MASTER PLAN FOR VATAKARA TOWN-2031

PREPARED BY

VATAKARA MUNICIPALITY &

DEPARTMENT OF

TOWN AND COUNTRY PLANNING,

GOVERNMENT OF KERALA

REGIONAL TOWN PLANNING OFFICE, KOZHIKODE

FOREWORD

Vatakara has been treated as a trade Centre since 1871 in the Malabar area. It was elevated to the status of municipal town on 1st October 1958 merging Vatakara Panchayat and the nearby villages of Puduppanam and Nadkkuthazha. The economic potential of town may depend on a number of factors like geographical location, tourism potential, and availability of economic infrastructure, regional linkages and propensities for accepting further investments. Vatakara town has seen a number of institutes in both Government and private sector and investments in various commercial ventures, which has immense potential to be a regional center.

The master plan for Vatakara emphasize on the needs of the people, people`s aspiration, economic realities, etc. Vatakara town needs an integrated approach to development issues in infrastructure, environmental, heritage conservation and in various social and service sectors. The Town and country planning department of the State has come forward for the preparation of comprehensive master plan taking the ground realities in to consideration. I appreciate the efforts put in by Working Groups and Spatial Integration Committee, consists of Municipal Councilors and Experts in different fields, for the preparation of the plan in the form of input data and suggestions. The sincere efforts of Smt. P P Ranjini, Ex.Chairperson, in materializing master plan in the present form need special mention. I am indebted to the officials of Town and Country Planning Department who has prepared this master plan through a process of people`s participation by understanding the aspiration and expectation of the citizens of the town, sectoral study by collecting necessary data and preparation of plan using modern techniques like GIS.

I hope this master plan shall be the datum for the development of Vatakara for years to come.

Vatakara

Date:

VATAKARA MUNICIPALITY
Date.....
VATAKARA

Sreedharan K

Chairman, Vatakara Municipality.

PREFACE

Urbanization trend in the state of Kerala shows marked peculiarities. The main reason for the urban population growth is the increase in the number of urban areas and also urbanization of the peripheral areas of the existing major urban centers. The present practice of annual planning based on the budgetary provisions envisioning only short period implementation, is inadequate and will hamper the comprehensive mass scale development of town. Therefore an integrated and coordinative planning strategy based on comprehensive master plan, effectively reflecting the social, cultural and a heritage factor of every town, is required.

The 74th constitutional amendment and subsequent state legislation have put forward a paradigm shift in the master planning process. The focus has shifted from physical planning to spatial planning for economic development. 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 allocation and engineering solutions. It must encompass and connect various Socio-Technical considerations too." Master plan for Vatakara Municipality-2031 is the third master plan for Vatakara Municipality prepared as per the order G.O (RT). No.3982/2008/LSGD dated 13/11/2008 under the scheme of preparation of Master plan for 32 municipalities.

I take this opportunity to appreciate the officials of the Regional Town Planning Office, Kozhikode, under the remarkable leadership of Sri.C.J.Poulose (Rtd), Sri.G.Sasikumar (Rtd) and Sri.K.V.Abdul Malik, Smt.Isha P.A. Town Planners, Kozhikode. I also appreciate Sri. T. K. Girish Kumar Town Planner as well as Sri. Rijesh N M, Dr.Athira Ravi, Smt Leelitty Thomas, Deputy Town Planners for the sincere efforts put in for the preparation of this Master plan.

The State Project Cell played an anchor role in this plan preparation, right from conceptualization to completion and I place on record my appreciation for Sri Eapen Varughese, Shaji Joseph Chief Town planners (Rtd), Sri.Jacob Easow, Sri.Devarajan K, Smt. Darley D.S. Mony Additional Chief Town Planners (Rtd), Smt.Ushakumari P.R, Sri J Jayakumar Senior Town Planner, Smt.Asha Ajoy Ghosh and Sri.Baiju K, Town Planners and other officials of the State Project Cell, for the efforts in vetting and finalizing the master plan. Indeed, the Master plan for Vatakara Municipality will provide a framework for future development of the town.

OFFICE OF THE CHIEF TOWN PLANNER * THIRUVANANTHAPURAM *

Gigi George

Chief Town planner (Planning)

Thiruvananthapuram,

Date:

ACKNOWLEDGEMENT

The existing master plan for Vatakara Municipality, which is sanctioned via G.O. (RT) No.564/99/LAD dated 17/02/1999 prepared for addressing the developments during 1991 to 2011. The revision of master plan for Vatakara Municipality was taken up by the end of the year 2009, following the direction of the government and felt need of the Municipality. A methodology was evolved for the preparation of master plans at the state level and the same was adopted with suitable modifications at the town level. The master plan for Vatakara once sanctioned shall give directions to the development process in the Municipality for future years.

The data required for planning process were collected from different government departments and it is gratefully acknowledged their readiness to share the data. The collection of data and analysis would not have been possible without the active involvement of spatial integration committee under the chairmanship of Sri K Sreedharan, Municipal Chairman, Sri.T.P.Chandran and Smt.P.P.Ranjini, the Ex Municipal Chairpersons. The contributions made by Sri.M.Sajith Kumar as resource person in the spatial integration committee is also gratefully acknowledged.

The inimitable leadership provided by Sri.Eapen Varughese, Chief Town Planner (Rtd) and Sri Shaji Joseph, Chief Town Planner (Planning)(Rtd) has been a constant source of inspiration. Smt.Darley. D. S. Mony, Additional Chief Town Planner (Rtd) and Sri P.N.Rajesh, Smt Asha Ajoy Ghosh, Town Planner gave necessary directions for the whole process. The resourcefulness of Sri.Jacob Easow, Additional Chief Town Planner (Rtd), Smt.Ushakumari P.R. Sri.J.Jaya Kumar, Senior Town Planner and Sri.Baiju K., Town Planner gave constant guidance throughout the project. The other staff members of the state project cell and office of the chief town planner have been highly helpful in giving various inputs for the project.

Sri C.J.Poulose, Sri G. Sasikumar and Sri.K.V.Abdul Malik contributed to the work as District Town Planners during the currency of this project. The assistance offered by the Sri.T.K.Girish Kumar, Town Planner, Sri. Rijesh N M, Dr.Athira Ravi, Smt Leelitty Thomas, Deputy Town Planners, Sri. P.Girish Kumar, Sri P.Muhammed, Smt Preeja Padmanabhan and Sri.P.M.Rajeev, Assistant Town Planners are remarkable. The efforts put by Sri Sharin T.P and Kum.Sruthi C.S Planning assistants, Smt Sheeja Thayyil, Smt Shiji E.P and Smt Anusha T.O, Town Planning Surveyors, Sri Sreejith Koroth, Sri Anish Kumar T.P. chainmans and statistical wing of this office for the collection of data and preparation of maps needs special mention. All the staff members of the Regional Town & Country Planning Office, Kozhikode 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.

Isha P.A.

Town Planner

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PART I:

STUDY AND ANALYSIS

1 INTRODUCTION

Vatakara Municipality was constituted in 1958. The first master plan for Vatakara was prepared in 1976 and was sanctioned by the Government vide G.O.(ms) No. 288/84/LA & SD dt. 12.11.1984. The plan was prepared for a period of 15 years from 1976 and the proposals were mainly for a projected population of 89000 by 1991. This master plan was revised aiming the balanced and integrated urban development to take care of present and future needs up to the year 2011. The present master plan was sanctioned via G.O.(RT) No.564/99/LAD dated 17/02/1999. The delineated planning area of old master plan was 22.5034 sq. km. The Projected population of Vatakara planning area in 2011 was 105000.

The main objectives of this plan are the promotion of sound economic development and employment stability in secondary and tertiary sectors, mobilization of available resources, industrialization and commercial development, distribution of population, establishment of functional circulation system for access and uninterrupted traffic flow, allocation of urban land for various uses after securing functional compatibility among them and the provision of infrastructure facilities of adequate quality and quantity at minimum cost and maximum utility.

The master plan is a package of development projects both remunerative and non-remunerative, to be undertaken by various development agencies in short and long term phases, for the fulfillment of plan objectives and for the guided growth of Vatakara town.

A series of priority oriented short term programs in the form of Detailed Town Planning Schemes within the frame work of master plan giving detailed proposals for part of the Urban area for 5 to 10 years to be prepared before under taking physical development. Regular reviews of plan performance and consequent modifications to suit changing socio-economic trends encountered during implementation have also to be made.

2 NEED FOR THE PLAN

The first master plan for Vatakara was prepared in 1976 and was sanctioned by the Government vide G.O.(ms) No. 288/84/LA & SD dt. 12.11.1984. The master plan was revised aiming the balanced and integrated urban development to take care of present and future needs up to the year 2011. Now the projected period is over and this is the prime reason for revision of master plan

The Projected population for the Master Plan 2011 was 105000. But the actual population as per 2001 is only 75847. The growth rate came down drastically from 12.81% to 4.71%. The numbers of vehicles have increased many folds. Transport network has become congested. Working classes engaged in traditional productive sectors are withdrawing continuously. The economic basis of the Municipality is to be redefined. Further the developmental perspective of Vatakara could not be viewed from the requirement of Municipality alone. Vatakara being the Taluk headquarters has to perform the function as a service provider for the nearby local bodies which are distantly located and undeveloped, lacking infrastructural facilities. The land use zoning and regulations are to be framed as development friendly, so that the city could develop as its own and act as service provider at the same time conserving the environmentally sensitive regions within the city.

3 METHODOLOGY

The aim of new master plan is visualization of future of the Municipality using new sophisticated methods, which will control the land use in a scientific manner. The methodology consists of five steps.

3.1 Data Collection

This can be done in three stages, Primary, secondary and tertiary data collection. Primary data collection consists of land use survey, socio economic survey and transportation survey. Secondary data collection is the collection of information from secondary sources such as line departments. Tertiary sources are newspapers, books, earlier studies, 'vikhasana rekhas' of Municipality, etc.

3.2 Study and analysis

The analysis part consists of two stages, local level analysis and spatial analysis. Local level analysis is done by collecting people's aspirations and by studying the problems and potentials in every sector by working groups/spatial integration committee. Spatial analysis is done by studying the regional setting of the area, land use and population characteristics. These analysis leads to identification of problems and potentials of the study area.

3.3 Preparation of development concept.

Development Concept was derived from three stages, viz identification of development aims and objectives, identification of development goals and then the formulation of development policies and strategies.

3.4 Development of sectoral proposals

Based on development policies, the future prospects of each sectors can be identified. Once the future needs of Municipality are identified, the proposals for each sectors are developed.

3.5 Legalization

The final stage of master plan preparation is its legalization. In this phase, the plan will be legalized based on Town Planning Act and Rules. The Gazette publication of Master plan shall be done in this stage.

4 EARLIER PLANNING EFFORTS AND STUDIES

Vatakara Municipality was constituted in 1958. In 1976, the first master plan for Vatakara was prepared and was sanctioned by the Government vide G.O.(ms) No. 288/84/LA & SD dt. 12.11.1984. The projected plan period was 15 years from 1976 and the proposals were mainly for a projected population of 89000 by 1991.

