passing through the town is overcrowded. The situation in the State Highway is also not different. The bus stand is ill located. There are number of junctions in the municipality with volume exceeding their capacity, which require immediate improvements in geometry. Safe passage of pedestrians in the town centres, Kunnummel and Kottappadi is another issue to be tackled. The number of people travelling by car, two wheelers and autos combined exceeds that by public transport. This adds congestion and environmental damage. The quality and reliability of public transport needs to be enhanced. There is a dearth of parking spaces for private vehicles in the municipality causing kerb parking affecting the carrying capacity of the roads. A proper truck terminal is needed for the development of trade and commerce in the town.

1.7.0 Water supply

As per socio-economic survey conducted, the residents of the municipality attached high priority of development to water supply, which indicates that people are not satisfied by the present availability of water. Even though standards are met in majority of the area, the people's expectation regarding quantity and quality of water is high as experienced throughout the state. Major source of municipal water supply for Malappuram municipality is Kadalundy River. Constructing a number of weirs in the Kadalundi River shall solve the problem of availability of water. Another major problem is the efficiency of distribution network i.e., pipe lines. Most of the pipe lines are very old and require frequent maintenance.

1.8.0 Drainage

The drainage network in the municipality is not an efficient one. Even though the arterial channel is well formed (but badly maintained), the rest of the drainages available cannot even be called a network. A haphazard distribution of segments of drains without inter connectivity characterizes the drainage system in the municipality. The storm water causes serious damage to the road surface every year. A cluster of drains without inter connectivity or a hierarchical pattern does not form a network. This should be made to a network by correcting the geometry of existing drains and adding the missing links.

1.9.0 Waste water

The municipality does not have any facility for carrying, treating and safe passage of waste water. The waste water is often let out in the storm water drains. This poses a serious public health hazard.

wards do not have recreational facilities in a walking distance. With the fragmentation of residential properties, people have lesser open land attached to their houses and hence need for public open space for recreation is on the rise.

1.16.0 Other Civic amenities

The civic amenities in the town are commensurate with the present population. However, the future additional demands due to increase in population have to be met.

1.17.0 Social backwardness

The people below poverty line are only 8.07 % of the municipal population according to the census 2001. The BPL index of 25 wards out of 37 wards is above 1 indicating an almost uniform spread of people below poverty line. The SC population constitutes only 4.97 % of the municipal population and ST population is even less at below 0.1 %. The literacy rate among SC population is slightly less than that of the general population. The SC population is concentrated in the agricultural zones of the town.

1.18.0 Environment

The problems faced by the municipality in the environmental sector are the fast depletion of paddy land, illicit sand mining and water pollution due to waste water entering the storm water drains. The problems identified have not reached unmanageable proportions and hence can be brought under control.

1.19.0 Development administration and finance

The financial position of the municipality is not very strong. The fiscal surplus of the municipality is not an indication of financial health, but of poor financial management. The major problems faced by the municipality in the finance sector are the leakage in rates and taxes and paucity of funds for developmental activities. The municipality has number of prime real estate in the town which can be developed (through PPP mode or otherwise) for enhancing the income of the municipality. Hence the municipality has tremendous potential for development of financially remunerative projects for sourcing funds for urban development.

1.20.0 Spatial Structure

The Malappuram municipality has a well developed spatial structure due to the peculiarities of topography and the implementation of the master plan in force to an extent. There are distinct pockets of residential concentration, the main functional area i.e. the civil station; commercial activities concentrated in two centres i.e. Kottappady and Kunnummel, area occupied by armed police, two distinct areas where primary economic activities like agriculture and industry do take place all interconnected by a road network consisting of NH, SH and municipal roads with the public amenities and social infrastructure spread throughout the locations of residential concentration. The development plan needs to strengthen this existing spatial structure.

CHAPTER 3 DEVELOPMENT ISSUES

Based on the various studies and analyses including SWOT analysis, the key development issues in the municipality were identified as:-

- The Town is divided in to two by the topography
- Agro processing industry is not commensurate with the agricultural production
- Low density commercial development
- Unsatisfied demand for wholesale market
- Inadequate infrastructure facilities in Animal Husbandry
- No planned tourism facilities
- Inadequate recreational facilities
- Haphazard nature of the traffic net work
- Lack of parking facilities
- Risky pedestrian traffic
- There is mismatch in water scarcity and water supply
- Under utilization of potentials
- Poor solid waste management
- There is no provision for waste water treatment
- Inadequate drainage (Thamarakuzhy and Hajiyarpally)
- Lack of facilities for professional education
- Weak secondary care facilities in health sector
- Land value inhibits low income housing
- Low WPR
- Weak financial position of the Municipality

CHAPTER 5 GOALS AND OBJECTIVES

Keeping the results of various studies and analysis in mind broad goals are formulated for the successful realization of the vision.

5.1.0 GOALS

- Create adequate and efficient infrastructure commensurate with the status of district Head Quarters
- Ensure preservation of environmental quality
- Culturally sensitive responsible tourism
- Sustainable urban development
- Generation of resources for urban development

5.2.0 OBJECTIVES

Certain objectives are found to be critical for the achievement of the goals formulated. Thus the objectives of this development plan are to:-

- put in place an efficient traffic and transport network catering to the varied human activities in the town
- strengthen the secondary level health care facilities
- create ample higher education facilities in the town
- build a drainage system forseeing the future demands
- conserve paddy lands
- ensure environment friendly disposal of waste
- provide ample recreational facilities
- develop tourist circuits
- conserve heritage without being detrimental to developmental activities
- preserve water bodies
- ensure equitable distribution of services
- eradicate housing shortage
- provide adequate civic amenities
- establish a chain of wholesale and retail markets
- promotion of non polluting industrial base
- facilitate trade and commerce in line with the projected status of the town
- facilitate creation of employment
- bring in transparent and efficient governance and service delivery

CHAPTER 7 GENERAL POLICIES AND STRATEGIES

The general policies and strategies are worked out to achieve the goals set through the objectives without conflicts among the development proposals, considering the development potential, demand for physical development and need to conserve certain features and bring in synergy to the development process as a whole. The following policies/strategies are considered essential from this viewpoint.

- The town has a water frontage of 18.5 Km. Conservation of the river shore with a view to prevent water pollution is imperative for conserving environmental quality.
- Three pockets of residential intensity are identified. Enhancement of infrastructural facilities (road, water supply drainage etc.) in these areas shall help create compact residential development.
- Segregation of intra municipal traffic from the NH by providing internal connectivity shall improve NH performance.
- No separate area is earmarked for industrial use since the experience is that such zoning need not attract industrial ventures. Hence Micro and Small industries of non-polluting nature (green coded) shall be allowed in all zones. Moderately polluting industries (orange coded) of micro and small nature shall be allowed in dry cultivation area (which is reasonably away from town centre and major residential area). Industries of polluting nature and medium or large scale shall be allowed in the vicinity of existing industrial area (area to the demarcated).
- The town with its serene environmental quality, places of heritage value and scope for recreational facilities is ideal for developing a tourist circuit.
- The residential density in dry cultivation area needs to be limited in order to reinforce the compact nature of residential development.
- The wet land (Paddy field in the context of the town) need to be conserved as environmental elements due to their importance as water sinks. Inter connectivity of the wet lands shall be ensured.
- The town requires facilities for higher education. Earmarking land for the purpose is not feasible since the institutions are likely to come up in private sector and the municipality /state government has no immediate proposal for acquisition for the purpose at present. Hence this use shall be permitted in dry cultivation area where a large parcel of land is available.
- A chain of wholesale and retail market are needed for easing the congestion in town centre and reducing intra municipal traffic.
- A scientific approach to solid waste management shall be put in place.
- Public Private Partnership (PPP) has to be encouraged to face the resources crunch. Specific projects shall be identified to be taken up in PPP mode.
- Overall efficiency shall be improved by a functional road network considering the present bottlenecks and future needs.
- Trade and commerce, even though not the prime function of Malappuram is an integral part of any town and hence need facilitation.
- The primary function of the town that is being the administrative

CHAPTER 8 PROJECTED REQUIREMENTS

8.1.0 Population projection

The population projection for 2011, 2021 and 2031 of the municipality are made by assuming that same trend in the population growth continues. The population is projected by six methods and the average of the six is taken to arrive at the population figures in 2011, 2021 and 2031.

The following methods were used.

a. Arithmetical method
b. Geometrical increase method
c. Incremental increase method
d. Decreasing rate method
e. Graphical method
f. Apportionment method

a) Arithmetic method

This method is based on the assumption that the increase in population is constant. In this method, the average increase of population for the last three or four decades is worked out and then for each successive future decade, this average is added. This method gives low results, as such is applied for old and large cities. The population at the end of 'n' years or decades is calculated by the equation

P_n = P+ ni

Where, P_n = Population at the end of 'n' years or decades

P = Present population

i = Average increase per year or decade.

Table 8.1 Projected Municipal population –Arithmetical method

Year	Ptrojected population
2011	67321
2021	76151
2031	84981

b) Geometrical increase method

In this method the percentage increase in population from decade to decade remains constant. From the available census records, this percentage is fixed and then population of each future successive decade is worked out. This method gives high values and is applied to young and rapidly growing cities. Thus the population at the end of 'n' years or decades is given as,

P_n = $P (1+r/100)^n$

Where r = average percentage increase per decade

Table 8.2 Projected Municipal population – Geometrical increase method

Year	Expected population
2011	71541
2021	87501
2031	107023

f) Apportionment method

In this method, the ratio of the Municipal population to the State population is found out and the same is projected to the next decades by assuming the change in ratio during 2011-2021 and 2021-2031 is same as that during 2001-2011. The projected population of the Municipality based on the apportionment method is shown in table 8.6.

Table 8.6 Projected Municipal population – Apportionment method

Year	Total population		Ratio of Municipal population to State	Change in the ratio
	Kerala	Municipality		
	X	Y	Y/X	
1971	21347375	32002	0.00149	-
1981	25453680	39786	0.00156	0.00007
1991	29098518	49696	0.00170	0.00014
2001	31841374	58491	0.00183	0.00013
2011	33817196	66282	0.00196	0.00013
2021	35198589	73565	0.00209	0.00013
2031	36141911	80235	0.00222	0.00013

The projected total population by the above mentioned methods differs slightly. The average of these six projected values is taken as the population figures of the Malappuram municipality.

Table 8.7 Final Projected population of the Municipality

SL No	Method adopted	Total population		
		2011	2021	2031
1	Arithmetic method	67, 321	76, 151	84, 981
2	Geometric method	71, 541	87, 501	1, 07023
3	Incremental increase method	67, 829	77, 167	86, 505
4	Decreasing rate method	64, 650	71, 458	78, 983
5	Graphical method	67, 000	76, 000	84, 500
6	Apportionment method	66, 282	73, 565	80, 235
	Average projected population	67, 437	76, 974	87, 038

So it can be concluded that the total population of Malappuram municipality will be 67,437, 76,974 and 87, 038 on 2011, 2021 and 2031 respectively based on the projection. However, the municipality shall attract migration of certain population to it due to the development projects envisaged in some of the sectors. Hence, the population in the horizon year is considered to be 100000 for calculation purposes.

8.2.0 Sectoral projections

The projected population in 2031 is 87, 000. For the Purpose of assessment of sectoral requirements this is rounded off to 100000.

the capacity. By 2025 onwards, all sections will cross capacity

- Tirur road also crossed the capacity. Its ratio will be 5.69 by the year 2030
- A.K road, crossed the capacity from 2010 onwards

d) Water supply

- Current water supply = 11.5 MLD
- Per capita requirement = 135 lpcd
- However considering the cultural factors, 200 lpcd is taken.
- So, requirement by 2031 = 100000*200
  = 20 MLD
- Additional requirement = 8.5 MLD

e) Solid waste management

- Waste generated = 220gm/Head/day
- Waste generation in 2031 = 20 tons/day
- Present waste generated/day = 16.57 tons
- Waste collected/day = 13 tons

Hence additional 7 tons/day to be treated

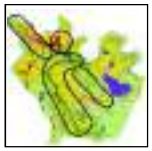
f) Energy

- As per standards, consumption of power works out to be 2KW/HH.
- Consumption of power by 2031 is worked out to be 40,000KW for a population of 100,000 with HH size of 5.

Category	Existing Nos	Standards recommended	Demand 2031
11KV substation		1 for 15,000 persons	7 Nos
LPG Godowns	1	1 for 40-50,000persons	1
Petrol pumps	5	1/150 Ha of gross residential and 1/40 Ha of industrial area	6 Nos

g) Education

SL No	Category	Existing Nos	Standards recommended	Demand 2031	Shortage
1.	LP School	18	1/2500 population	40	22
2.	UP School	10	1/7500 population	14	4
3.	High School	6	1/13000 population	8	2
4.	HSS	6	1/13000 population	8	2
5.	Arts & Science	2	1/80,000 population	2	0
6.	Polytechnic	1	1/36,000 population	3	2
7.	I.T.C/I.T.I	0	1/35,000 population	3	3
8.	T.T.I	3	1/1,20,000 population	2	0
9.	Professional college	0	12,50,000 population	1	1



CHAPTER 1 LAND USE PLAN

The land use plan is prepared considering the spatial structure of the town, inter linkages between various human activities on land, efficiency of transport network, trip generation characteristics of various land uses and the projected demand for various activities during the plan period.