The delineated planning area of second master plan comprised of entire Municipality area 21.31 sq. km; 1.09 sq. km of Chorode Panchayat and 0.0934 sq. km of Villiappalli Panchayat. The Projected population of Vatakara planning area in 2011 as per the existing master plan was 105000. The map of the existing master plan is shown in Figure 4.1



Fig4.1 : Sanctioned Vatakara Master plan map

Revised Development Plan for Vatakara Town- sanctioned as per G.O. (Rt) No.564/99/LAD dated 17/02/99.

The main objectives of this plan are the promotion of sound economic development and employment stability in secondary and tertiary sectors, mobilization of available resources, industrialization and commercial development, distribution of population, establishment of functional circulation system for access and uninterrupted traffic flow, allocation of urban land for various uses after securing functional compatibility among them and the provision of infrastructure facilities of adequate quality and quantity at minimum cost and maximum utility.

5 PROFILE OF THE TOWN

5.1 Location

Vatakara Municipality is located 48km North of Kozhikode city. The Municipality is bounded in the North by Chorode Grama Panchayat, East by Villiappalli and Maniyoor Grama Panchayats, South by Payyoli Grama Panchayat and West by Arabian Sea. Nearby towns of Vatakara are Thalassery – 25Km North and Koyilandy - 25 km South.

5.2 Area and Population

Vatakara has been treated as a trade centre since 1871 in Malabar area. It was elevated to the status of municipal town on 1st October 1958 merging Vatakara Panchayat and the nearby villages of Puduppanam and Nadkkuthazha.

Area of Vatakara Municipality is 21.31 Sq Km. Municipality is now divided into 44 election wards. The population of the municipal area as per 2011 census is 75295.

Table 5.1 Population of Municipality

Year	Population
1901	11319 (Vatakara Panchayat)
1911	11149 (Vatakara Panchayat)
1921	9804 (Vatakara Panchayat)
1931	11259 (Vatakara Panchayat)
1941	17924 (Vatakara Panchayat)
1951	20964 (Vatakara Panchayat)
1961	43908 (Vatakara Municipality, Merged Vatakara Panchayat and Puduppanam and Nadkkuthazha villages in 1958)
1971	53938 (Vatakara Municipality)
1981	64174 (Vatakara Municipality)
1991	72434 (Vatakara Municipality)
2001	75847 (Vatakara Municipality)
2011	75295 (Vatakara Municipality)

5.3 Climate

Vatakara Municipality falls within the tropical to sub- tropical climatic region and dominant feature is the monsoon. Maximum variation in relief from west coast to the hilly regions of the Western Ghats in the east, and proximity to the sea, influence the parameters. The Municipality comes under one of the Agro- climatic zones of the Kerala.

The maximum temperature in the region varies almost between 27.8^{0}C to 34.2^{0}C and minimum temperature ranges from 21.9^{0}C to 26.8^{0}C. The monthly variation in temperature is minimum during winter season (November, December and January) and maximum during spring season (February and March).

The average annual rain fall in the District is about 3000mm. The southwest monsoon sets in the first week of June and ends in mid- August contributing about 60% of the annual rainfall, northeast monsoon (September to December) contributes to about 25% of the annual rainfall. The period between December and May is practically dry.

In most of the time the percentage of humidity is very high especially in coastal regions and it varies between 88.6% in July to August and 74% in April.

5.4 Physiography

Based on altitude, land could be classified into three; low land, mid land and high land.

Low land Land lying between 0 to 7.5m from MSL is treated as low land. The low land is the coastal land of Vatakara, which is characterized by dense inhabitation with prime agriculture as Coconut.

Mid land Land lying between 7.5m to 75m from MSL is treated as midland. Majority of the land area in Vatakara is midland. The average elevation of Vatakara Municipality is 15m and soil is predominantly lateritic in nature. In the mid land area, in addition to Coconut, Banana, Arecanut, Pepper, Vegetables and paddy are cultivated.

High land there is no high land region in Vatakara.

6 HISTORY / EVOLUTION AND GROWTH

Vatakara was under the regime of Kolathiri. Later on Tippu Sulthan captured Vatakara. In 1790 British conquered Tippu and the land was handed over to the Kadathanad Raja.

Vatakara is the birth place of Thacholi Othenan, the hero of the ballads of North Malabar. Thacholi tharavadu is in Nadakku Thazha desam near Meppayil in Vatakara.

Vatakara had played significant role in the National movement of the freedom struggle for our nation. Vatakara was the headquarters of the Kurumpanad Taluk which contributed much in awakening and inculcating patriotism. The decision of **Guruvayoor Sathyagraha** and **Payyannur Uppu sathyagraha**, which invited attention nationally, was taken in the gathering of Congress held at Vatakara. Sri. Moyyarath Sankaran was instrumental in publishing **'Kerala Kesari'** daily. Vatakara was venue for various labour movements.

Vagbhadanatha's Athmavidya Sangham and Sree Narayanaguru's Dharmaparipalana Sangham energized the social reforms movement in Vatakara. The 'Siddhasrama' which is established by Swami Sivananda Paramahamsan with a view of eradicating caste system and social untouchability is also functioning in Municipality.

6.1 Cultural background

Vatakara is native place of famous folk songs known as Vadakkan pattukal. The most popular folk songs are those which celebrates the exploits of Thacholi Mepayil Kunju Othenan's "the Robin hood of North Malabar". The Original Tacholi ballad describing one of Othenan's exploits has been extremely popular and several ballads have since been composed in the same style describing the deeds of other heroes.

Vatakara was famous for Kalaripayattu and this flourished in the 16th century. Kalarippayattu is one of the advanced combat sciences of India. This martial art has produced great heroes whose incredible deeds of valor were are celebrated in legends and folk songs. Though Kalarippayattu was once a comprehensive combat system, today it is valued mainly from the stand point of physical culture.



Kalaripayattu

There is a historical fort, now in ruins in the heart of the town. History says that the fort was acquired from Kolathiri by Kadathanad family in 1564AD. The Mysoreans established a monopoly of all goods exports from Malabar and converted the fort into their warehouse. A desperate attempt was made by them to establish their foothold here, but after the fall of Fort. St. Angelo at Cannanore in 1790, Mysoreans were driven out of Vatakara with heavy loss of men and ammunition. The advent of the British restored the fort and given to Kadathanad Raja. The Raja converted it into a Brahmin feeding house and later transferred it to historical temple of Paravantals.

In 1934 Gandhiji visited Vatakara, when the daughter of Kadathanad Raja- Koumudi presented her ornaments to Gandhiji, and the incident is remembered as supreme sacrifice. It is believed that literary poet Cherussery, who is the author of Krishnagatha was born in Vatakara. All these depict the rich historic and cultural heritage of Vatakara.

7 BIODIVERSITY

Coconut is the main crops in Vatakara. In addition to this Arecanut, Jack fruit, Mango, Rubber, Paddy, etc. is also seen. Small area of mangrove forest is there near to railway station. Few 'kavus' mostly associated with temple are also present. There is no reserve forest area in Vatakara. But as a part of social forestry program casuarinas are planted along beach side.

8 REGIONAL SETTING AND DISTRICT URBANISATION REPORT

The process of urbanization can be assessed in relation to urban population content. In Kerala urban population content had been increasing from 7.1% in 1901 to 26.40% in 1991. A slight decline in this proportion to 25.97% is seen in 2001 census. Among the District the percentage of urbanisation has varied from 3.8% in Wayanad to 50.40% in Kannur. Ernakulam District follows Kannur with 47.6% of urban population. In six Districts, ie Kannur, Ernakulam , Kozhikode, Thiruvananthapuram, Alappuzha and Thrissur the percentage of urban population is higher than the State average. In three Districts viz. Wayanad, Malappuram and Idukki the urban population is 10% or less.

In Kerala context, the development of tertiary sector is the main cause of urbanisation, it is not the outcome of accelerated industrialization as seen in other states like Tamilnadu, Maharashtra, Andra Pradesh and Karnataka. Kannur District with an urban population of 50.4% ranked first in urban content but 11th in per capita income, this may be due to prevalence of low income generating small- scale industries. Ernakulam District with an urban content of 47% is ranking second in urban content and first in per capita income. This is due to the commercial importance of port induced service sector development. Idukki District though ranks 13th in urban content is second in per capita income, due to production specialization in plantation crops.

8.1 Spatial structure of the District

Spatial structure of the Kozhikode District is identified in the District Urbanization Report published by Town and Country Planning Department. The spatial structure of the District is derived by overlaying the map of activity pattern, hierarchy of settlements and connectivity. Taking into account the future prospects, the existing spatial structure is modified. Expected spatial structure of the District for the year 2021 is shown in Figure 8.1

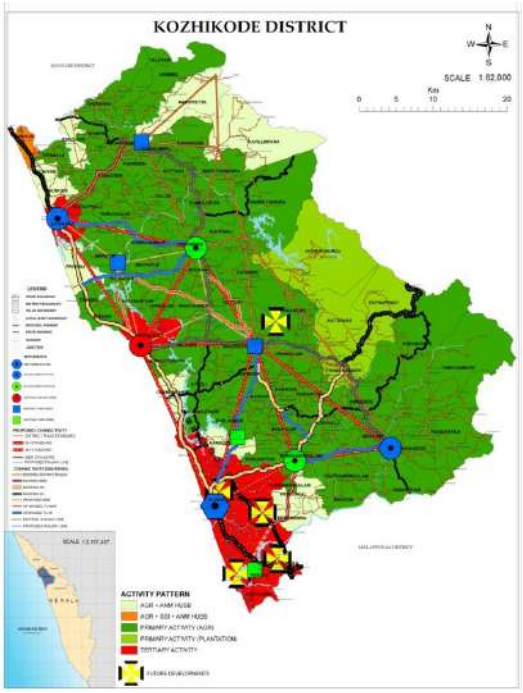


Fig8.1: Expected Spatial Structure of Kozhikode District

8.2 Activity pattern of the town

Integrating the urban profile, land use concentration index and functional character, the activity pattern derived for Kozhikode District is represented in Figure 8.2.



Fig8.2:Activity pattern of Kozhikode

From the Figure, it can be seen that, tertiary activity is concentrated in Vatakara Municipality area.

8.3 Functional Character of the town

In the Kerala context, a ward or a local body will be having either pucca urban area, pucca rural area or mixed (Residential cum Agricultural) use area in separate or in its combination. The functional character of an LSGI denotes the major activity within the settlement. The functional character of the local body can be pucca rural (Agriculture and allied activities), pucca urban (secondary sector and tertiary sector activities) or a combination of both (Semi Rural and Semi Urban).

The Land uses in the LSGI are categorized in to neutral, urban, rural and residential-agriculture mix. The area under each of these categories of land use, population concentration pattern, % of workers engaged in non-agricultural pursuits and the average plot size in the residential-agriculture mix zone are integrated to categorize the LSGIs in to urban, semi-urban, semi-rural and rural. The functional character of LSGIs in Kozhikode District is shown in Figure 8.3. It can be noted from the Figure that, the functional character of Vatakara Municipality is urban.



Fig8.3: Functional character of Kozhikode

8.4 Connectivity

In the District Urbanization Report, Vatakara Municipality is identified as a second order node. The regional road network of Kozhikode District is given in Figure 8.4. In that, Vatakara is treated as a main transit station with connectivity to all nearby major centers.

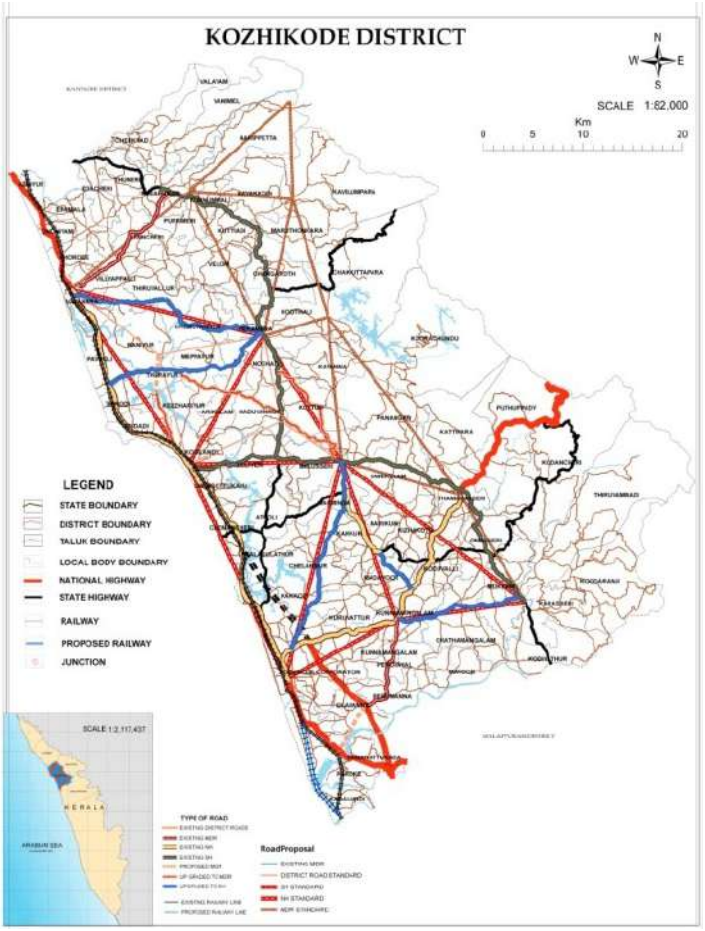


Fig8.4: Connectivity plan of Kozhikode

8.5 Inference

Vatakara Municipality is classified as urban while analyzing the functional character of the settlement in DUR. The order of settlement is second, after the first order Kozhikode Municipal Corporation. In the analysis of activity pattern of LSGs, Vatakara has got tertiary activity classification. In every analysis in DUR, Vatakara shows urban character. Moreover, it has a major role in future connectivity profile of the District. Hence it can be concluded that, Vatakara will be the future development centre in the District next to Kozhikode Corporation.

9 DEMOGRAPHY

Total population of Vatakara Municipality as per 2011 census is 75295. There are 35531 males and 39764 females in Vatakara.

9.1 Population and its growth pattern

The population of Vatakara Municipality and the rate of growth of population is shown in Figure 9.1. Rate of growth of population have shown a drastic reduction during 1991-2011. The growth rate is declining and population is stabilizing. In the percentage share of 0 to 6 age group, Vatakara exhibits higher amount of reduction, which indicates reduced rate of fertility.

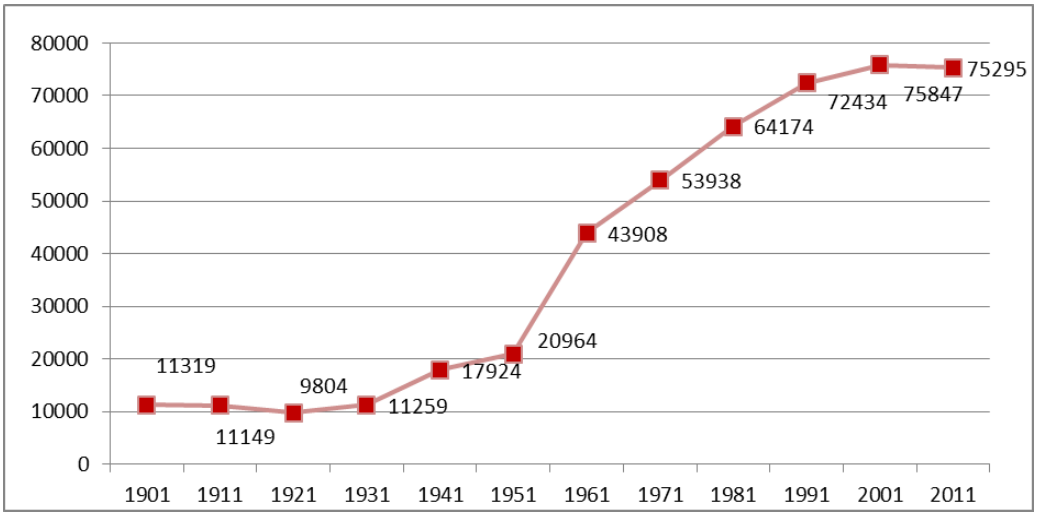


Fig9.1: Population growth of Vatakara

9.2 Spatial distribution of Population

Comparison of gross density of population of Vatakara Municipality with that of Koyilandy Municipality, rural and urban areas of the District is shown in the Table below. The gross density of population as per 2011 census is 3533 persons/sq. km. which is greater than the density of Kozhikode urban area (2195).

Table 9.1: Gross population density

Gross Density (Persons / Sq. Km)					
	1971	1981	1991	2001	2011
Vatakara Municipality	2528	3007	3396	3558	3533
Kozhikode Corporation	4040	4771	5078	5179	5120
Koyilandy Municipality	-	-	-	2375	2474
Kozhikode District	565	957	1118	1228	1317
Kozhikode Urban	2819	3821	2957	3288	2195
Kozhikode Rural	438	748	806	885	724

Also the gross population density of Vatakara Municipality is compared with adjacent local bodies. It can be seen from Figure 9.2 that Vatakara has been housing a larger population compared to the surrounding Grama Panchayats for many decades.

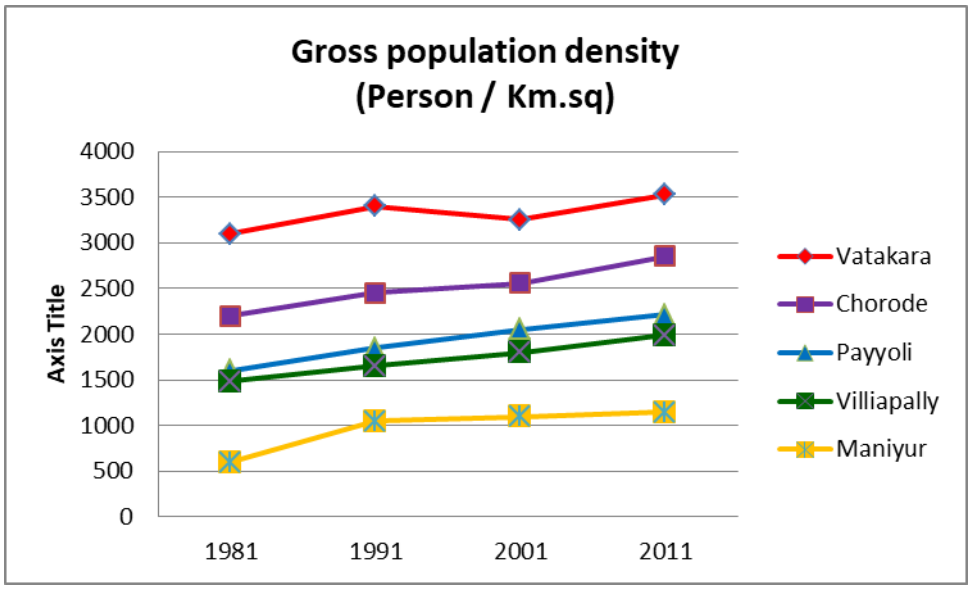


Fig9.2: Comparison of Gross population density

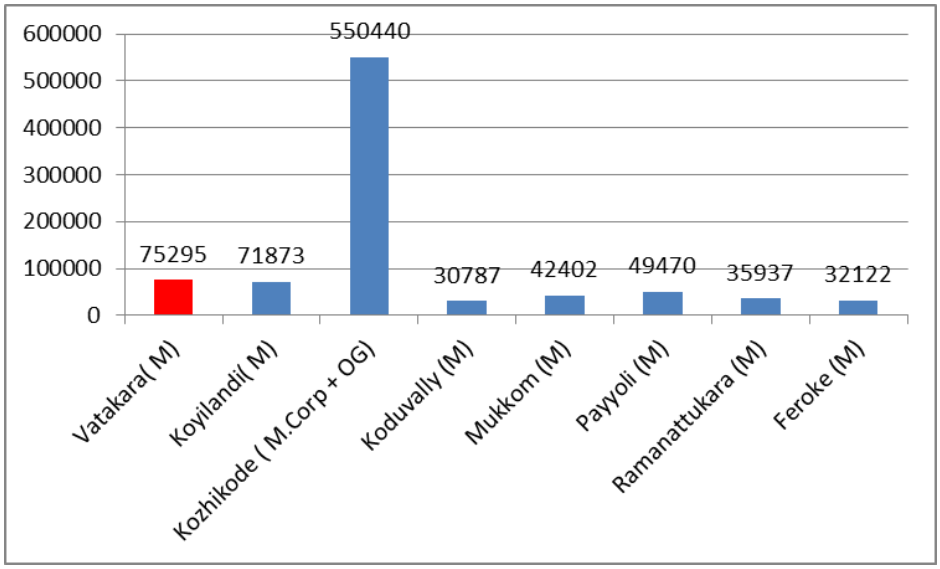


Fig9.3: Comparison of Total Population with other Towns in the District (Source: Census of India 2011)

Among the various urban local bodies the population of Kozhikode Municipal Corporation and its outgrowths is at the peak with a total population of 550440 as per Census 2011. Vatakara Municipality holds the second place with a population of 75095.

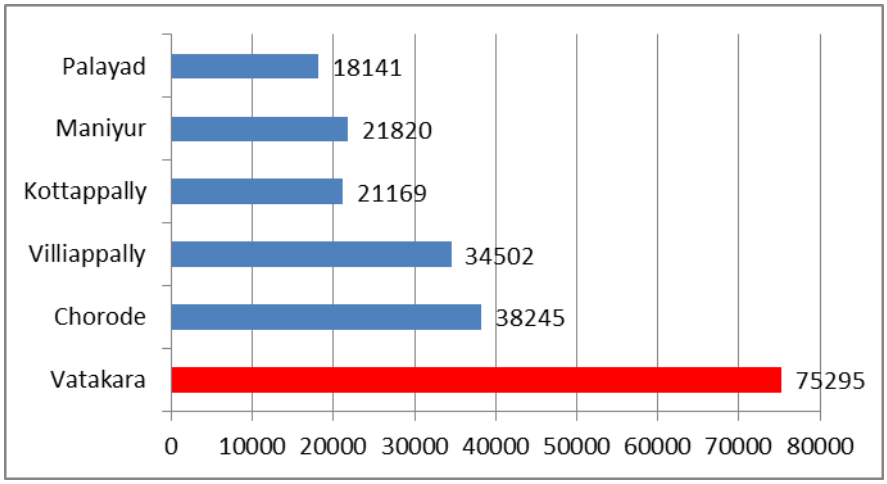


Fig9.4: Comparison of Total Population with nearby LSGs (Source: Census of India 2011)

Total population of Payyoli town is compared to the nearby LSGs in Figure 9.4. Vadakara Municipality has the highest population and Palayad with lowest at 18141.