The residential zone comprises of 1403.80 ha. which is 41.78 % of the total extent of the municipality. In addition to this, low density residences are permissible in dry cultivation area. Besides 132.50 ha is under mixed residential and commercial land use where both the uses are permissible. Hence, the land required for housing needs shall be adequate and the net residential density shall remain below the values stipulated for a medium town throughout the plan period. The residential use is provided in a continuous manner except for natural barriers like water ways, roads etc in order to ensure compactness and thus easy provision for basic amenities and infrastructure.

The commercial land use covers an area of 38.90 ha. In addition to this area, commercial uses are permissible in mixed residential and commercial zone. This shall cover the demand for commercial development in the town.

A special policy area is earmarked In the town centre at Kottappadi. This area is bounded by NH, Parappanangaadi Road, Tirur road and bypass road. The area was under paddy cultivation a few years back. It is not cultivated at present. It is proposed to develop this area as the town centre of the municipality by Land Pooling. In the absence of a consensus among the land owners for development by land pooling whereby the public amenities, market, roads and bus stand to be provided in the area shall be owned and operated by the municipality, the proposed area shall be reverted back to the existing land use, ie conserved paddy field.

An extent of 132.50 ha is zoned for mixed residential and commercial land use. The identified areas are ideal for both the uses and the share of each use in this area shall be determined by the dynamics of development and this offers maximum flexibility in land use regulation.

The area under industrial zone comes to 111.00 ha. The land under public ownership and earmarked for the purpose is only considered for such zoning. The practice of zoning land under private ownership without solid acquisition proposals is found to be counterproductive since this necessarily doesn't attract industrial investment, but freezes the valuable urban land. However, small scale non polluting industries are allowed in residential area. All types of industries are allowed in dry cultivation area subject to certain regulations. These policies shall be adequate to ensure the availability of sufficient land for industrial development in the municipality.

An extend of 202.20 ha is coming under the traffic and transportation zone. The major share of this extent is area covered by roads. The municipal road network has a fair coverage. Hence no new roads are proposed. Widening of existing roads and providing a few missing links only are attempted. The land under this zone also covers bus stands, truck terminals, bus bays, taxi stands etc.

The dry agriculture zone has an extent of 742.20 ha. This area besides its economic value due to agricultural production, is significant since large tracts of land is available in this zone within the municipality. Low density residential development aimed at low income group shall be allowed in this zone due to comparative price advantage. The industrial and institutional land uses also shall be permitted in this zone with certain regulatory measures to ensure isolation of non compatible land uses.

The extent of wet agricultural zone comes to 87.10 ha. Conservation of Paddy fields for economic reasons is not relevant in an urban context. However, paddy field works as water sinks and undisturbed open land influencing ground water management and micro climate. Hence this area has environmental significance. The pressure on Paddy field for conversion to other urban land uses is tremendous. So conservation of paddy is proposed wherever essential for maintaining environmental quality and the land use in these areas are to be strictly regulated. Some areas that were under paddy earlier and release of which for urban land use shall be desirable from the development perspective are included in the appropriate land uses.

The area under public and semi public land use comes to 83.30 ha. Only land under public ownership and private land intended for institutional development are considered in this zone. The municipality anticipates a number of higher level institutions to be set up in the town. No specific location can be set apart for this purpose since the point of time and nature of ownership of these institutions cannot be ascertained at present. So provision for these is made in dry agricultural zone where a vast tract of suitable land is available, with certain regulatory measures.

Parks and recreational open space occupy 16.30 ha of land. In this case also land under public ownership only is considered.

The municipality has 18.5km of river frontage. The shore line is environmentally sensitive and any polluting activity in this area shall directly pollute river and the steep slopes pose threats to stability. Hence regulating development of this area to preserve environmental quality and taking advantage of the water front is considered. The extent of area under this environmentally sensitive zone is 150.10 ha.

Some areas in the municipality have very steep slope and hence are prone to land slides. These areas are identified and put under a disaster prone zone with a total extent of 226.3 ha. The development in this zone shall be regulated with disaster proneness in mind and with adequate disaster mitigation measures.

The proposed land use of Malappuram (M) is shown in Fig 1.1 and Table 1.1.

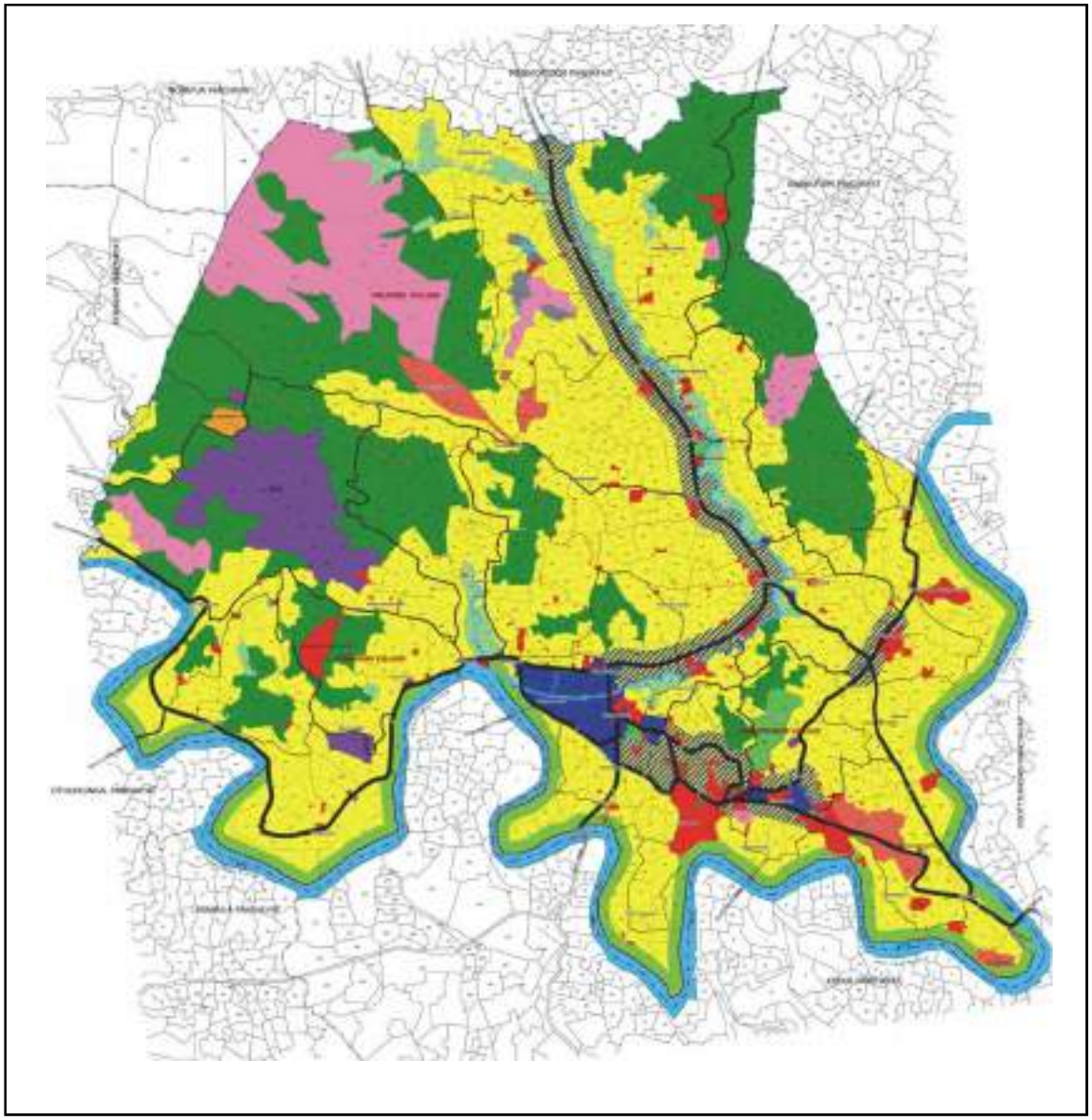




Fig 1.1 Proposed land use of Malappuram (M) 2030

Table 1.1 Proposed Land use 2030

Sl No.	Land use	Area in SqKm.	% of Municipal Area
1	Residential	14.038	41.78
2	Commercial	0.389	1.16
3	Industrial	1.110	3.30
4	Public and Semi-Public	0.833	2.48
5	Dry Agriculture	7.422	22.09
6	Wet Agriculture	0.871	2.59
7	Park and Open Space	0.163	0.49
8	Transport and Communication	2.022	6.02
9	Water Bodies	1.156	3.44
10	Hazardous	0.055	0.16
11	Disaster prone zone	2.210	6.58
12	Environmentall sensitivie zone	1.501	4.47
13	MSP	0.423	1.26
14	Mixed CR	1.325	3.94
15	Rocky area	0.083	0.25
	Total	33.600	100.00

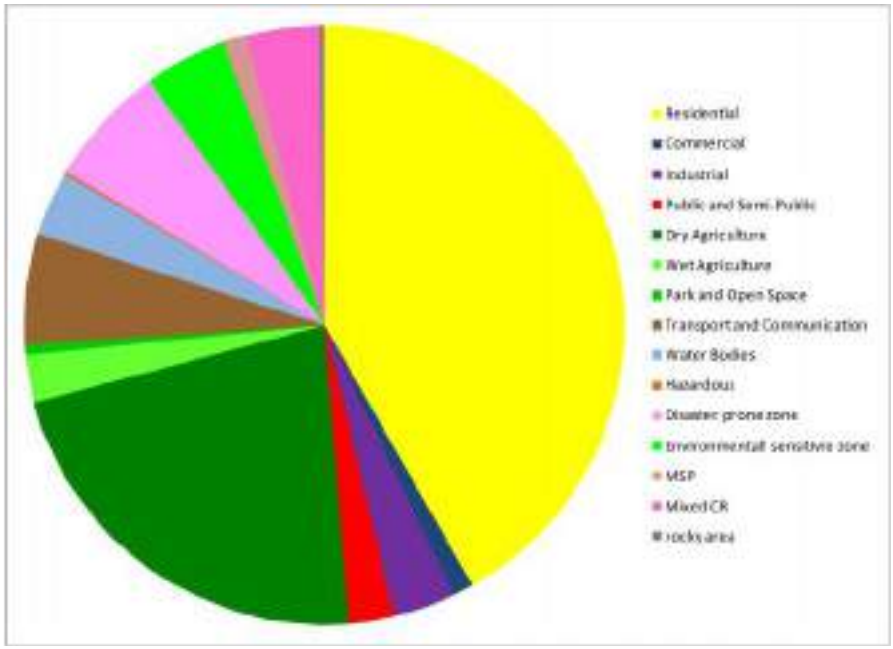
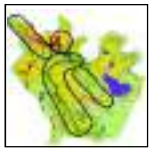


Fig 1.2 Proposed land use Breakup 2030



CHAPTER 2 TRAFFIC AND TRANSPORTATION PLAN

The road network of the municipality has fairly good coverage. But the road width is inadequate in most of the stretches. The projected traffic volume for 2031 far exceeds the capacity of the road network. Hence widening of the existing roads to cater to this increase in volume is attempted.

The national hig hway passing through the town has a varying width at present. The National High way Authority of India had fixed the width of National Highways as 45 m. Considering the projected traffic volume and heavy builtup nature of the town centre, the proposed width of the National Highway passing through the town is fixed as 30 m.

The Malappuram – Parappanangadi road is also an important arterial road in the town. Even though the projected volume of traffic (trend based) is less compared to other arterial roads, this road is supposed to give connectivity to the anticipated higher level institutions and industries. So this road is proposed to be widened to 30 m.

The Kavungal - Machingal bypass road, if developed properly can function as NH bypass and divert through traffic from town centre. So, this road is proposed to be of 30 m width. The bypass connecting Parappanangadi road to Tirur road and Tirur road to AK road, Jubilee road and AK road connects a pair of arterial roads and hence are proposed to be widened to 30 m.

Number of sub-arterial roads are identified in the municipality. They are proposed to have a width of either 12 m or 10 m depending on the importance and projected traffic through the link. All the collector streets are proposed to be widened to 7 m.

All the roads having a proposed width of 30m and above shall have a building line of 5m on either side and all other roads shall have a building line of 3m

The basic premises of the road network plan are to strengthen the existing network by improvement in geometry, width, providing missing links etc. and to divert intra town traffic from the National Highway and other arterial roads. Improvement of major junctions are also to be taken up while widening the existing road network. A detailed road alignment and junction improvement plan shall be prepared based on the development plan proposals.

The existing municipal bus stand is not adequate to meet the projected requirements. So a new bus stand is proposed as part of the new city centre development project at Kottappady.

The present taxi stand at Kunnummel junction shall be shifted to the plot near DTPC and the area thus made available shall be converted into a bus bay which shall ease the congestion at Kunnummel junction.

Addressing the private vehicle parking problem in the town, number of parking plazas (attached to commercial developments on public land) are proposed at Kunnummel near Collector's Bungalow and Kottapadi.

Auto rickshaw and taxi parking on the kerb of the arterial roads shall be made into separate bays while widening these roads. All the major roads shall be given adequate foot path for pedestrian traffic to ensure pedestrian safety.