Concentration index of ward wise net population density is shown in the Figure 9.5. Maximum density is along the coastal belt, ward 1 Kooriyadu, ward 29- Azhithala, ward 41 Valiya Valappu, ward 42 Pandikasala, ward 4 Shanthinikethan and ward 44 Mukachery. Areas with lesser density of population is scattered within the Municipality.

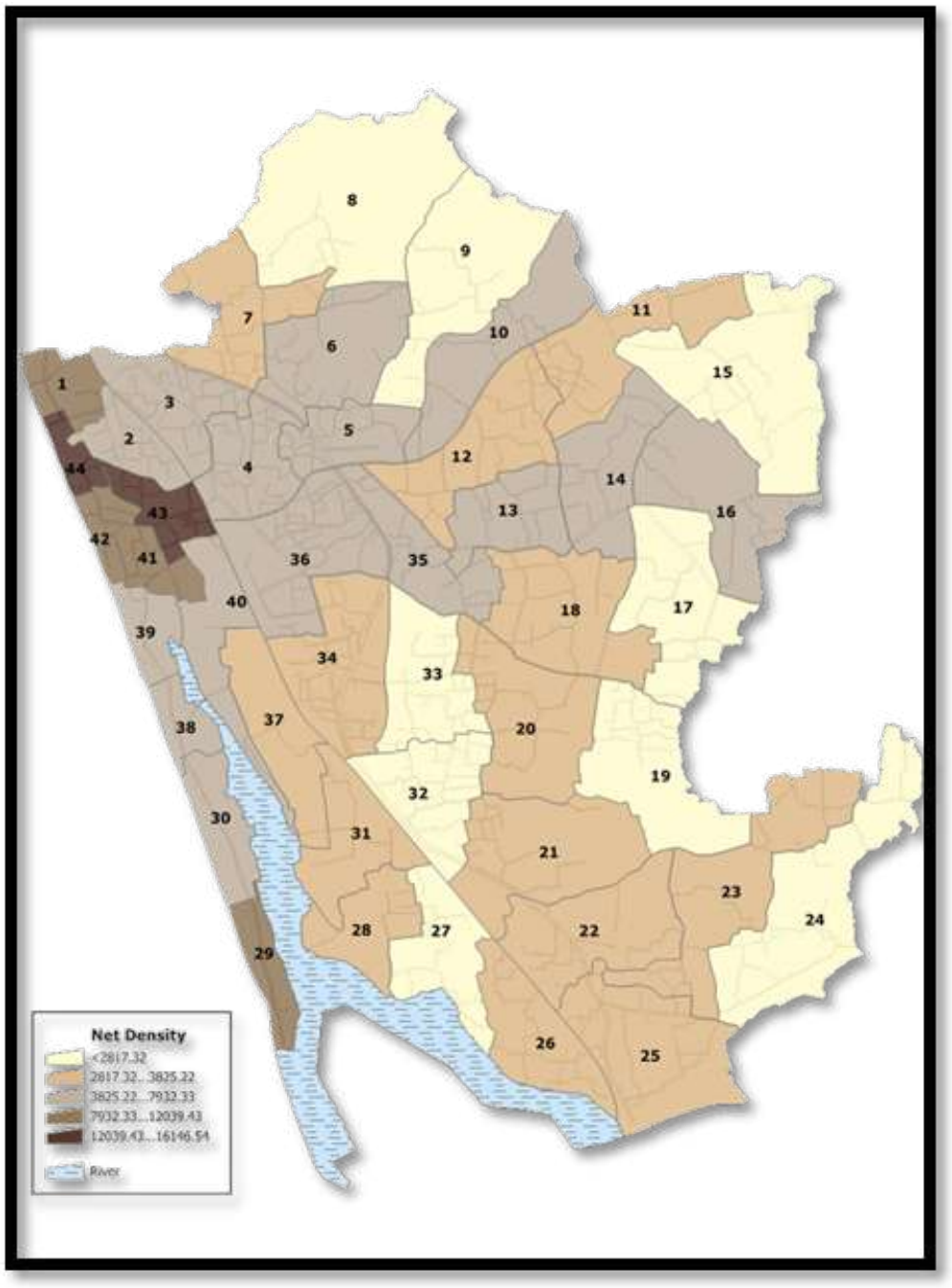


Fig 9.5: CI of net population density

9.3 Age-Sex ratio

Age sex pyramid prepared based on the data obtained from socio economic survey is regressive in nature (Figure 9.6).

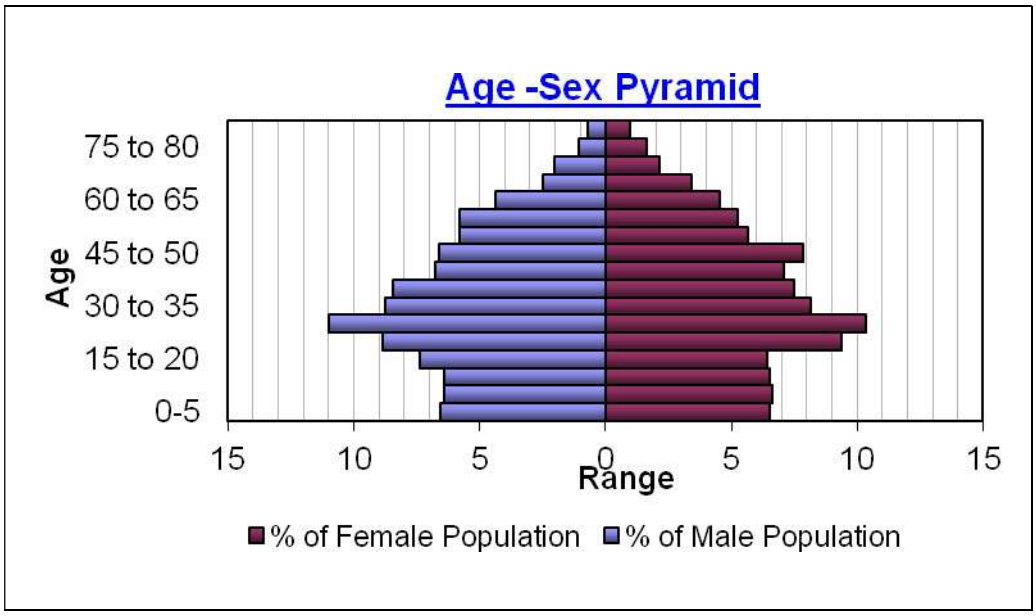


Fig 9.6: Vatakara Age sex pyramid

The fertility rate is decreasing, which indicate slowly growing population. At the same time the working population (15-59) consists of largely youth (15-34) year and as a result the economy can grow more quickly and the dependency rate is also less.

The sex ratio of Vatakara Municipality as per 2011 census is 1119 females for 1000 males. In all the previous census records from 1951 onwards there is a preponderance of females over males in Vatakara. The sex ratio of children of age 0-6 years shows a decreasing trend throughout the District. In the case of Vadakara sex ratio is 952 females for 1000 males.

9.4 Literacy

The percentage of literate persons as per 2011 census is 94.88. The percentage has shown marginal improvement in the last decade. The value is less than the average urban literacy rate of Kozhikode District. The gender gap in the literacy rate has also shown slight improvement in the last decade and it can be seen that the value is higher than that of Kozhikode urban area.

9.5 House hold size

As per the 2011 census the total number of households in Vatakara is 15,787 and the household size is 4.76 persons per HH.

Referring the Figure 9.7, it can be seen that Vatakara exhibits house hold size higher than the average in the District. This may be due to the presence of joint family system existing in Vatakara. Joint families concentrated more in wards 41 Valiya Valappu. 42 Pandikasala, 43 Shanthinikethan and ward 44 Mukkachery.

Higher density of households is along the coastal lines, indicating denser settlements. Listed slums in the Municipality namely Pandikasala, Mokachery, Kuriyadi and Avikal are in wards 1,29,43 and 44 respectively. Concentration index of household size and household density is shown in Figure 9.8 and 9.9 respectively.

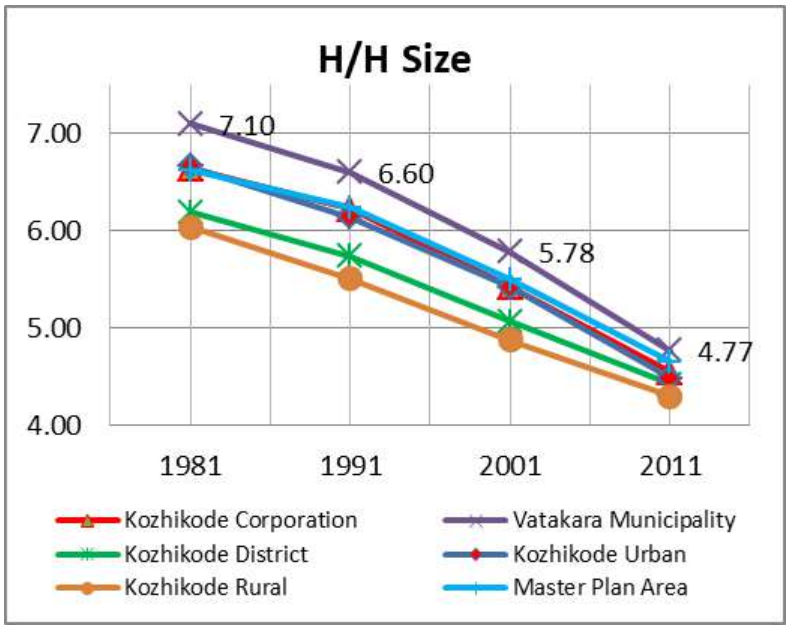


Fig9.7: Household size comparison

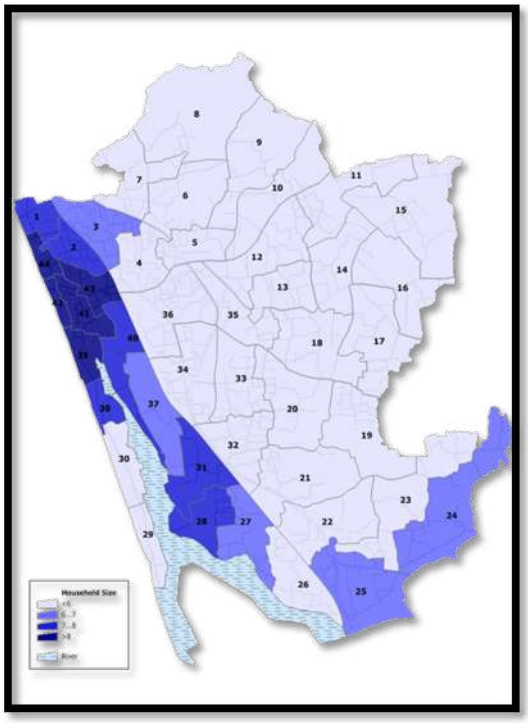


Fig9.8 : Variation of Household Size

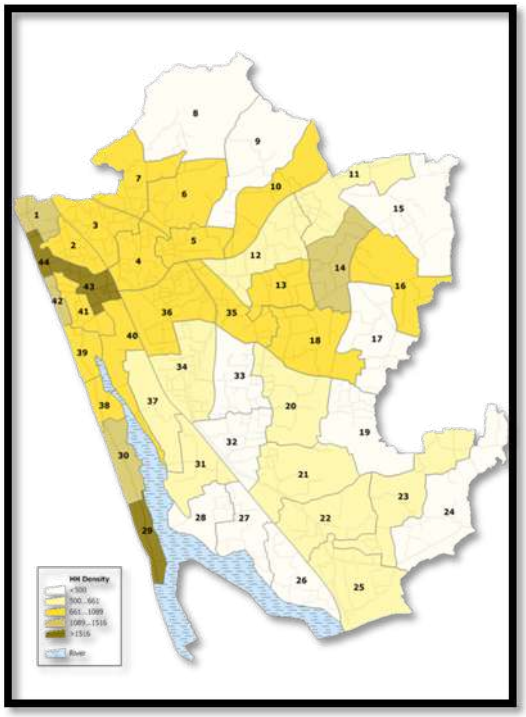


Fig9.9 : Variation of Household Density

9.6 Inference

Vatakara Municipality houses a higher share of population compared to surrounding local bodies. The density of population is also very high. The census Figure s show that the rate of growth of population has shown a drastic slowdown in the last decade, mainly due to reduced fertility rate and there is not much of migration to the Municipal Area.

10 EMPLOYMENT

10.1 Workers

Total workers in Vatakara Municipality as per 2011 census are 21544, out of which 19291 are main workers and 2253 are marginal workers (Figure 10.1).

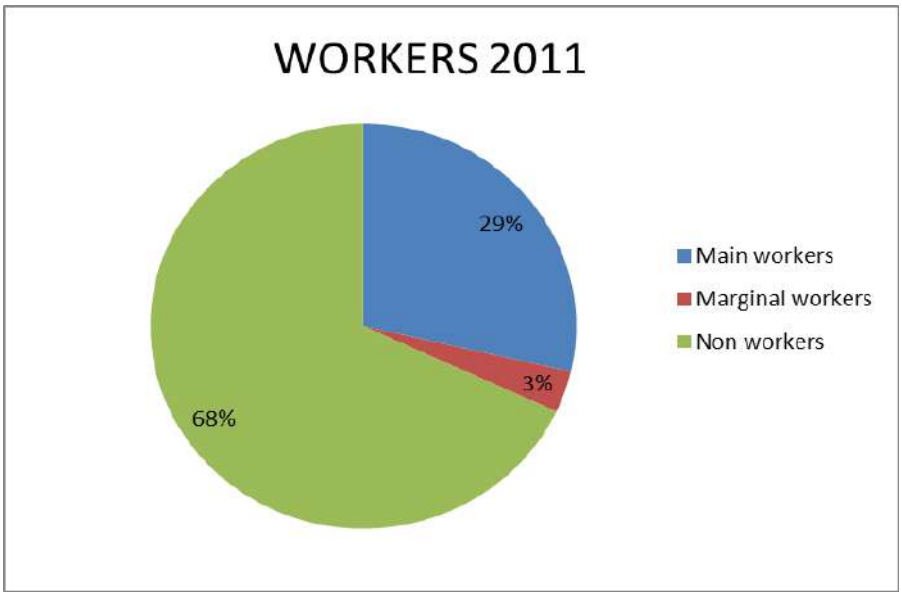


Fig10.1 :Workers in Vatakara

10.2 Work Participation Rate

From the graph shown below one can observe that the increase in total workers over last decade is minimum. Considering the female workers, though the number is increasing slightly in numerical value, female work participation ratio in Vatakara has been steadily decreasing till 2001. However between 2001 and 2011, the FWPR has shown an improvement. Female workers have shown increasing trend in the same period. The work participation ratio (Figure 10.2) is steadily increasing and the value in 2011 census is 28.35. However this is less than the average work participation rate of Kozhikode District.

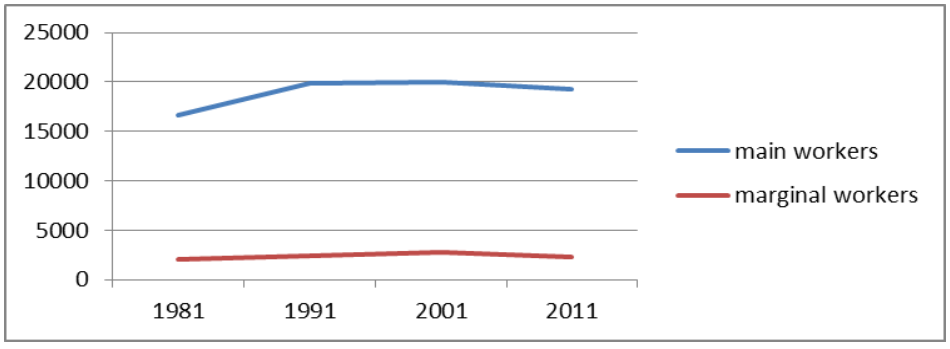


Fig10.2: Main and Marginal workers in Vatakara

The work participation rate is plotted in the Figure 10.3 given below.

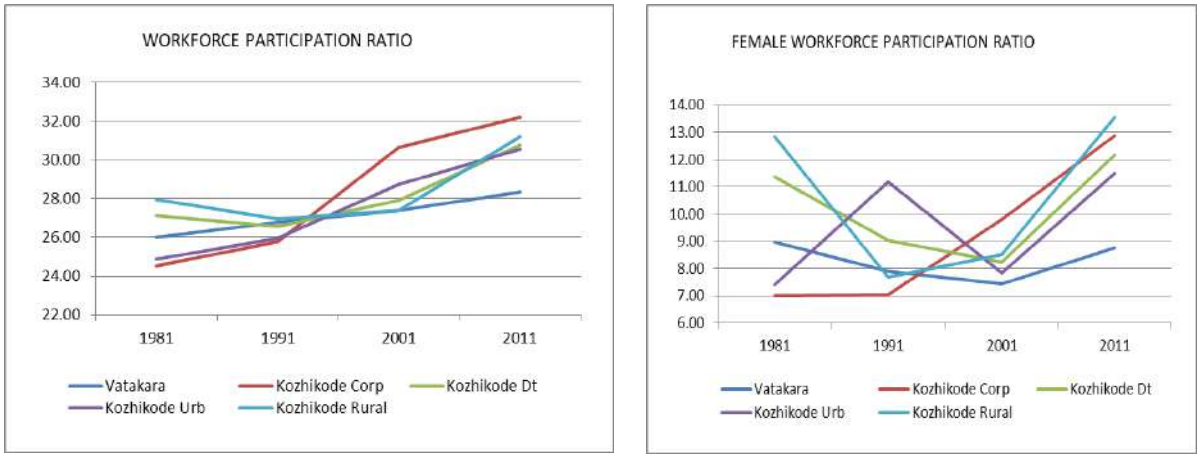


Fig10.3: Total and female work participation ratio

10.3 Occupational structure

Vatakara was a hub of traditional household industries like handlooms, coir, pottery and beedi. These industries have declined due to reduced demand, low monetary benefits and inclination of youngsters towards more attractive and fashionable jobs. The percentages have reduced from 5% to 2% over last two decades. Similarly the share of cultivators and agricultural labourers are also decreasing whereas the persons engaged in other sectors have increased from 89% to 96% over last two decades.

The job opportunities available in Vatakara Municipality are very less. The socio +economic survey reveals that about 20% of population is trying for employment.

Table 10.1 Employment Details (Socio economic survey)

Type	Public Sector	Semi public	Private Sector	Self employed	Social worker	Unemployed / trying for employment	Pensioner	Un employed / Not trying for employment	Students	Others
Average % for LSGI	2.56	0.49	12.03	10.34	0.08	19.78	2.77	22.38	21.58	7.99

10.4 Inference

From the population study, it is observed that higher proportion of the population belongs to working age and hence the dependency ratio is less. But there are no sufficient job opportunities available in Vatakara. In order to make use of this man power fruitfully there has to be chances of better job oriented professional institutions and entrepreneurship development programs in Vatakara. The traditional sector employments are to be strengthened and those who loses employment in traditional sector have to be rehabilitated.

11 LAND USE

11.1 General Analysis of land use

The existing land use map prepared by the Town and Country Planning Department after detailed survey is depicted in Figure 11.1.

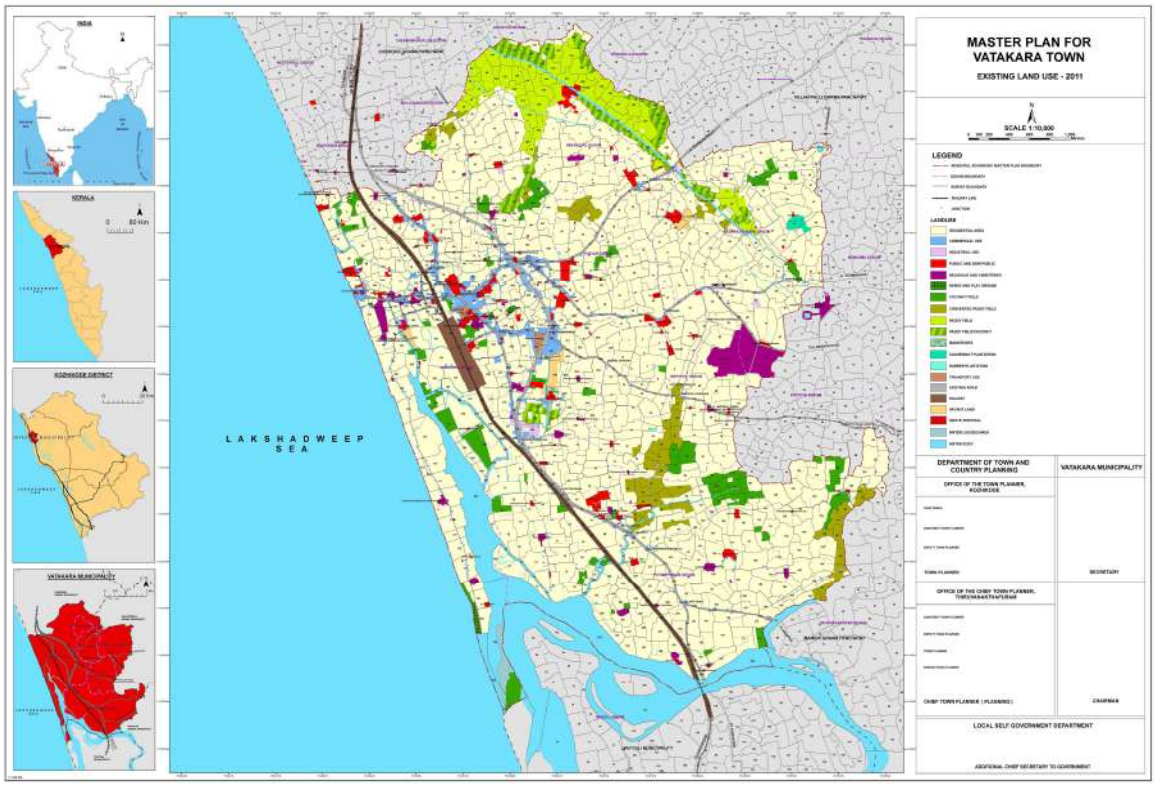


Fig 11.1: Existing land use map of Vatakara Municipality

An enlarged Figure is attached as Annexes (1) GLS/1/Map No.1 - Existing land use map. It can be seen that the lion share (68.65%) of municipal area is residential, and then comes the agricultural area which includes paddy fields and other plantations. Water bodies constitute 6.52% which stresses the environmental importance. From the map it can be observed that the land area available for recreation such as park and open space are negligible. Similarly the industrial and commercial areas are very meager.