Table 2.1 Proposed widening of roads

Sl.No	Name of Road	Length of Roads	Existing width of Roads	Proposed width of Roads
1	Kottakkunnu link road	1490 m	3 m	12 m
2	Madathil Road	380 m	3 m	7 m
3	Kalamthatta road	990 m	3.5 m	7 m
4	Madath Palliyali road	480 m	3.5 m	7 m
5	Padincharemukku-MSM road	1510 m	3.5 m	7 m
6	Aliyaparamba road	1445 m	4 m	7 m
7	Muzhayankallungal road	736 m	4 m	7 m
8	Panachi chira road	710 m	4 m	7 m
9	Kannathupara road	785 m	4 m	7 m
10	MSM-Chennath road	410 m	4 m	10 m
11	Road to Oorakam Panchayath	740 m	4 m	7 m
12	PMSA road	1385 m	4 m	7 m
13	Thamarakkuzhi road	1470 m	4.5 m	7 m
14	Cheri road	1832 m	4.5 m	7 m
15	Valaparamba road	950 m	4.5 m	7 m
16	Paithiniparamba road	1930 m	4.5 m	7 m
17	ESI road	3010 m	4.5 m	12 m
18	Kynode road	2400 m	4.5 m	12 m
19	Kalampadi road	1610 m	5 m	7 m
20	Chemmankadavu road	1710 m	5 m	7 m
21	Road to Oorakam Panchayath	760 m	5 m	7 m
22	Ithilparamba road	810 m	5 m	7 m
23	Alathurpadi-Cherupara road	640 m	6 m	10 m
24	Padincharemukku road	2320 m	6 m	10 m
25	Andikkad road	1705 m	6 m	7 m
26	DPO road	1130 m	6.5 m	10 m
27	Spinning mill road	2580 m	7 m	12 m
28	Cherattukuzhi road	2220 m	8 m	12 m
29	Chennath-Cherupara road	6180 m	8 m	12 m
30	Konompara-Karathodu road	5900 m	8 m	12 m
31	Hajiyarpalli-Edayipalam road	2680 m	8 m	12 m
32	Perumparamba-MSP road	385 m	0 m	7 m
33	Malappuram-Parappanangadi	7180 m	12 m	30 m
34	Munduparamba-Machingal bypass	1080 m	12 m	30 m
35	Tirur-Manjeri	3420 m	12 m	30 m
36	Tirur-Manjeri	1060 m	13 m	30 m
37	Tirur road-Parappangadi	1160 m	16 m	30 m
38	Municipal bus stand-Tirur road bypass	540 m	16 m	30 m
39	NH 213	10530 m	20 m	30 m
40	Kavungal Munduparamba byepass	2100 m	25 m	30 m

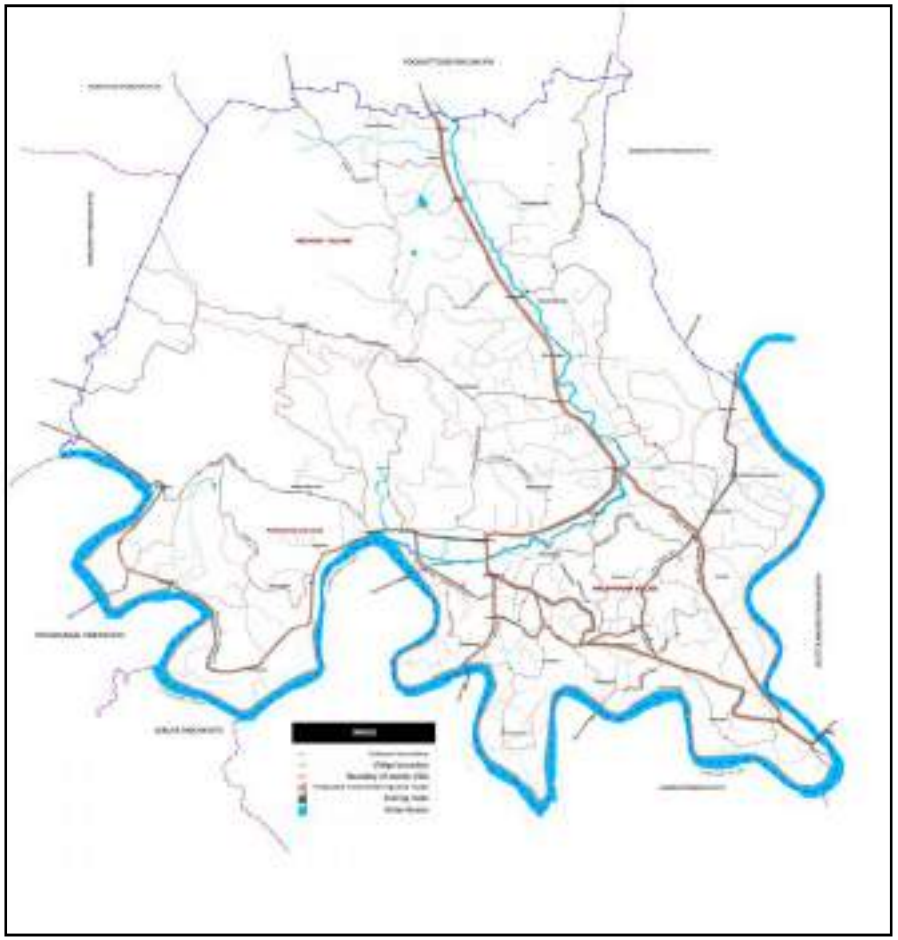


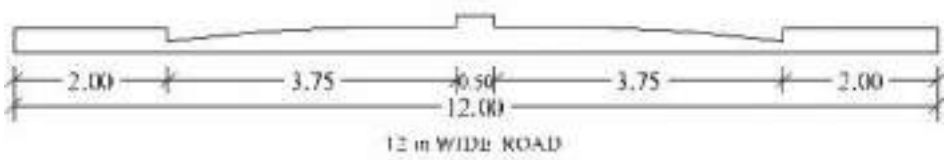
Fig 2.1 Proposed road network

Table 2.2 List of junctions to be improved

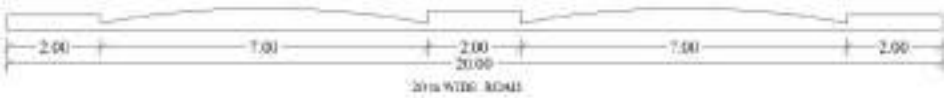
Sl No	Name
1	Kunnummel
2	Police station
3	Kottappadi
4	Kizhakkethala
5	Machingal
6	Collector`s Bunglow
7	Munduparamba
8	Konompara
9	Kavungal
10	Moonampadi
11	Hajiyarpally

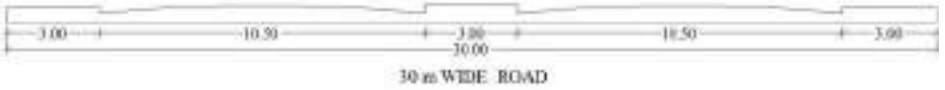
Fig 2.2 Typical proposed cross section of road 7m,10m,12m,20 m,30 m



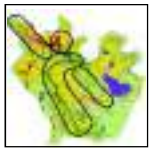


12 m WIDE ROAD





30 m WIDE ROAD



CHAPTER 3 SECTORAL PROPOSALS

3.1.0 Industry

There are no direct projects to be taken up by the municipality in the sector . The development plan attempts to provide for the development of the industrial sector by regulatory/promotive measures which are explained in the earlier chapters.

3.2.0 Trade and commerce

The development of this sector is ensured by the land use policies and projects to be taken up by the municipality.

Development of a city centre at Kottapady is proposed under Land Pooling scheme. In the Land Pooling scheme the municipality shall get approximately 25 % of the land under the scheme. In turn, the municipality shall create the roads and the other urban infrastructure in the area. The area left after providing roads shall be utilized by the municipality for recreational open space, wholesale market and a bus stand . The rest of the area (returned back to the land owners on pro-rata basis) shall be put under planned commercial development. A special purpose vehicle may be formed for this project as and when necessary.

A commercial complex shall be developed at the present Collector's Bungalow site. A parking Plaza also shall be attached to this complex. Another proposal is an entertainment mall at Kunnummel (near DTPC). A shopping centre shall be developed at Kottapadi (where the market is at present) with an attached parking plaza and provision for street vendors .

All these projects may be considered under PPP after study on vaibility and preparation of the detailed project reports .

The zoning for commercial use provided in the land use plan shall ensure the supply of land for commercial development in private sector.

3.3.0 Tourism

Number of projects are formulated in tourism sector with a view to create a tourism circuit within the town . The Kottakunnu park is the major tourist attraction at present. It is proposed to build a watch tower and crafts village inside the Kottakunnu Park . The tourism department already has a town square project in the municipality. A museum is also proposed in the Kottakunnu complex. A new tourism project named " Santhi theeram " by which walk ways shall be developed along the river shore is already launched in the municipality. This area is proposed to be connected to Kottakunnu park by a rope way . The rope way shall have an overall view over the town and is expected to augment the flow of tourist both to Kottakunnu and Santhi theeram.

A Tourism village is proposed accessible from Munduparamba byepass. Besides a boat jetty shall be constructed at Parakkadavu. This will facilitate recreational boat service in this stretch of the river .

Efforts are on for setting up of a planetarium and science park at Malappuram in a plot measuring 1.01 acres owned by the municipality at

Hajiyar palli. An adventure park shall be developed at the present Collectors Bungalow site. The site is in between Kottakunnu and Santhi theeram projects and is easily accessible. Another proposal is a ropeway from Santhitheeram to Kottakkunnu.

Basic amenities like toilets, wash, rest area, refreshments etc. shall be made available at all these location in a planned manner .

3.4.0 Agriculture

The major issue that can be addressed to by the development in this sector is found to be irrigation infra-structure. It is proposed to widen the Valiyathodu (the major storm water drainage in the town) to 20 Meters width. Side protection and deepening this channel is also required . Further a few check dams shall be constructed (number and locations are to be decided based on a detailed study) in this channel making this drain a dependable source for irrigation.

Another proposal is to construct four check dams in Kadalundi river which will have positive impact on both water supply and irrigation.

3.5.0 Animal husbandry

Even though the people of the municipality are good consumers of meat as revealed by the studies the town has no slaughter house. Hence it is proposed to build a slaughter house in the municipality near the solid waste treatment plant.

3.6.0 Fisheries

The fisheries sector is not very prominent in the town, not being a coastal one and has no major water bodies like back waters or lakes. So, no interventions by the development plan are considered necessary in this sector.

3.7.0 Water supply

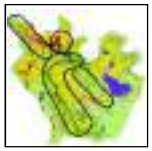
The problem with the water supply in the town is not the volume but the distribution system. The supply doesn't reach the areas of water scarcity. Besides, there is no adequate water treatment plants in the municipality at present. In order to augment the quantity, four check dams are proposed in Kadalundi river. A water treatment plant is proposed at Chamakkayam along with the weir. To ease the distribution and increase coverage, three overhead tanks are proposed each at Kottakunnu, Perumpramba and Kalamthatta.

These projects are expected to make the water supply system adequate in coverage and quantity in the municipality.

3.8.0 Drainage

The drainage network of the municipality needs total revamping. It is proposed to improve the Valiyathodu by widening , side protection works, deepening and construction of check dams. A detailed drainage plan is to be prepared for the municipality before taking up works on the drainage network. However an approximate length of 36 km is estimated to be constructed in addition to the 25.26 Km of the drains in the municipality.

3.9.0 Sewerage



There are no sewerage network in the municipality. Some of the residential and commercial establishments let out waste water to the drainage channels. This practice shall be strictly prevented. A waste water treatment plant is proposed to be constructed at Valiyavaramba . The liquid waste generated in the town centre shall be directed to this treatment plant before letting out in to the river.

3.10.0 Solid waste disposal

The municipality has a solid waste treatment plant . The collection of waste is not 100 % . Steps shall be taken to improve collection of waste and their segregation. Besides, the existing plant shall not be adequate to cater to the projected waste production during the plan period.Hence it is proposed to expand the existing treatment plant in a phased manner to cater to the projected volume of 20 Tons /day of solid waste during the plan period.

3.11.0 Energy

The Energy position in the municipality is satisfactory. It is presumed that the routine expansion programme of the KSEB shall adequately cover the increased energy demand in the town. One significant factor in an urban design context is the conversion of overhead electric lines to underground cables. Such conversion is proposed in the town centre in this development plan.

3.12.0 Education

Due to expansion in population 22 more primaryschools, 2 High Schools, 2 Higher Secondary Schools and 1 College are to be started in the town to cater to the increased demand. Further , the town is suitable for development of institutions for higher learning. So the municipality shall facilitate the setting up of these institutions both in Private and Public sector.

3.13.0 Health

The existing Taluk hospital is to be expanded to District hospital level considering the extent of hinter land and projected population of the municipality and its hinter land. Besides, according to the standards the municipality shall be in short of four PHCs and one Child welfare and Maternity centre during the plan period. The municipality shall facilitates the creation of these facilities in the town in public sector.

3.14.0 Housing

The town has a housing shortage of only 2728units at present. This shortage is expected to be met by schemes like IHSDP, VAMBAY, EMSHS, RAY etc in operation in the municipality. The housing sector is given adequate thrust in the land use plan (by ensuring supply of land) so that housing shortage do not recur in future.