11.2 Comparison of land use with other urban local bodies within the District

Comparison of land use (based on Kerala State Land Use Board data) with Koyilandy Municipality and Kozhikode Corporation is produced in Figure 11.2 below. It can be seen that Vatakara exhibits higher share of urban land use and lower share of rural land uses when

compared to Koyilandy. The share of neutral land use is the maximum in the case of Vatakara, which includes vacant lands, water bodies, marshy and water logged areas.

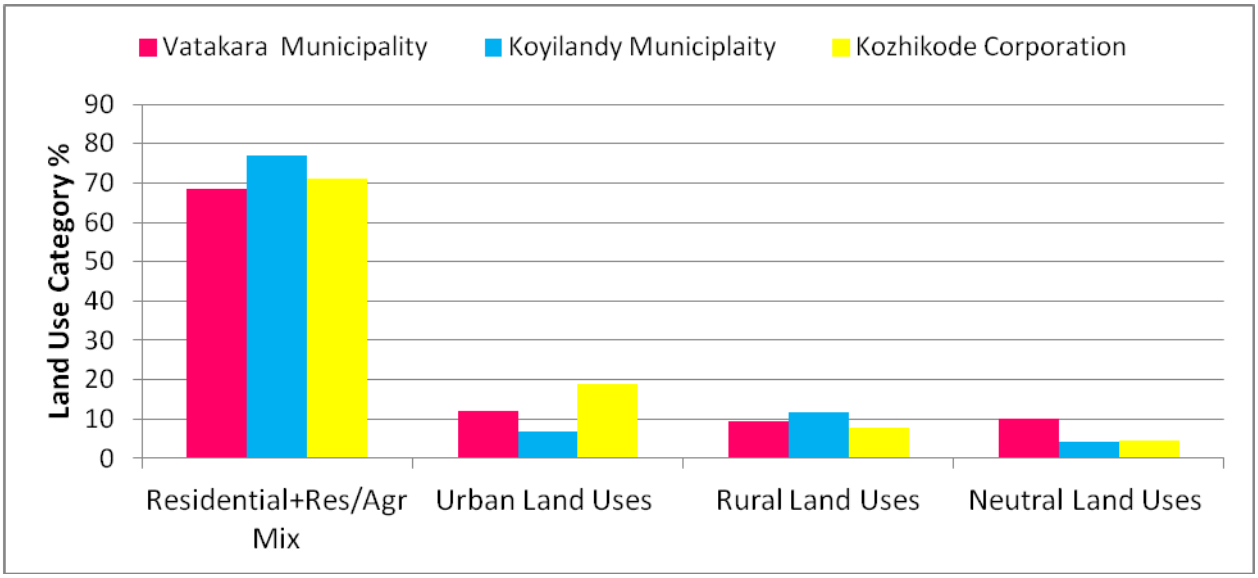


Fig11.2: Comparison of existing land use

11.3 Temporal variation of Land use

The temporal variation of land use over a period of 20 years is analyzed and shown in Figure 11.3. Here the existing land use in the previous revision and the existing land use prepared for current revision are compared with the land use proposed in the sanctioned Master Plan for the year 1991 to 2011.

Commercial land use area has tripled in the last two decades, indicating the flourishing of commercial activities. Nevertheless existing area is only one third of the proposed area. Though the industrial area has increased, the existing industrial area is very small (0.05 sq.km) whereas envisaged in the existing Master Plan was 0.71 sq km. Land utilized for transportation has increased from 4.12% to 6.76% and the proposed is 7.4%. It is to be mentioned at this juncture that the increase in the percentage is not due the implementation of the existing Master Plan proposal, but due the formation of other internal roads. Most of the proposal remains as such.

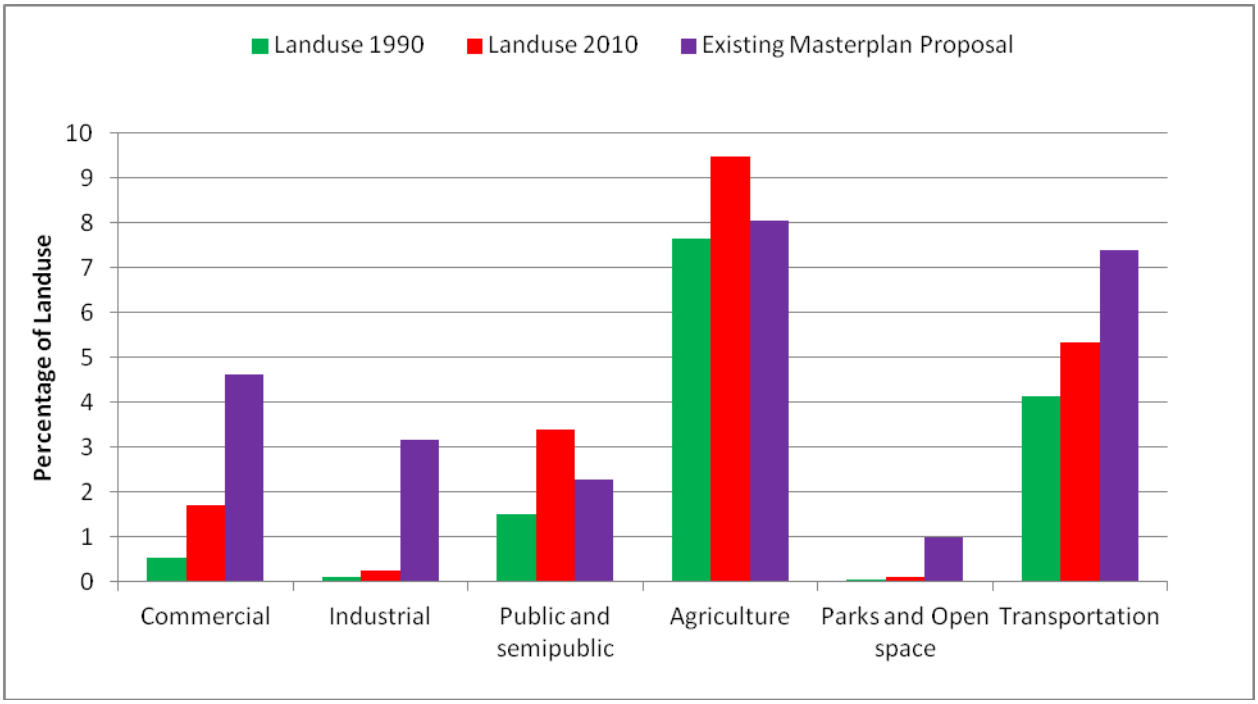


Fig11.3: Temporal variation of land use

Public and semipublic land use has increased beyond the proposal due to the establishment of new institutions in the education and health sector. Area for park and open space, though it has doubled, it is only $^{1}/_{10}$ of the area as proposed, which points out the necessity of reserving land for this purpose.

11.4 Land use concentration pattern

Land use concentration in Vatakara

The concentration of a particular land use in a given location is quantified in terms of concentration index which is given by

$$\text{Concentration index of a Particular land use (CI)} = \frac{\text{Percentage of that particular Land use in the ward}}{\text{Percentage of that particular land use in the Municipality}}$$

The value of concentration index (CI) can be one, less than one or greater than one. If CI is less than one, it indicates the absence of moderate concentration of that particular land use in that ward. If CI is equal to one or greater than one, it indicates the high concentration of that particular land use.

a. Residential

68.65% of land in Vatakara Municipality comes under residential land use (Figure11.4). Residential concentrations are maximum in ward 13 Bonoth and ward 16 Kallunira in the eastern part and in coastal area, in wards 30 Purankara, 28 Kunchiraman Vakkiel palam and 39 Koyilandy valappu. 11% of total population is residing in these wards.

Average plot size per households is derived from the ward wise area and the number of house holds. It can be seen from figure 11.5 that, in ward 15, 19, 24,26, 27, 28,32 and 33, the area of land per household in above 45 cents and it could be presumed that there is better chances for homestead cultivation in these wards.

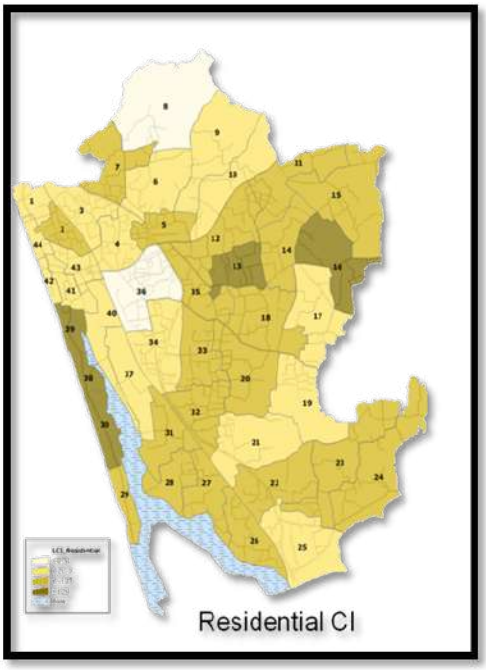


Fig 11.4: CI of residential land use

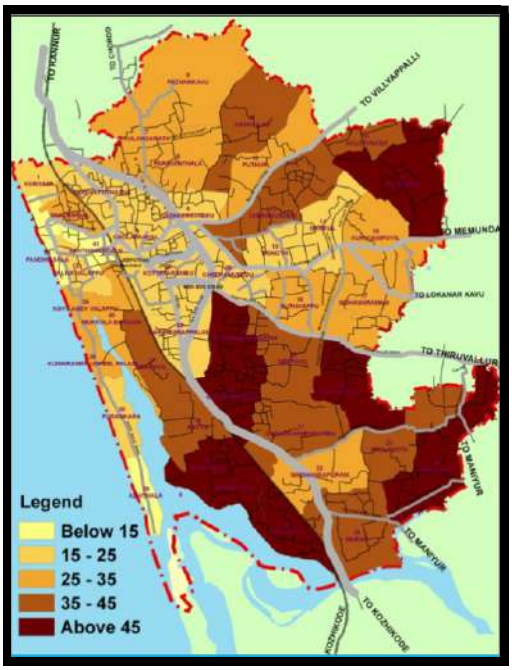


Fig 11.5: CI of average plot size (from socio economic survey)

b. Commercial

Commercial activities are concentrated mainly in the CBD area. Only 1.69% of land in the Municipality comes under this use. Commercial activities are concentrated in Thazhe Angady, Nut Street and between the Old NH and NH Bye Pass. While Thazhe Angady and Nut Street are the old trade and commerce hubs, the area around NH Bypass is the new commercial hub. CI of commercial activities are shown in Figure 11.6.