3.15.0 Recreation

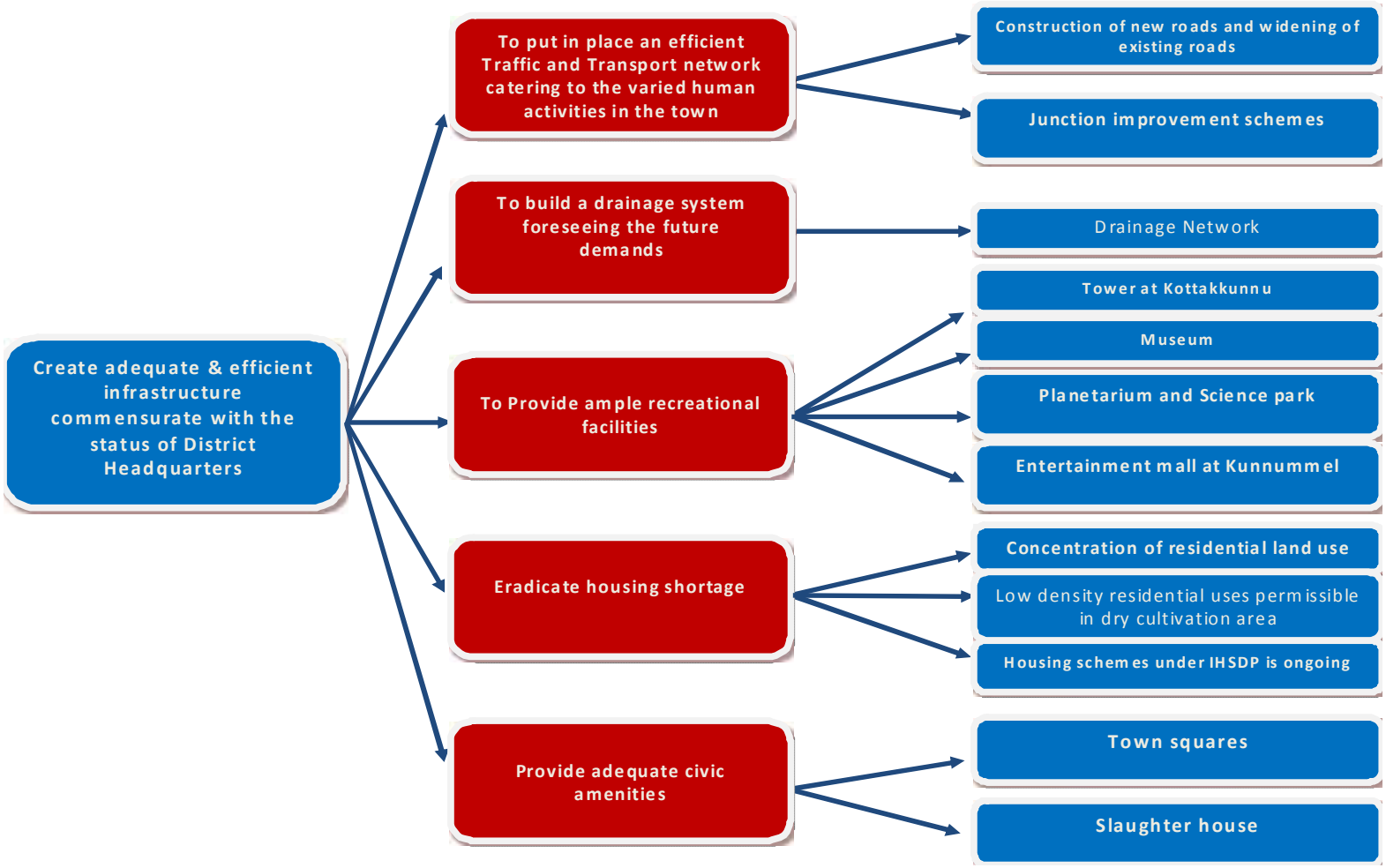
The proposals in this sector include entertainment mall at Kunnummel and various projects proposed under the tourism sector.

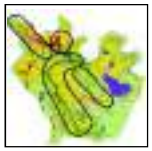
3.16.0 Other Civic amenities

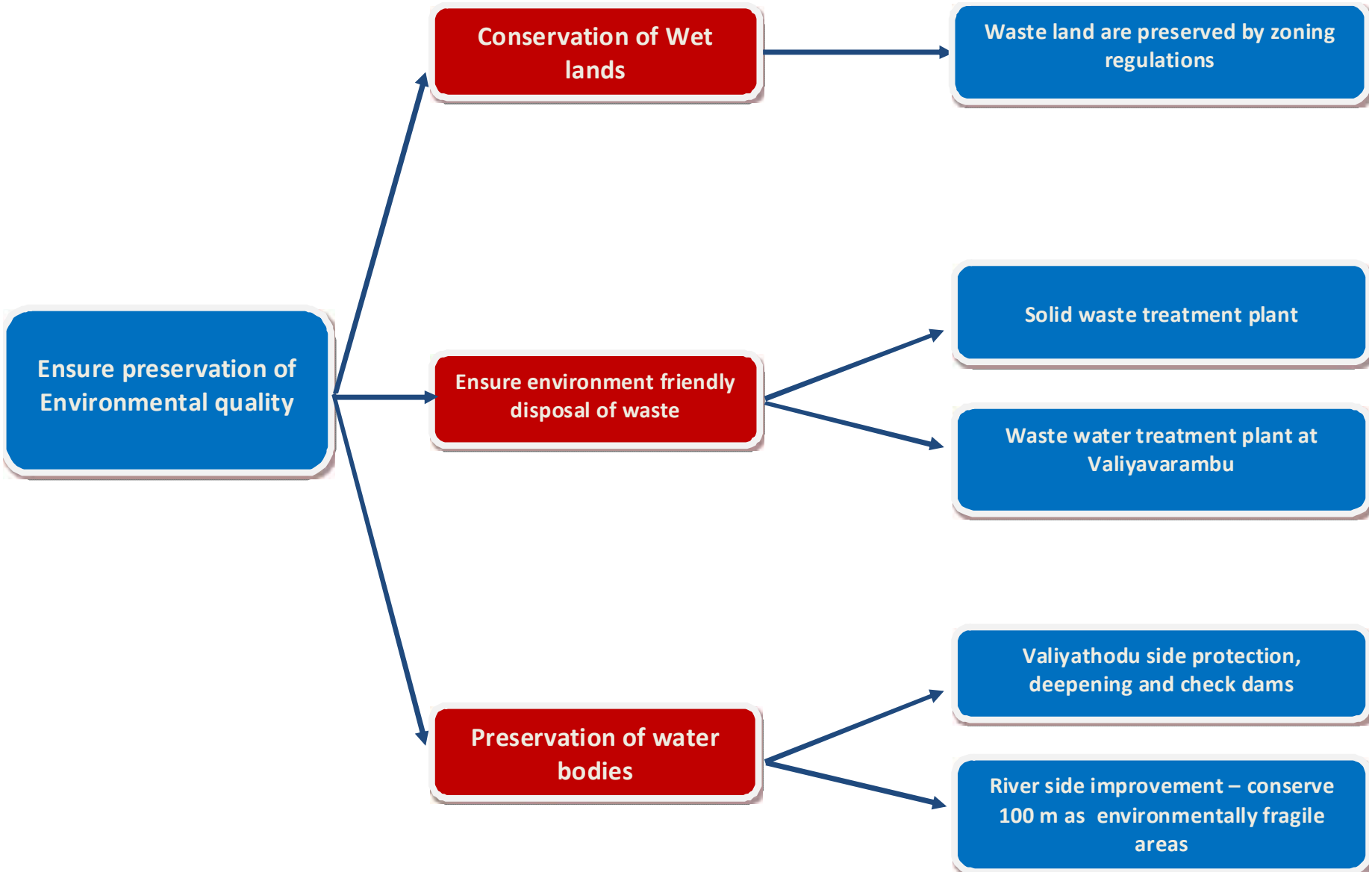
The civic amenities are found to be adequate in the municipality due to a close knit community living present in the municipality. No new facilities are proposed in this development plan in this sector.

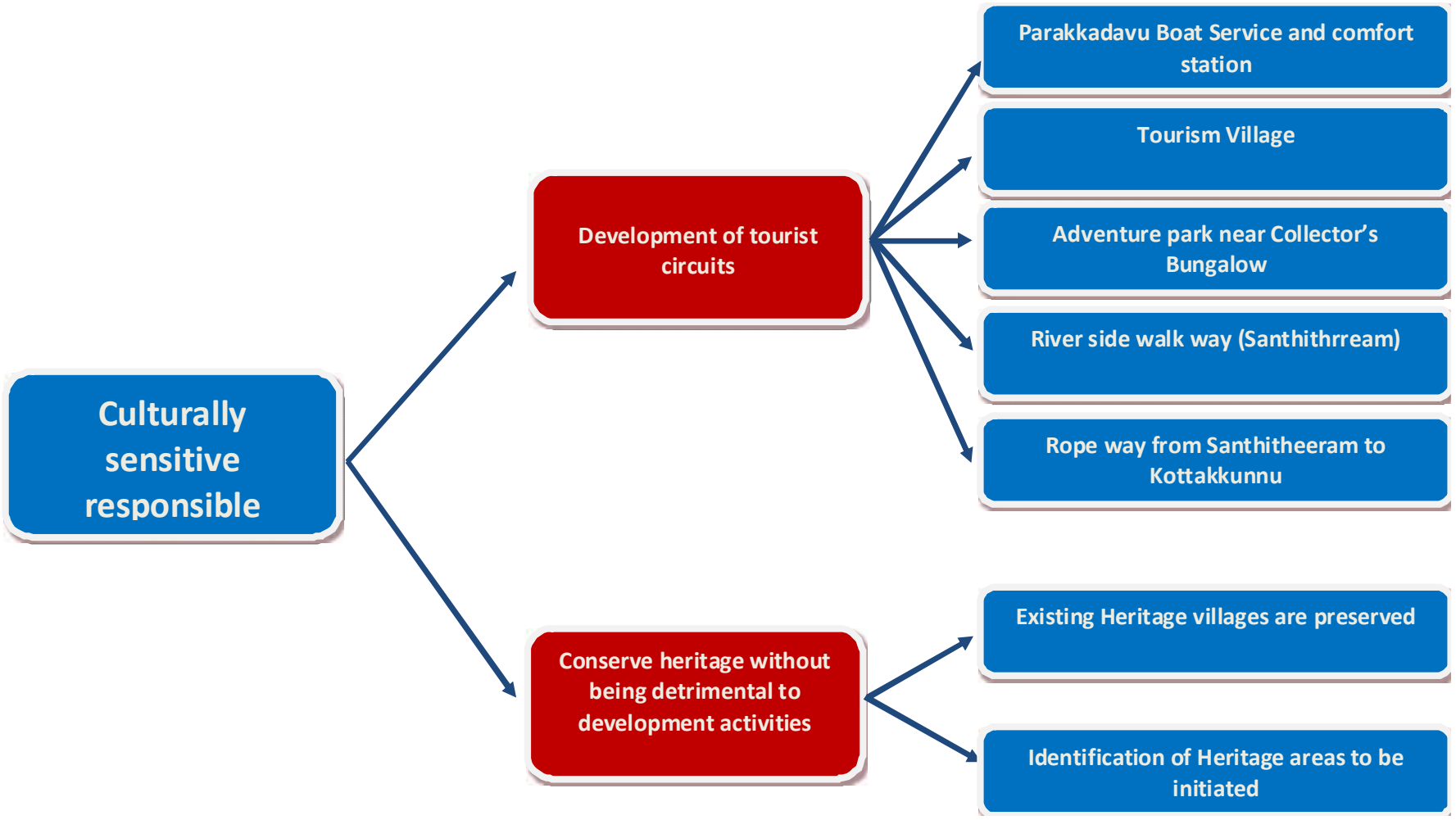
CHAPTER 4 GOAL BASED DECISION TREE

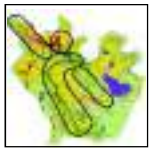
A goal based decision tree is constructed to ensure the integrity of the development plan as follows.

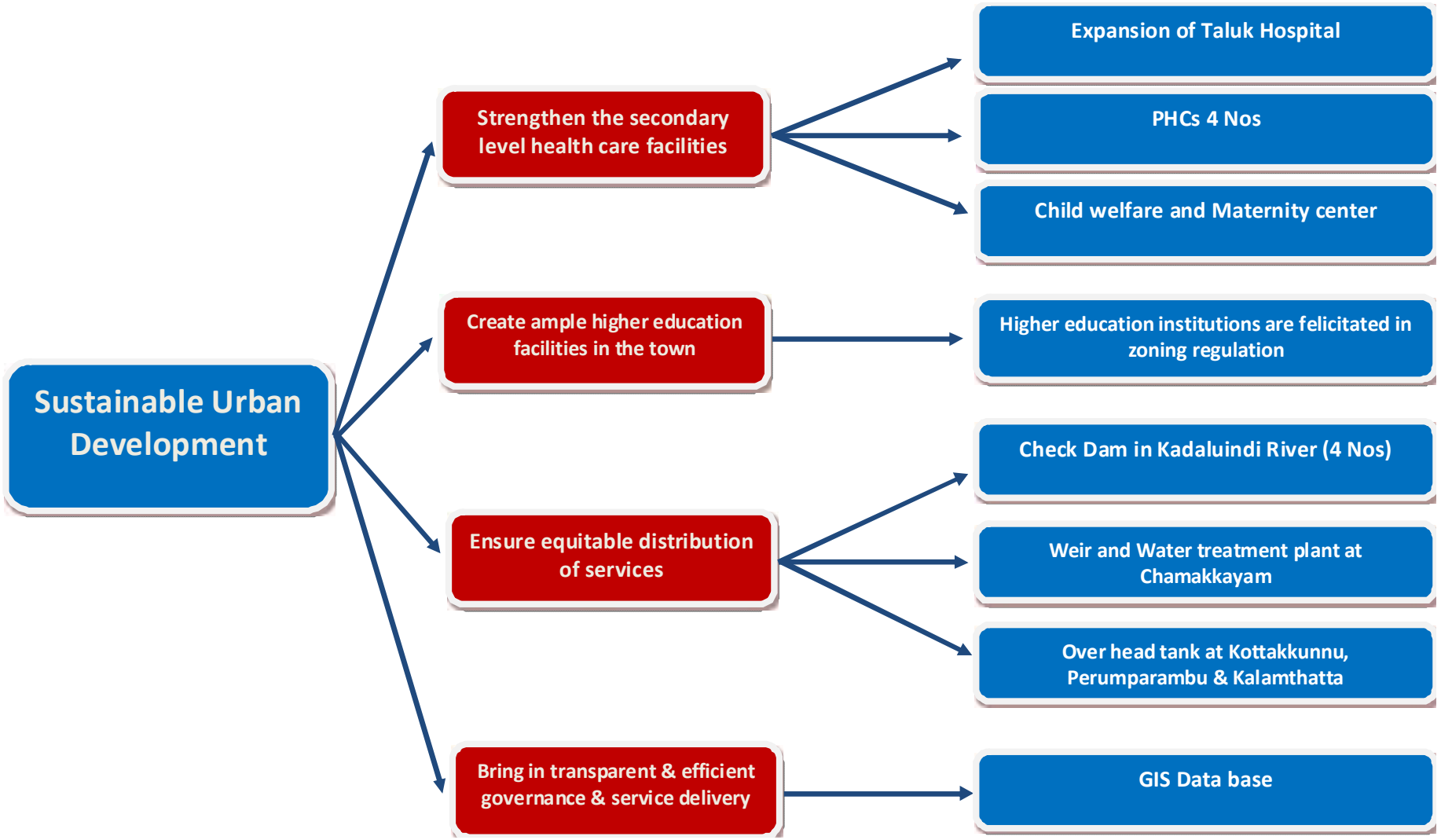





Ensure preservation of Environmental quality
Conservation of Wet lands
Waste land are preserved by zoning regulations
Ensure environment friendly disposal of waste
Solid waste treatment plant
Waste water treatment plant at Valiyavarambu
Preservation of water bodies
Valiyathodu side protection, deepening and check dams
River side improvement – conserve 100 m as environmentally fragile areas


Culturally sensitive responsible
Development of tourist circuits
Parakkadavu Boat Service and comfort station
Tourism Village
Adventure park near Collector's Bungalow
River side walk way (Santhithrream)
Rope way from Santhitheeram to Kottakkunnu
Conserve heritage without being detrimental to development activities
Existing Heritage villages are preserved
Identification of Heritage areas to be initiated




Sustainable Urban Development
Strengthen the secondary level health care facilities
Expansion of Taluk Hospital
PHCs 4 Nos
Child welfare and Maternity center
Create ample higher education facilities in the town
Higher education institutions are felicitated in zoning regulation
Ensure equitable distribution of services
Check Dam in Kadaluindi River (4 Nos)
Weir and Water treatment plant at Chamakkayam
Over head tank at Kottakkunnu, Perumparambu & Kalamthatta
Bring in transparent & efficient governance & service delivery
GIS Data base

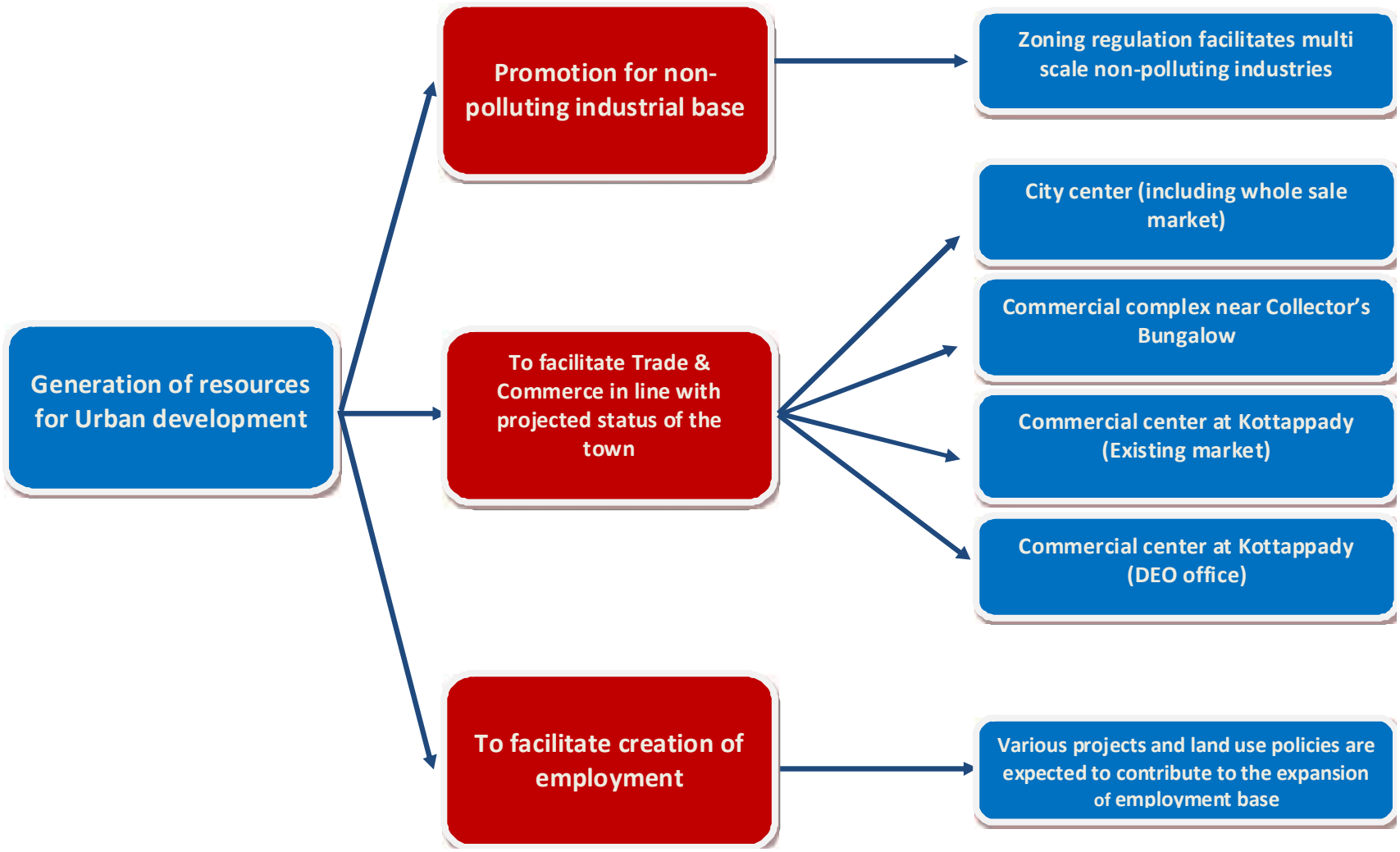
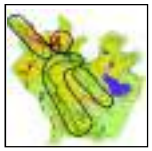


Fig . 4.1 Goal Based Decision Tree

It can be seen that each objective has been derived from any of the identified goals and each of the projects proposed has an objective behind it. Various land use policies adopted in the development plan also emanate from the identified objectives. Thus the development plan aims at realizing the development vision formulated for the town.



CHAPTER 5 ENVIRONMENT

The Development plan puts forward a multi pronged approach towards the environmental protection and management. The conservation of wet land (Paddy fields in the context of Malappuram Municipality) is given due priority. Where conversion of paddy land is proposed strict environmental protection measures are also prescribed. One instance is the conversion of uncultivated paddy land between the national highway and Valiyathodu . Once the National Highway and the Valiya thodu are widen to the proposed widths only a narrow strip shall be retained. The plot owners in this strip shall able to convert the land use to residential or commercial use on condition that they provide the land required for the widening of the Valiyathodu free of cost to the municipality and bear the cost of side protection of the channel along their boundary. The conversion of un cultivated paddy for the city centre project also takes care of water storage, drainage, wastes water treatment etc.

An environmentally sensitive zone is identified along the river shore. In a buffer area of 100m from the river no intense activity which is likely to pollute the river or affect the stability of slope shall be permissible.

The nuisance type of polluting industries (if to be set up based on economic or employment considerations in the municipality) are to be well isolated from areas of inhabitance and institutional development. Likewise, hazardous uses such as solid waste treatment, slaughter house etc are also isolated from residential and institution areas.

The regulations imposed in disaster prone areas also are meant to conserve the environment in these areas.

Physical improvements are proposed for valiyathodu in order to improve the efficiency of drainage. A properly designed drainage network is also proposed in the development plan. Improvement of solid waste collection, expansion of the solid waste treatment plant and construction of a waste water treatment plant shall help preserve the serenity of environment of the town.

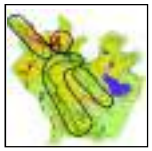
CHAPTER 6 DISASTER PREPAREDNESS AND MANAGEMENT

Disaster prone areas are identified in the development plan. The only land related disaster proneness that the town has is that of land slides . Areas prone to land slides are identified and brought under an exclusive zone. The development regulations are formulated for this zone keeping the stability of the structures in mind.

The proposed road network shall ensure reaching of every nook and corner of the municipality in case of a calamity.

Another disaster proness identified in the municipality is the flooding of certain areas during heavy rains. Improvements to drainage network especially the arterial channel , valiyathodu , addresses this problem.

Being the District headquarters the town has a well organized disaster preparedness under the revenue department. The town also has a fire and rescue station with adequate staff and equipment. A unit of armed police (The Malabar Special Police) is also available in town in case of any calamities natural or other wise.



CHAPTER 7 GOVERNANCE

The issues in urban governance are almost uniform across the urban LSGs in the state. The weak financial position of the urban LSGs affect the service delivery. Transparency in service delivery is often suffered due to the system of keeping manual registers and avoidance of digitization. Even though sufficient funds were made available by the government under various schemes for the last few decades, the computerization of the operations of the municipality is in a very slow pace. This affects the quality of service and prompts unhealthy, unethical practices and evades transparency.

The problem in assessment and collection of property tax, The main income of the municipality, is very acute. The municipality is able to collect only 60 % of the tax which is assessed to be due Evasion of assessment also do happen and could not be quantified. With the introduction of the GIS based property tax management system 20 to 30 % increase in tax collection is observed elsewhere. The situation cannot be different in Malappuram municipality also.

Besides unauthorized construction also do come up which are public hazards and drains on the municipal revenue.

Another issue is lack of information system for planning and implementing development activities and providing various relief measures to the citizens at large.

All these issues can be addressed by a properly co-ordinated management information system and property tax management system in a GIS platform with user interphase and constant updating of the data base.

So a GIS based system of Urban governance shall be put in place in Malappuram Municipality. The first step towards this is creation of an interactive plot level GIS data base for the municipality and training of municipal staff for the usage and updation of the same. This component is taken up by the Town and Country Planning Department under the Scheme State Urban Information System at a cost of of Rs. 50 Lakhs in the first phase. In the subsequent phases the municipality shall add various layers and applications to the data base like utility mapping, property tax management system, Management information system, birth registration, death registration, various other registrations , building permit applications, issue of various certificates, utilities management, other service delivery etc. and enable web GIS with user interface.

This is expected to solve many of the urban governance issues prevailing in the municipality.

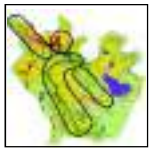
The creation of GIS database for Malappuram municipality is taken up by the state government as a model project and this experience shall provide insight to the process while replicating in other LSGs.

CHAPTER 8 FINANCIAL RESOURCES AND PLANNING

The development plan details out land use regulations and development activities to be taken up by the various agencies and stake holders. Hence projects are proposed to be taken up by various agencies and municipality is not the only agency responsible for the implementation of the plan. The projects coming under the scope the Municipality itself may be financed by other schemes/agencies etc. The following table gives broad phasing and approximate costs at 2011 prices of the proposed projects and indicates the implementing agencies. The source of funds for projects indicated as external are various plan schemes of Central /State governments, borrowing from lending agencies etc. This will be taken up by the municipality on a case to case basis.