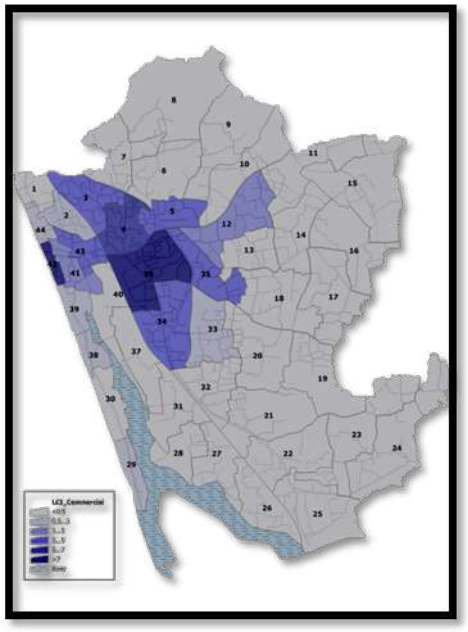


Fig11.6: CI of commercial land use

c. Industrial

Area coming under industrial activities is very less in Vatakara. Concentration is maximum in ward 3 & Karimpanapalam, where the industrial estate is located. 0.23% of land is coming in this group. CI of industrial activities are shown in Figure 11.7.

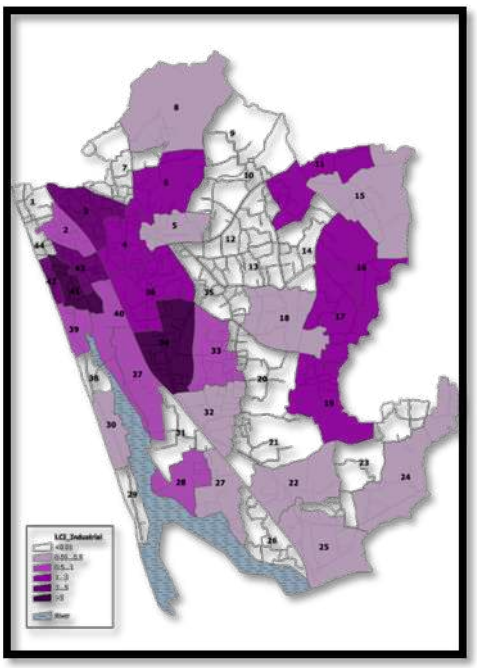


Fig11.7: CI of industrial land use

d. Public & Semi public

Public and semi public activities in Vatakara Municipality is scattered in and around 3.3% of land. It comes to about 0.71 Sq Km in area. Main activities coming under these lands are educational and health related. Since Vatakara is a taluk head quarters, the concentration of service activities will be maximum. The poorly developed semi rural natured surrounding panchayats points out the necessity of high concentration of service activities in the Vatakara Municipality. But still the land use coming under public and semi public type is very less.

e. Recreational, Park and open spaces

Recreational areas, parks and open spaces are very less in the Municipality. Sandbanks and Municipal Park are the only developed recreational spaces of considerable quality. Other than this, one small park is available inside the CBD area. Few open lands are available in the Municipality and are scattered. Children use some of these areas for their playing activities such as cricket, foot ball, etc. Only 0.02 SqKm area in Vatakara Municipality is coming under park and open space category.

f. Transportation

1.44 SqKm of land in Vatakara Municipality comes under transportation land use category. This comes around 6.76% of land use. Out of this 1.50% is occupied by Railway. The major items coming under this land use type, other than railway are two bus stands, one lorry stand, one jeep stand and few auto stands. Railway station and bus stand is shown in Figure 11.8 and 11.9 respectively.



Fig11.8: Vatakara Railway Station



Fig11.9: Vatakara New Bus stand

g. Agricultural

Vatakara is characterized by vast stretches of paddy fields especially in wards Paravanthala(6), Pazhankavu(8) and Arakilad(9). The concentration of agricultural area is prepared from the existing land use map and shown in Figure 11.10. The concentration is

maximum in ward 8. As the agricultural production has become less remunerative especially paddy, the tendency to convert the land to other uses has increased too much which has resulted in wide range of consequences. The paddy fields near residential area are getting converted at faster rate especially at wards 20 Meppayil and Ward 21 Chandaparambu. The concentration of agricultural land use conversion is shown in figure 11.11

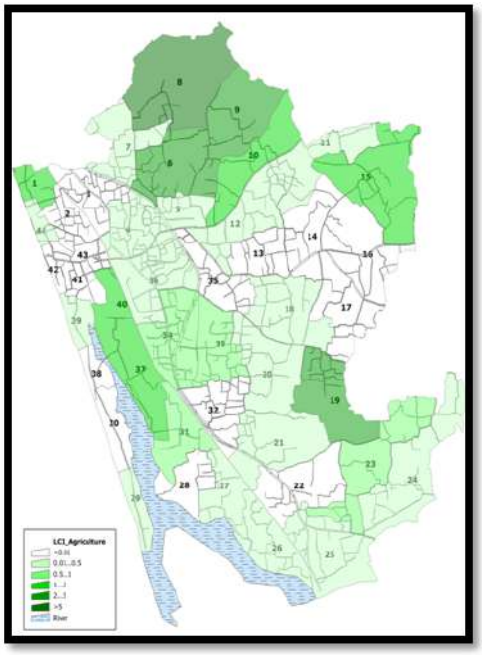


Fig 11.10: The concentration Index of agricultural area

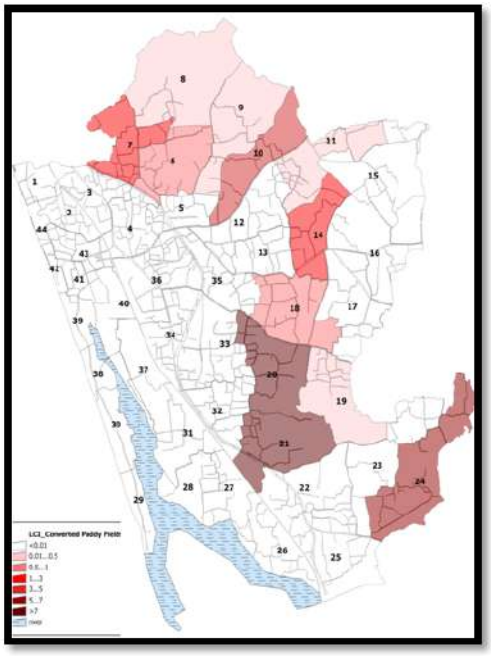


Fig 11.11: Concentration index of converted agricultural land use area.

11.5 Categorization of residential land use

68.65% of land in Vatakara Municipality comes under residential type. The analysis of household density reveals that the households are almost equally concentrated in the Municipality except in two wards in beach area and one in the CBD area. These three wards show higher household density. The east and south east area of Municipality shows low concentration compared to other areas.

Hence based on this analysis, the residential land use can be categories as three, high residential, medium residential and low residential. The wards besides Arabian Sea and in the CBD area can be classified as high residential. The wards at north and north east area can be classed to medium residential. Among this, few wards, where agricultural concentration is very high are low residential. Other wards in the east and south east parts of the Municipality are coming under low residential class. This is shown in Figure 11.12

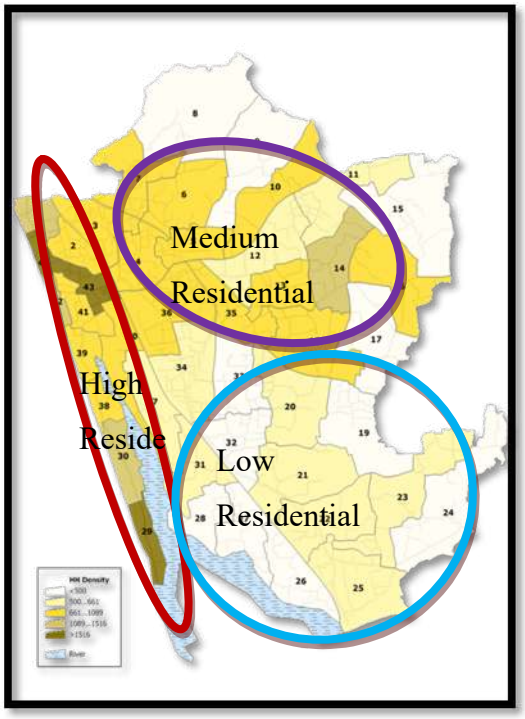


Fig11.12: Categorization of residential land use

11.6 Inference

From the land use analysis it could be observed that majority of areas are still residential and the transformation into commercial is very slow. Area available for recreation is very less. Another characteristic is that, still vast stretches of paddy fields are available which is very important to retain from agricultural point of view and environmental sensitiveness as well.

12 ECONOMIC ASPECTS

12.1 Industry

Vatakara was once very rich in household industrial sector. Hand-loom, Coir, Cement pots, Beedi, Fisheries, Ayurvedic medicines etc are the industrial units mainly seen in Vatakara.

12.1.1 Present Scenario

There are no medium/large industries in Vatakara. There are about 224 small scale industrial units whose classification is given in Table below. Location of existing industries is shown in Figure 12.1.