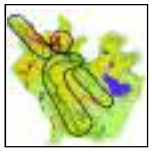
Table 8.1 Sectoral Praposals (Phasing and costing)

	Sectoral proposals (phasing and costing)				
SL No	Project	Approximate cost Rs in Lakhs	Duration (Years)	Source of funds	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
1	Valiyathodu side protection, deepening & check dams	800	10	Own	
2	Slaughter house	100	2	Ext	
3	Tourism village	50	1	Ext	
4	Town square	50	1	Ext	
5	Tower at Kottakkunnu	100	2	PPP	
6	Museum	50	1	Own	
7	Planitarium and Science park	500	3	Ext	
8	Parakkadavu Boat service and comfort station	25	1	Ext	
9	City centre (including wholesale market)	5000	5	PPP	
10	Check dam in Kadalundy river (4 Nos)	1200	8	RMF	
11	Weir and water treatment plant at Chamakkayam	180	2	KWA	



Sl.No	Project	Approximate cost Rs. in Lakhs	Duration (Years)	Source of funds	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
12	Over head tank at Kottakkunnu	75	2	KWA																				
13	Over head tank at Perumparamba	80	2	KWA																				
14	Over head tank at Kalanthatta	30	2	KWA																				
15	Drainage network	1000	20	State& Own																				
16	Solid waste treatment plant (expansion)	200	2	Ext																				
17	Expansion of Taluk hospital	1000	3	State																				
18	PHCs- 4 Nos.	400	4	State																				
19	Child welfare and meternity centre	100	1	State																				
20	Waste water treatment plant at Valiyavarmbu	4000	5	Ext																				
21	Commercial complex near collector's bunglow	500	3	PPP																				
22	Adventure park near collector's bunglow	50	1	Ext																				
23	Commercial centre at Kottappady (Existing market)	1500	3	PPP																				
24	Entertainment Mall at Kunnummal	1000	3	PPP																				
25	Conversion of overhead electric lines to under ground cables	1000	5	KSEB																				
26	Santhiteeram	220	1	State																				
27	Ropeway connecting Shanthiteeram-Kottakkunnu	1000	3	Ext																				
28	Junction improvement	500	10	Own																				
29	Education institution	4000	15	State																				
30	GIS data base	50	1	State																				
	Total	24760																						

Road Proposals																										
Sl No	Road proposals	Length of roads	Existing width of roads	proposed width of roads	Approximate cost Rs in Lakhs	Source of funds	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Kottakkunnu link Road	1490 m	3m	12m	602.65	Own																				
2	Madathil Road	380 m	3m	7m	96.26	Own																				
3	Kalamthatta Road	990 m	3.5m	7m	238.55	Own																				
4	Madath Palliyali Road	480 m	3.5m	7m	115.66	Own																				
5	Padincharemukku - MSM Road	1510 m	3.5m	7m	363.85	Own																				
6	Aliyaparamba Road	1445 m	4m	7m	330.33	Own																				
7	Muzhayankallungal Road	736 m	4m	7m	168.25	Own																				
8	Panachi chira Road	710 m	4m	7m	162.31	Own																				
9	Kannathupara Road	785 m	4m	7m	179.45	Own																				
10	MSM- Chennath Road	410 m	4m	10 m	125.51	Own																				
11	Road to Oorakam Panchayath	740 m	4m	7m	169.17	Own																				
12	PMSA Road	1385 m	4m	7m	316.62	Own																				
13	Thamarakkuzhy Road	1470 m	4.5m	7m	317.89	Own																				
14	Cheri Road	1832 m	4.5m	7m	396.17	Own																				
15	Valparamba Road	950 m	4.5m	7m	205.44	Own																				
16	Paithiniparamba Road	1930 m	4.5m	7m	417.36	Own																				
17	ESI Road	3010 m	4.5m	12 m	1105.9	Own																				
18	Kynode Road	2400 m	4.5m	12 m	881.76	Own																				
19	Kalampadi Road	1610 m	5m	7m	328.27	Own																				
20	Chemmankadavu Road	1710 m	5m	7m	348.66	Own																				
21	Road to Oorakam Panchayath	760 m	5m	7m	154.96	Own																				



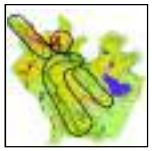
Sl. No.	Road proposals	Length of roads	Existing width of roads	Proposed width of roads	Approximate cost Rs. In Lakhs	Source of funds	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
22	Ithilparamba road	810 m	5 m	7 m	165.15	Own																				
23	Alathurpadi-Cherupara road	640 m	6 m	10 m	164.28	Own																				
24	Padincharemukku road	2320 m	6 m	10 m	595.52	Own																				
25	Andikkad road	1705 m	6 m	7 m	305.51	Own																				
26	DPO road	1130 m	6.5 m	10 m	276.1	Own																				
27	Spinning mill road	2580 m	7 m	12 m	788.51	Own																				
28	Cherattukuzhi road	2220 m	8 m	12 m	623.63	Own																				
29	Chennath-Cherupara road	6180 m	8 m	12 m	1736.1	Own																				
30	Konompara-Karathodu road	5900 m	8 m	12 m	1657.4	Own																				
31	Hajiyarpalli-Edayipalam road	2680 m	8 m	12 m	752.85	Own																				
32	Perumparamba-MSP road	385 m	0 m	7 m	126.07	Own																				
33	Malappuram-Parappanangadi	7180 m	12 m	30 m	13241	PWD																				
34	Munduparamba-Machingal bypass	1080 m	12 m	30m	2207.2	PWD																				
35	Tirur-Manjeri	3420 m	12 m	30 m	6307.1	PWD																				
36	Tirur-Manjeri	1060 m	13 m	30 m	1876.3	PWD																				
37	Tirur road-Parappangadi	1160 m	16 m	16 m	1795.3	PWD																				
38	Municipal bus stand-Tirur road bypass	540 m	16 m	30 m	835.74	PWD																				

Sl. No.	Road proposals	Length of roads	Existing width of roads	Proposed width of roads	Approximate cost Rs. In Lakhs	Source of funds	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
39	NH 213	10530 m	20 m	30m	27022.7	PWD																				
40	Kavungal Munduparamba bypass	2100 m	25 m	30m	2942.6	PWD																				
	Total Cost of Road	70444.05 Lakhs																								
	Grand Total of Proposal	**952.04Crores**																								

The cost of projects under various source of funds can thus be summarized as follows.

Own (Municipal fund)	1606.61Million
External (Source yet to be identified)	597.50Million
PPP	810.00Million
River Management Fund)	120.00Million
State	627.00Million
KWA	36.50Million
KSEB	100.00Million
PWD	5622.80Million
Total	**9520.41Million**

Out of the Rupees 19520.41 Million Rs 7044.40Million (74.00 %) is required for road development. Out of this Rs 5622.80 Million, ie 59.10 % of the total outlay for implementation of the development plan and 79.82 % of the outlay for road development has to come from PWD. Realising this there should be constant pressure by the municipality and political leadership at large on the state government for making sufficient funds available with the PWD to take up these projects. The municipality needs to invest approximately Rs. 80 Million per annum for implementation of this development plan. The municipal financial resources are to be augmented to meet this demand.



CHAPTER 9 MONITORING AND REVIEW

Implementation of the development plan is equally or more important than preparation of the development plan. In order to ensure timely implementation of the development plan, a permanent system for monitoring and review is envisaged.

9.1.0 Monitoring

A monitoring committee shall be set up as follows.

Municipal chairman	Chairman
Chairpersons of all Standing Committees Town Planner of the State Town and Country Planning department having jurisdiction in the area	Members
Municipal Secretary	Convenor

The monitoring committee shall meet as and when required. The committee shall also scrutinize the annual plan proposals of the municipality for compatibility with the development plan and also make suggestions regarding projects listed in the development plan that may be included in the annual plan proposals to the concerned working groups.

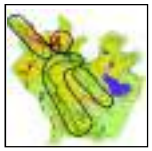
9.2.0 Review

The sanctioned development plan shall be reviewed every five year (in phases co-terminus with the five year plans). Hence the first review shall be in 2016 and after five years thereafter. A committee shall be constituted for the review of the master plan as follows.

Municipal chairman	Chairman
Municipal Vice Chairman, Chairperson , Standing Committee for Public works	Members
Town Planner of the State Town and Country Planning Department having jurisdiction in the area	Convenor

Senior Town Planner of the state Town and Country Planning Department in charge of the circle in which the district is included shall be special invitee to the committee.

The committee shall review the implementation of the development plan, direction of growth, new major investments that have come up in the municipality, financial position of the municipality, adherence to development regulation etc. and shall advice the council regarding maintaining status quo, making minor variations or revision in toto.

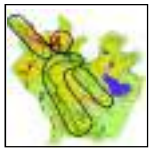


CHAPTER 1 ZONING

1.1.0 Zoning Regulations

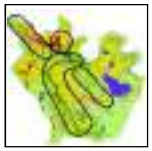
1. All future development shall be in conformity with the provisions of the Development Plan for Malappuram Town.
2. For the implementation and enforcement of the proposals envisaged in the Development Plan for the Municipal town areas have been zoned under various uses such as residential, commercial, industrial, pubic and semi-public etc. Details regarding the nature of uses permitted, uses restricted and uses prohibited in each zone are given below.
3. " Uses permitted" in a zone cover the uses that can be normally accommodated in the relevant zone. In some cases it may be possible to permit some other uses also, which are not likely to affect the quality and environment in a zone specified for a particular use. Such cases have to be individually studied based on their performance characteristics and spatial locational factors. Such cases, which come under this category, are classified as " Uses Restircted". " Uses Prohibited" enlists the various objectionable uses in each zone, which shall not be permitted under normal circumstances.
4. Zoning regulations are not intended to prohibit existing uses that have been lawfully established prior to the enforcement of these regulations. They are essentially intended to help the competent authority in decisions regarding granting or refusal of planning permissions for land use conversions and construction of buildings/ structures of any other matter specifically mentioned in these regulations.
5. Existing areas and structure of archaeological importance, agricultural uses and religious uses may be permitted to continue in all zones.

Sl. No.	Land use	Permitted	Uses Restricted by the Secretary of the Local Self Government with the concurrence of Town Planner of the State town planning Service having jurisdiction over the area	Chief Town Planner	Uses Prohibited
(1)	(2)	(3)	(4)	(5)	(6)
1	Residential	All Residences, Residential flats, Guest houses ,Lodges, Professional services, Offices and studios of the Residents, Night shelters, Orphanages, Old Age homes and Dharma salas, Parks and Play grounds, Small Service Industries of non nuisance nature(see annexure I) engaging not more than 10 workers with power limited to 10HP or 20 workers without power ,Tot lots, Water treatment plants below 10 MLD **Floor area limited to 100 Sqm** Electric substations, ATMs, Gymnasium/Yoga centres, Clinics (out patient), Social Welfare Centre, Cyber café, Incidental public utility buildings **Floor area limited to 150 Sqm** Day care centres and creches, Nursery / Kinder Garten/ primary school, Uses incidental to Residential uses such as Retail and Convenience shops , Professional Offices, Community halls, Clubs, Library and Reading room ,Open air theatre. **Floor area limited to 200 Sqm** Banking and Financial Institutions **Floor area limited to500 Sqm** Religious buildings	Hostels and Boarding Houses, Ashrams / Mutt, Primary, Secondary and Higher Secondary Schools, Transmission towers/ Wireless station, Parking plazas, Swimming pool, Smoke house attached to a residential building, Taxi/Jeep / Autorikshaw stand and Service industries of non nuisance nature(see annexure I) engaging not more than 20 workers with power limited to 20HP or 30 workers without power **Floor area above 150Sqm and upto 300Sqm** Retail and Convenience shops **Floor area limited to 200 Sqm** CommercialOffices/ Establishments, Bakeries and Confectioneries, Restaurants/Canteens,IT/ Hardware/Software, Automobile show room, Small automobile workshops for 2 /3 wheelers	Community halls above 150Sqm, Printing Press, Fuel Filling Stations, Hospitals up to 750Sqm floor area, new areas or buildings under Religious Use above 500Sqm, Other public utility areas and buildings essentially serving the need of the locality, Industrial estate and industrial parks.	Any other uses not specified in columns (3),(4), and (5)



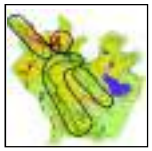
(1)	(2)	(3)	(4)	(5)	(6)
2	Commercial	Residences - floor area upto 200 Sq m, Ashram / Mutt, Hostels, Boarding Houses, Guest Houses, Lodges, Night Shelters, All Shops including Shopping Complexes, Shopping malls, Multiplex, Hypermarkets, Restaurants, Hotels, Markets, Professional offices, Commercial Offices & Establishments, Banking and Financial Institutions, Godowns/Warehouse/ Storage of non hazardous materials, Stacking yards, IT Software units, Movie Halls, Auditorium / Wedding Halls / Community halls, Gymnasium / Yoga Centers, Fuel Filling Stations, Day Care and Crèche, Nursery / Kinder Garten / Schools upto Higher Secondary level, Tot Lots/Parks/Play Grounds, Cottage Industries, Automobile workshops, Automobile Service Stations, Cold storage, Service Industries of non-nuisance Nature (See Annexure I) engaging not more than 30 workers without power or 20 workers with power limited to 30 HP, Saw Mills, Weigh bridges, IT/ Hardware / Electronic Industries, Marble and Granite Storage / Cutting centers, Local / State/Central Govt. or Public Sector offices, Transmission towers, Telecommunication towers and Wireless Station, Library and Reading Room, Social Welfare Centres, Museum, Exhibition Centres and Art Gallery, Indoor Games Stadium, Conven	Residences - floor area upto 300 Sqm, Residential Flats / Apartments upto 20 units	Residential Flats / Apartments upto 30 units, New areas or buildings under Religious uses	Any other uses not specified in columns (3),(4), and (5)

(1)	(2)	(3)	(4)	(5)	(6)
		tion Centres, Public Utility Areas & Buildings, Places of Worship, Clinics (Outpatient), Diagnostic Centres, Hospitals up to 750Sqm, Parking Plazas, Transport Terminals, Plant Nursery, Storage of Agricultural Produces and Seeds			
3	Mixed (Residential cum commercial) zone	All uses permitted under Residential and Commercial uses	Swimming pool, Taxi/Jeep / Autorikshaw stand, Service industries of non nuisance nature(see Annexure I) engaging not more than 30 workers with power limited to 50HP or 50 workers without power	New areas or buildings under religious uses, Other public utility areas and buildings essentially serving the need of the locality, Industrial estate and industrial parks.	Any other uses not specified in columns (3),(4), and (5)
4	Public and semi public	Local /State/Central Government or Public Sector Offices, Social and Cultural Establishments, Auditorium/Wedding/ Community Halls, Hospitals, Clinics / Health Centre, All type of Educational Institutions, Public utilities and related Buildings, Religious buildings, Civil Defence and Home Guard, Jail and Reformatory, Library and Reading Room, Social Welfare Centre, All type of recreations (Parks, Museum, Indoor Games Stadium, Fair ground, Swimming pool, Exhibition Centre and Art Gallery, Play ground, Open air theatre, Zoological /Botanical Garden, Bird Sanctuary, Camping site), ATMs, Cyber café, Radio and	Residential uses incidental to main use up to 100Sqm of floor area, Outdoor Game Stadium, Convention Centres, Parking plaza, Traffic park, Taxi/Jeep / Autorikshaw stand, IT/Soft/ Hardware units, Beauty parlor, Gymnasium/ Yoga centre,Water treatment plants above 10 MLD, Industries of non nuisance nature(see Annexure I) engaging not more than 10 workers with power limited to 10HP or 20 workers without power	All transport Terminals/Stand/Lorry Stand, Fuel filling Stations, Cremation ground, Common Vault, Sewage Treatment plants, Dumping Yards, Residential buildings up to 300Sqm of floor area, Commercial buildings above 100Sqm floor area	Any other uses not specified in columns (3),(4), and (5)



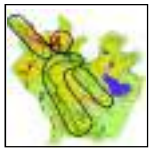
(1)	(2)	(3)	(4)	(5)	(6)
		T V Stations, Transmission towers/ Wireless station, Water treatment plants below 10 MLD, Tot lots **Floor area limited to 100 Sqm** Day care and Crèche, Retail shops/Whole sale shops/ Professional offices ,Restaurants / Canteens			
5	Parks and open spaces	Parks, Open spaces and maidans, Play grounds, Tot lots, Zoological and Botanical Gardens, Stadia, Swimming pools, Bird Sanctuary, Public utility Buildings such as Police post/ station, Fire post/station, Outdoor Games Stadium , Fair Ground, Exhibition Centre, Art Gallery, Traffic park, Amusement parks, Camping site, Transmission towers/ wireless station.	Pavilions and grand stands, Bath House, Aquarium, Reading room, Gymnasium / yoga centers, Reading Rooms, Radio kiosks, Social and Cultural Establishments incidental to main use, Taxi/Jeep/Autorikshaw stand, ATMs, Water treatment plants below 10 MLD, Day care, crèches and Kinder Garten	Public utilities , Museums , Restaurants, Circus, Festivals, Picnics, Travelling Cinemas, Parking Plazas, Incidental uses viz. retail shops, Restaurants / canteens etc with coverage limited to 5% and a maximum FAR of 0.1.	Any other uses not specified in columns (3),(4), and (5)
6	Industrial	All types of Industries other than obnoxious and nuisance type(Annexure II), Industrial Estates/Industrial Parks, Wholesale Business, Storage / Godowns / Warehouses of non hazardous material incidental to Industrial use, All kinds of Automobile workshops, Automobile	Social Welfare Centers, Swimming Pools, Day care and Creche, Hostels and Boarding Houses, All Educational Institutions, Government Offices and Recreations, Junk yards , Landing Places and stacking yards and	All Industries in Annexure II, Fuel filling stations , Junk Yards, Industrial Estates and Industrial Parks , Medium and Heavy Industries, Cremation	Any other uses not specified in columns (3),(4), and (5)

(1)	(2)	(3)	(4)	(5)	(6)
		Showrooms, All kinds of Service Stations, Spray Painting workshops, Saw Mills, Saw Mills with Timber yard, Fish/Meat Processing centre, Cold storage ,Ice factory , Printing Press, Water treatment Plants, Marble and Granite Storage/Cutting centers, Bakeries and confectioneries, IT / Soft / Hardware units, Stacking Yards, Weigh Bridges, Residential uses incidental to the Industrial Uses, Public or semi public uses incidental to the Industrial use ,Place of worship, Public utility areas and buildings, Tot lots, Parks and Play grounds attached to incidental Residential use , Clinics (Out patients),Parking Plaza, Transport Terminals ,Taxi/Jeep/ Autorikshaw stand incidental to the Industrial use, Transmission towers/ Wireless station, storage of Agriculture products and seeds **Floor area limited to 100 Sqm** Banks, ATMs, Restaurants/Canteens, Container Truck Terminals with minimum access width 12m **Floor area limited to 150 Sqm** Residential buildings , Retail shops	waste disposal plants. **Floor Area above100 Sqm and upto 300 Sqm** Professional offices, Banking and financial institutions, Canteen/ Restaurants. **Floor Area above150 Sqm and upto 300 Sqm** Retail Shops **Floor Area up to 500Sqm** Museum, Aditorium, Wedding Hall or Community Hall, Indoor/ Outdoor Game Stadium, Gymnasium and Open Air Theatre, Diagnostic Centres. **Floor Area up to 750Sqm** Hospitals and Health Establishments(IP)	ground/Crematorium, Burial ground/ Common Vault, Slaughter house, Gas Godowns, Storage of Explosives and Fireworks, Dumping yards, Sewage Treatment plants, Smoke house.	
7	Disaster prone zone	Residential buildings not exceeding two floors from surrounding ground level at any point, Commercial buildings not exceeding two floors from surrounding ground level at any point, Incidental public utility buildings of	Hostels and Boarding Houses not exceeding two floors from ground level at any point, Automobile show room (height restricted to 7m), Small automobile workshops	Community halls, Printing Press, Public utility areas and buildings essentially serving the need of	Any other uses not specified in columns (3),(4), and (5)



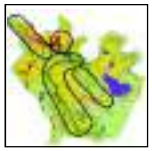
(1)	(2)	(3)	(4)	(5)	(6)
		floor area upto 100sqm, Small service industries of non nuisance nature (see Annexure I) engaging not more than 3 workers with power limited to 5 HP or 6 workers without power.	for 2/3 wheelers up to 200Sqm of floor area, Parking Plaza, Industries of all nature	the local community all not exceeding two floors from surrounding gorund level and/ or 7m in height	
8	Agriculture				
	Dry Agriculture Zone	All Agricultural/ Plantation activities, Transmission towers/ Wireless station, Tot lots , Parks ,Fair Ground, Play ground, Smoke house, Zoological and Botanical Gardens, Bird Sanctuary, Camping site, Seed Farm, Pump House, Wells and Irrigation Ponds, Garden land, Brick kiln, Dhobikhana , Police Post / Station, Fire Post/ Fire station, Water treatment plants below 10 MLD **Floor area upto 100Sqm** Retail shops, ATMs ,Restaurants/ Canteens, Cyber café,Non nuisance type of Industries (see AnnexureI) **Floor area upto 300Sqm** Residential buildings.	Day care and Crèche, Nursery, Kindergarten, Primary School, Fire Station, Telephone Exchange, Radio and Television Station, Clinics, auto rikshaw/ taxi/ jeep stand, Industries of non nuisance nature (see Annexure I) with power limited to 50HP and workers limited to 50 or 100 workers without power.	Residential buildings with floor area above 300Sqm, Fuel Filling Stations, Gymnasium/Yoga centre, Auditorium, Wedding or Community halls, Indoor/Outdoor Game Stadium, Convention centres, Swimming pools, Parking Plazas, Junkyards, Cremation Grounds, Crematorium, Burial Ground, Common Vault, Slaughter Houses, Storage of Explosives and Fireworks, Gas Godown, Saw mills	Any other uses not specified in columns (3),(4), and (5)

(1)	(2)	(3)	(4)	(5)	(6)
				with Timber yards, Fish or Meat processing centre, Dumping yards, Sewage treatment plants, Bus terminal, Lorry stand(min 12 m access width), Water treatment plant 10 MLD, Automobile Workshops for 2-3 wheelers, Secondary & Higher Secondary Education buildings, Industries of nuisance nature as listed in Annexure II(if the area is not densely populated and no higher educational institution is in existence with in 250m from the plot boundary) and Higher Educational Institutions (if no industry of nuisance nature as listed in Annexure II is in existance with in 250m from the plot boundary), Industries of non nuisance nature (see Annexure I) with power more than 50HP and workers more than 50 or more than 100 workers without power	



(1)	(2)	(3)	(4)	(5)	(6)
b)	Wet Agriculture Zone	Paddy fields, Gardens, Pastures and Grazing grounds, Fodder Cultivation, Brick kilns, Dhobikhana and removal of Clay or Gravel upto a depth of 1m below the level of land surrounding the Agriculture area, Agriculture, Horticulture, Fish Farm, Seed Farm, Pump House, Wells and Irrigation Ponds, Storage of Agricultural Produces and Seeds, Green Houses and Plant Nursery.	Tot lots and playground, Transmission towers and wireless stations, Water treatment plants below 10 MLD, Residences up to 150 sq m following recommendations of the committee as specified in the guidelines		Any other uses not specifiding colums (3), (4) and (5)
9	Transport and communication	All uses connected with traffic such as Road and Rail Transportation Routes, Bus terminals, Railway stations, Vehicle parking areas, Water landings, Repair and service centers attached to the terminals, Container Terminals (Minimum access width required 12m) ,Weigh Bridges, Tot Lots, Traffic Park, Parks ,Lorry Stand,Taxi/Jeep/ Autoriksha Stand, Transmission towers/ wireless stations, Parking Plaza	Cyber café Police Post/ Station, Fire post/ Station,Post and Telegraph office, Telephone Exchange, Electric substation, Clinics (OP), play ground	Any use incidental to main uses such as Retail Shops/Restaurants/ canteens, ATMs , Residential Buildings, Night shelters, Guest houses, Lodges, Offices, Public Utility Areas and Buildings and parks which form an integral part of the Transportation Use Proposed, Fuel Filling Stations	Any other uses not specified in columns (3),(4), and (5)
10	Hazardous	Cremation Grounds, Burial Grounds and Related constructions , Sewage Treatment Plants, Manure Storage, Garbage Dumping, Junk yards, Slaughter Houses, and all types of	Police and Fire post/stations	Residences and Public and semi Public Offices incidental to the main uses upto	Any other uses not specified in columns (3),(4), and (5)

(1)	(2)	(3)	(4)	(5)	(6)
		Obnoxious and Nuisance Industries as per Annexure II, Incidental Storage and Warehousing, Transmission towers/ wireless station.		100Sqm of floor area, Storage of Explosives and Fire Works, and Gas Godowns, Saw Mills with Timber Yard, Spray Painting Workshops	
11	Environmentally sensitive area	Residential buildings, Water Treatment plant of any capacity, Parks and Play Grounds, Tot lots, Small Service Industries of non nuisance nature(see annexure I) engaging not more than 10 workers with power limited to 10HP or 20 workers without power. **Floor area upto 100Sqm** Electric Substations, ATMs, Gymnasium/Yoga centers, Clinics (out patient), Social Welfare Centre, Cyber café, Incidental public utility buildings **Floor area upto 200Sqm** Restaurants, Single storied Commercial building, Clubs, Library and Reading Room, Banking and Financial Institutions	Special residential buildings,Ashram Mutt, Day care centres and creches, Nursery / Kinder Garten/ Primary School(all single storey), Parking plazas Swimming Pool, Taxi/Jeep/ Autorikshaw Stand.	Fuel filling stations	Any other uses not specified in columns (3),(4), and (5)



1.2.0. Special zones' Development Guidelines

Four special zones need detailed guidelines.

1.2.1. Special policy area at Kottapadi

This is the area earmarked for development of city centre at Kottappadi under a Land Pooling Scheme. Detailed Land Pooling scheme shall be prepared after stake holder meetings. The scheme shall essentially include recreational open space/water body, roads as required, whole sale market, bus stand and planned commercial development. The area earmarked for planned commercial development shall be distributed among the participating land owners. The detailed land pooling scheme shall be prepared by the council with the technical assistance of the district office of the Town and Country Planning Department and the scheme approved by the council shall be submitted to the government through the Chief Town Planner. The scheme in addition to the land subdivisions and usage shall also contain development regulation for the various land uses included in the scheme.

In the absence of consensus among the land owners in the area, in part or full the land use shall be deemed to be reverted back to the existing land use that is wet agriculture in part or full.

1.2.2. Buffer area in Kottakkunnu

A distance of 200 meter from the boundary of Kottakkunnu park shall be treated as buffer area of Kottakkunnu. Any development in this buffer area shall be permitted which is compatible with the zoning regulation with the condition that the highest point of any structure erected, temporary or permanent shall not be higher than the ground elevation of Kottakkunnu at the nearest boundary of Kottakkunnu area.

1.2.3. Mixed Residential and Commercial Use in between NH and Valiyathodu

The narrow stretch left after widening of national highway and valiyathodu is zoned for mixed residential and commercial use. Subject to the condition that the land owners sharing boundary with the valiathodu shall surrender land required for widening of the valiyathodu to 20 M and construct the side protection walls along the new boundary at their cost as a pre-condition for issuing building/development permit. In the absence of such surrender of land and construction of side protection works, the parcel of land under consideration shall be deemed to be under wet agriculture zone.

1.2.4. Buffer area around solid waste Treatment Plant

A distance of 100 Meter from the premises of solid waste treatment plant for the purpose shall be a buffer area in which no residential building development shall be permitted.

1.2.5. Special zone for INKELCITY

This is the area earmarked for the INKELCITY project in the land transfered by the Government of Kerala to INKEL (as per GO(P)No.133/2011/1D, dated, Thiruvananthapuram, 23.5.2011) for setting up of an integrated township where industry, education, health and commercial developments are to come up. Components of the Educity project as per the DPR of INKEL as amended from time to time subject to the provisions

of the Kerala Municipality Building Rules 1999 and the subsequent amendments there on shall be permitted in this area.

1.3.0 General guidelines

(i) Expansion of existing public educational and health institutions to adjacent plots shall be permissible without any regard to the land use in which such adjacent plot is zoned and the development regulation imposed by such zoning, except in wet agriculture, disaster prone and environmentally sensitive zones.

(ii) Coverage and FAR of all constructions under Restricted uses for which concurrence is granted in Residential zone, wet or dry agricultural Zones shall not exceed 75 % of the coverage and Floor area Ratio values prescribed in the Kerala Municipality Building Rules, 1999. The provisions for additional Floor Are Ratio with fee as prescribed in Kerala Municipality Building Rules, 1999 will not be applicable for the construction under restricted uses.

(iii) Regulation of construction on the sides of new roads/roads proposed for widening as per the scheme shall be governed by the distance from the centerline of the road, unless otherwise specified in the General Town Planning Schemes or Detailed Town Planning Schemes or any detailed road alignments approved by the Chief Town Planner.

(iv) Regarding the assessment of permissibility of uses classified under the category 'Restricted uses', the chief Town Planner may issue general guidelines from time to time and such guidelines shall be adhered to by the responsible authorities.

(v) Large scale development proposals in area not less than 2 ha, exceeding an investment of Rs. 50 Crores, which provide direct employment (after commissioning) of not less than 500 may be permitted in zones other than wet agriculture, disaster prone and environmentally sensitive area, subject to the recommendation of committee to be constituted by the Government for this purpose, under the Chairmanship of the Secretary, LSG Department, consisting of the Chief Town Planner, State Town and Country Planning Department, the Town Planner, District Office of the Kerala StateTown and Country Planning Department being the convener and the Secretary of the local body concerned and satisfying the following conditions;

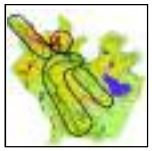
(a) The developer shall produce project-cum-feasibility report and Environmental Impact Assessment Report, if required, of the Project to the convener of the Committee, 15 days in advance of the committee meeting.

(b) The developer shall produce before the committee all required clearances form the State and Central Government agencies concerned.

(c) Adequate provision shall be made for supporting infrastructure such as water supply, sewerage, solid waste management etc. Separate sewage treatment plant and solid waste management measures shall be provided and maintained by the developer at own cost.Adequate Memorandum of Understanding between the developer and the Secretary of the local body concerned shall be undertaken to bring this into effect.

(d) Maximum Floor Area Ratio shall be 2 and Minimum Access Width shall be 12 meter.

(e) The project shall be completed within a period of 3 Years, if not specified otherwise.



(vi) In areas zoned for wet agriculture and other agricultural green space, applications for concurrence of single family residential buildings, shall be considered by the District Town Planner after considering the recommendations of the committee consisting of the following members namely :-

(1) Chairman, Malappuram Municipality;
(2) Secretary, Malappuram Municipality;
(3) Agricultural Officer concerned;
(4) Village Officer concerned.

The Secretary, Malappuram Municipality shall be Convener of the Committee.

The Committee shall consider the following aspects while recommending the applications,-

(a) The application shall be for single family residential buildings uptoa total floor area of 100 sqm.

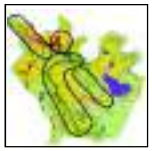
(b) The application shall be considered in accordance with the Kerala Conservation of Paddy land and wetland Act, 2008 (Act 28 of 2008).

(vii) Land to a depth of 50 meters in Residential Zone and 100 meters in Commercial, Public and Semi public and Industrial Zones along the sides of roads having an existing width of 12 meters or more uses permitted in Residential, Commercial and Public and Semi Public Zones may also be permitted by the Secretary of the Local Self Government if such uses are not allowable otherwise in the Zoning Regulations.

ANNEXURE I

TYPE OF NON-OBNOXIOUS AND NON-NUISANCE TYPE OF SERVICE OR LIGHT INDUSTRIES PERMISSIBLE IN RESIDENTIAL ZONES.

1. Production of copra
2. Processing of arecanut
3. Rice and Flour Mills.
4. Production of rice, flour etc., by hand pounding.
5. Processing of Cardamom, ginger, pepper etc.
6. Production of Khandasari for sugar-cane
7. Carrying and preservation of fruits and production of jam, jelly etc.
8. Processing of and preservation of cashew nuts.
9. Bakeries.
10. Production of Dairy Products.
11. Oil mills (vegetables)
12. Extraction of oil by ghani.
13. Manufacture of hydrogenated oil.
14. Manufacture of “aval” (Beaten rice), Pappad.
15. Production of vinegar.
16. Manufacture of soda water, lemonade, mineral water etc.
17. Manufacture of Ice.
18. Manufacture of ice cream.
19. Processing, packing and distribution of tea.
20. Processing, grinding, packing and distribution of coffee.
21. Manufacture of syrup.
22. Manufacture of beedi.
23. Manufacture of Cigar.
24. Manufacture of tobacco snuff.
25. Manufacture of chewing tobacco.
26. Cotton ginning, clearing, pressing etc.
27. Cotton spinning other than in Mills
28. Cotton spinning and weaving in Mills.
29. Cotton weaving in handloom.
30. Cotton weaving in power looms.
31. Handloom weaving.
32. Khadi Weaving in Handloom.
33. Printing of cotton textiles.
34. Manufacture of Cotton thread, rope twine etc.
35. Jute spinning.
36. Manufacture of jute products including repairing of gunny bags.
37. Weaving of silk by Handloom.
38. Manufacture of hosiery goods.
39. Making of embroidery products
40. Tailoring
41. Manufacture of quilts and mattresses.
42. Manufacture of Coir and Coir Products.
43. Manufacture and assembling of umbrellas and production of spare parts of umbrellas.
44. Repairing of umbrellas.
45. Manufacture of wooden furniture and fixtures.
46. Manufacture of structural wooden goods such as doors, beams etc.
47. Manufacture of wooden industrial goods such as parts of handloom ambarcharka, bobbirs etc.
48. Manufacture of wooden utensils, choto frames, toys, etc., and photo framing.
49. Cane industry including baskets, weaving etc.
50. Manufacture of miscellaneous wooden articles such as sticks, sandals, rules etc.
51. Manufacture of paperboard.



52. Making of paper boxes, bags, envelopes etc.
53. Printing and publishing of newspapers and periodicals.
54. Printing and publishing of books.
55. Miscellaneous printing works including type cutting, book binding.
56. Manufacture and repairing of leather shoes and chappals.
57. Manufacture of leather products such as suitcase, bag etc.
58. Vulcanizing and repairing of tyres and tubes.
59. Manufacture of rubber gloves.
60. Manufacture of Rubber products such as rubber sheets, nipples and rubber shoes including smoke-rubber.
61. Manufacture of pharmaceuticals, chemicals, Ayruvedic medicine etc.
62. Manufacture of agarbathi and other cosmetics.
63. Manufacture of plastic products such as nameplates etc.
64. Manufacture of lemongrass oil, candles etc.
65. Manufacture of cement products such as well-keros, tube, closets etc.
66. Manufacture of structural stone goods, stone crushing, stone carving, stone dressing, marble carving etc.
67. Manufacture of stone wares.
68. Manufacture of stone images.
69. Manufacture of chinaware's and crockery.
70. Manufacture of large containers and chinaware.
71. Manufacture of glass and glass products.
72. Manufacture of clay models
73. Manufacture of iron and steel furniture.
74. Manufacture and repairing of brass and bell metal products.
75. Manufacture of aluminum utensils and other products.
76. Manufacture of tin cars and copper vessels.
77. Electroplating, tinplating, welding etc.
78. Manufacture of agricultural implements, screws etc. (blacksmith and foundry)
79. Manufacturing assembling and repairing of machinery such as water pumps, oil mill chuck etc.
80. Manufacture of small machine tools and machine parts.
81. Manufacture of sewing machine parts and assembling and repairing of sewing machine.
82. Manufacture of electrical machinery and repairing of electric motors armature winding etc.
83. Manufacture and repairing of electric fans.
84. Charging and repairing of batteries.
85. Repairing of radios, microphones etc.
86. Manufacture of electric meters, production of electric and allied products, repairing and servicing of electrical appliances.
87. Bodybuilding of motor vehicles.
88. Manufacture and repairing of motor engine parts and accessories.
89. Servicing and repairing of motor vehicle.
90. Manufacture of cycles, parts and accessories.
91. Manufacture and repair of boats and barges.
92. Manufacture and repairing of animal drawn and hand drawn vehicles.
93. Repairing of photographic equipments, spectacles etc.
94. Manufacturing of medical instruments
95. Repairing of watches and clocks.
96. Manufacture of Jewellery.
97. Manufacture, repair and tuning of musical instruments.
98. Manufacture of sports goods, balloons etc.
99. Ivory, carving and ivory works
100. Miscellaneous industries.

ANNEXURE II
LIST OF OBNOXIOUS OR NUISANCE INDUSTRIES SUBJECT TO OBJECTIONABLE ODOURS, FUMES EFFLUENTS OR PROCESSES TO BE LOCATED IN HAZARDOUS ZONES.

I Manufacture of Food Stuff :

(1) Slaughtering, preservation of meat and fish and canning of fish.

II Manufacture of Beverages:

(2) Production of distilled spirits, wines, liquor etc., from alcoholic malt, fruits and malts in distillery and brewery.
(3) Production of country liquor and indigenous liquor such as toddy, liquor form mahua, palm juice.

III Manufacture of Textiles :

(4) Dyeing and bleaching of cotton

IV Manufacture of Wood and Wooden Products :

(5) Sawing and planning of wood.
(6) Wood seasoning and creosoting
(7) Manufacture of veneer and plywood.
(8) Paper, pulp and straw board.

V Manufacture of Leather and Leather Products :

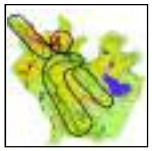
(9) Currying, tanning and finishing of hides and skims and preparation of finished leather.

VI Manufacture of rubber, petroleum and coal products:

(10) Manufacture of tyres and tubes
(11) Manufacture of Industrial and synthetic rubber.
(12) Reclamation of rubber.
(13) Production of petroleum, kerosene and other petroleum products in refineries.
(14) Production of chemicals and chemical products.

VII Manufacture of chemicals and chemical products :

(15) Manufacture of basic industrial chemicals such as acids, alkali and their salts not elsewhere specified (especially sulphurous, sulphuric, nitiric, hydrochloric etc., acids) ammonia, chorine and bleaching powder manufactures.
(16) Manufacture of dyes, paint, colours and varnishers, printing ink.
(17) Manufacture of fertilizers (Specially from organic materials)
(18) Manufacture of disinfectants and insecticides
(29) Manufacture of ammunition, explosive and fireworks.
(20) Manufacture of matches.



VIII Manufacture of Non-metallic mineral products other than petroleum and coal :

(21) Manufacture of cement and cement products
(22) Manufacture of Lime
(23) Manufacture of Plaster of Paris.

IX Manufacture of basic metals and their products :

(24) Manufacture of iron and steel including smelting, refining, rolling and conversion into basic forms.
(25) Manufacture including smelting, refining etc., of nonferrous metals and alloys in basic forms.
(26) Manufacture of Armaments.

X Manufacture of machinery (other than transport) and electrical equipments:

(27) Manufacture of all kinds of battery

XI Quarrying and stone Crusher

XII Miscellaneous items not covered above

(28) Incineration, reduction or dumping of offal, dead animals' garbage or refuse.
(29) Manufacture of gelatin and glue.
(30) Fat, tallow, grease or lard refining of manufacture.
(31) Bone meal, bone grist and bone powder.
(32) Manufacture of cashew nut shell oil.
(33) Other similar types of nuisance industries.