Table 12.1 Industrial Details

Type of SSI	No.
Chemical	2
Agro based	5
Forest based	13
Building Materials	14
Rubber Based	14
Textiles	16
Mineral	19
Electronics	21
Cement Based	30
Engineering	73
Others	17
Total	224

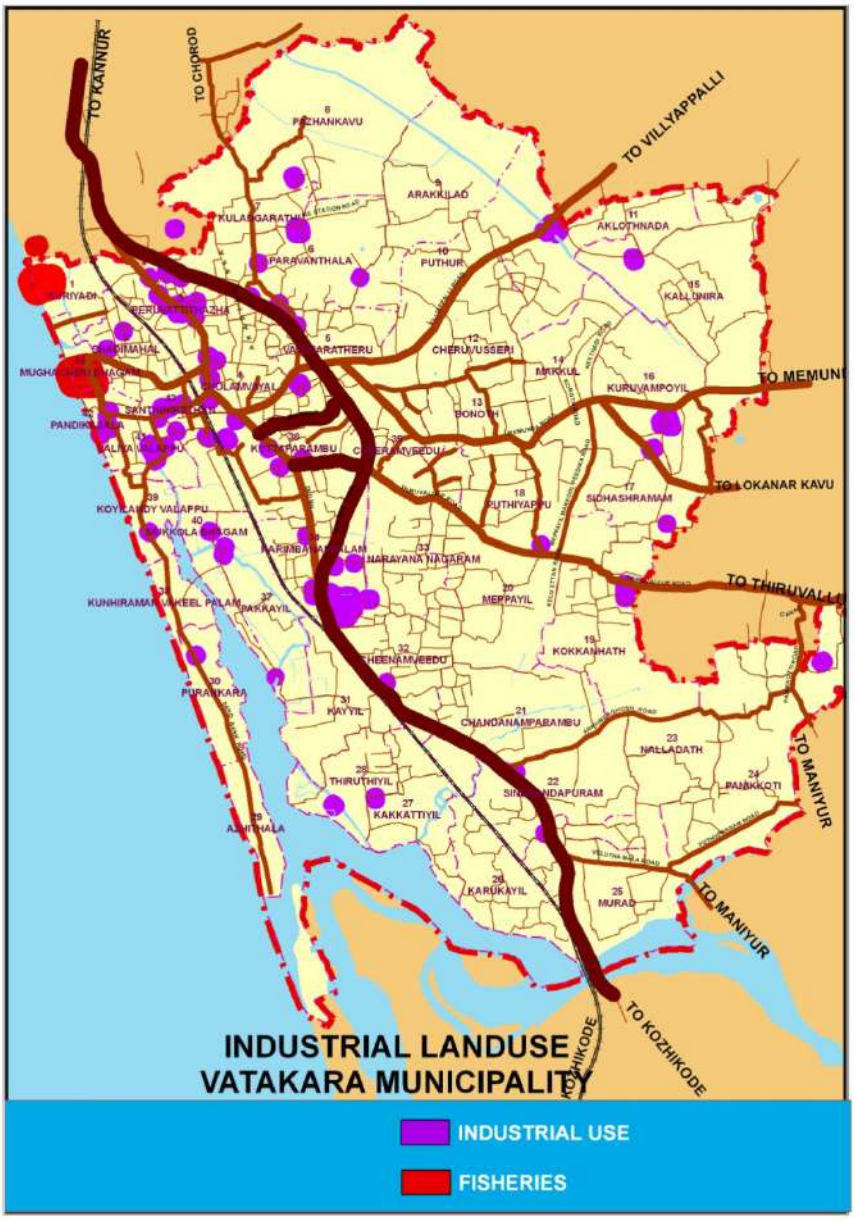


Fig12.1: Vatakara industrial locations

Hand-loom

There are 3 Hand-loom co-operative societies in Vatakara. Hand-loom sector is in crisis. The remuneration is less and people are shifting to other field. Even today many skilled laborers in this field are available in Vatakara. Establishment of an outlet for the production of yarn, fabric paint etc. would be beneficial to the weavers in and around the Municipality.

Coir

Vatakara is producing good number of coconuts (110 lakhs mrts/year). There were large numbers of industrial units producing coir. But now they are also experiencing

decline. The traditional method of processing coconut is not practical now a days due to environment pollution and there is no modern de-fibring unit available. There is no centralized way of collection of coconut as well.

Manufacture of cement products

Large numbers of people are engaged in the manufacture of cement pots, small water tanks, artifacts and other building products in the Pakkayil area of Vatakara and had monopoly over such products (Fig 12.2). But the rise in prices of raw material, non availability of sand, introduction of plastic tanks and aluminum pots have also affected badly on the manufacturers. There are no centralized marketing facilities available in the Municipality.



Fig12.2: Pot and cement artcrafts in pakkayil area

Beedi Making

Large numbers of women were employed in beedi making. The industry has suffered severe decline due to the fact that the usage of smoking products have decreased to a greater extent. The wages to labourers are also minimum. The decline in the industry has also affected the female work participation.

Wood industries

Wood industries are mainly concentrated in the Karimpanapalam region. Mainly saw mills and furniture making are included in the category. There are about 13 wood based industry. The shortage of power and non availability of land are the two factors affecting this sector.

Manufacture of Ayurvedic Medicines

There are two famous ayurvedic medicine manufacturing units in Vatakara which has got much demand in the internal market. Sidhasamajam located in Ward 23 has an extent of nearly 50 acres where nearly 80 types of medicines are made. The products are

prepared by the inmates. Manoj Ayurvedic Pharmaceuticals located in Ward 29 is another one. The unit is making nearly 300 types of herbal products. Both units have their own herbal gardens and are still short of raw materials which necessitate the scope of medicinal plant cultivation.

Women industrial units

The decline of traditional house hold industries such as coir, beedi, textile etc has caused the loss of jobs especially among female workers. To re-employ them better opportunities have to be created in the fields like readymades, soap making, pickle making, manufacturing of umbrella, paper bag etc. Vanitha Vyavasaya Kendram, a centre for training and implementation of projects, is available in the Municipality.

Repairing of gunny bags

Thazhe Angadi was the centre for the repair of old gunny bags and a lot of people were engaged in this. Even now a number of shops could be seen where this activity is going on.

Kopra based industry

Around 10000 T per year kopra is being produced in Vatakara. Though there is a good scope of establishing kopra based industry such as extraction of oil, value added products and the like, no major kopra based industries are available. Places like Adakatheru, Peruvattam Thazhe and Edodi are the areas where large scale kopra business is active.

Manufacture of Bio fertilizer units

Vatakara is a place where bio fertilizer is of good demand. At present there are no bio fertilizer units in Vatakara. There is no proper method of disposing solid wastes. Setting up such industry can certainly help to promote agriculture, fisheries and solid waste management.

12.1.2 Issues at a glance

a) Traditional industries are at declining state forcing many workers job less.
b) There is no large scale industries based on copra, fish, bio-fertilizer, coir, etc. though there exists vast potential.
c) Hindering factors includes shortage of power, non-availability of land and lack of centralized facility for collection of locally available raw materials
d) Lack of adoption of appropriate technologies like defibring units, mechanization in textile (hand looms).

e) Adoptions of appropriate marketing strategies are not practiced in the Municipality.

12.1.3 Conclusion

Though there is a decline of traditional industries, there are better scope for the revival of this sector because raw materials and skilled labourers are available. Vatakara is a place of its own products such as cement artifacts, herbal products etc. There is also scope for large scale industries based on coconut, coir, fisheries and bio-fertilizer manufacturing.

12.2 Trade and commerce

12.2.1 Present scenario

Commercial activities are concentrated in CBD area. Activities in other areas are marginal. Major commercial centers are listed below.

Table 12.2 Commercial activity details

Location	Category of commercial node/centre	Separate Parking area (Y/N)	Authorized auto stand (Y/N)	Authorized Taxi stand(Y/N)	Authorized Lorry stand (Y/N)	Public comfort Station (Y/N)	Proper Drainage
Old Bus stand	Mixed	N	N	N	N	Y	Surface drainage
New Bus Stand	Mixed	N	N	Y	N	Y	N
Anjuvilaku Jn	Fish Market	N	N	N	N	N	N
Edodi	Mixed	N	N	N	N	N	N
Nut street	Mixed	N	N	N	N	N	N
Keerthi talkis to palayad nada	Mixed	N	N	N	N	N	N

Karimpanapalam jn to asha hospital	Mixed	N	N	N	N	N	N
Onthan road to JTS and hospital road	Mixed	N	N	N	N	N	N
Keerthi talkis and convent to bus stand road	Mixed	N	N	N	N	N	N
Anjuvilaku Jn to peruvattomthazha	Mixed	N	N	N	N	N	N
JT road to thazheangadi and thazheangadi to municipal office	Mixed	N	N	N	N	N	N

Earlier days, Vatakara Municipality was a main trade centre in Malabar region. The main items were coconut, arecanut, spices and vegetables. The name of one street, ***nut street*** came from the high concentration of nuts related trading activities in that area. At that time, nuts and spices from north east and eastern parts of Kozhikode District were bought to Vatakara and traded from there. But now the past glory ended. The reduction in nut and spices production in and around Vatakara and ease in transportation of commodities to the Kozhikode central market and other areas reduced the trade in Vatakara. But still Vatakara can be considered as the second biggest trade centre in Kozhikode District after Kozhikode city.

Major commercial centres in Vatakara are Nut Street, Thazhe Angadi area, and areas besides new and old NH. (Figure 12.3)Almost all commercial centers are not having separate parking spaces, authorized auto stand, taxi stand, lorry stand, public comfort station and proper drainage facilities. The solid waste management in these centers is also a major issue.



Fig 12.3: Location of commercial centers.

Table 12.3 Commercial activities – Informal sector

Area of concentration of informal sector activities	Type of activity – fruits and vegetables, garments, tea and snacks, home appliances, books etc	Extent of informal sector activity in each area		No of units under Informal sector activity having the approval of Local body- Location wise	Labour force (man, women, children separately) in informal sector
		(no of shops/ cart)	No of street Vendors		
NH Moorad to Kuruvattithazham	Tea and Snacks, Fruits and Vegetables	4		Nil	Men
CC Road	Fruits and vegetables	5		Nil	Men
Thazheangadi	All	10		Nil	Men

The informal sector activity is minimal in the municipal area, most of which is concentrated in Thazhe Angadi.

12.3 Tourism

12.3.1 Places of Tourist interest

History of Vatakara depicts the glory of past. It is a place of interest for those who do research in history and has a number of focal points of tourists. Vatakara is home town for Kalarippayattu, the famous Lokanar Kavu in Villappally which is in the border of Vatakara, Sidha samajam, Thacholi Manikoth temple, Thazhe Angadi Valiyapalli, Sand banks, Kottackal Kunchali museum and Iringal Craft village both adjacent to Vatakara are the places of Tourist interest.

Kalaripayyattu and Marmas

This marital art has produced great heroes whose incredible deeds of valor are celebrated in the legends and flok songs.

Though Kalari Payattu was once a comprehensive combat system, it is today mainly valued from the standpoint of physical culture, The Kalari, or the combat school, is an enclosed rectangular pit, 42 paces long and 21 paces broad, always situated east-west with the floor six feet below the ground level, in the south-west corner is a tiered altar decorated with flowers and wick-lamps and dedicated to Rana Bhairavi, the Goddess of War. The initial training is called Meyyorakkam, or taming the physique. During the first fortnight the children and youngsters of the Kalari are given a special course of massage designed to prepare them to meet all situations of attack and defence. The trainees are given lessons in the use of weapons such as the Panthiran and the Kettukari (the stick and the stave), the Kuruvadi (the short stick), mace, spear, dagger, and sword and shield. A unique weapon in use in the long flexible sword, five feet long, called the Urumi.

The study of Marmas – the vulnerable points of the human system – was confined to esoteric circle among trainees. It is said that one can disable; immobilise or even kill an adversity by nearly touching, or glancing at a marma. These cardinal points are taught only to discipline students as the knowledge is to be used as a last report for self defense or against a dishonorable foe. In fact Kalari system enjoins that the art is to be employed only for noble causes and never for self advancement. The heyday of the Kalari Payattu ended with the down of the seventeenth century with the wide spread use of guns and cannons.

Kalari is gaining importance even today, more people especially foreigners are showing interest to learn this traditional martial art. There are 4 ‘Kalaris’ in Vatakara to teach this. To develop a Kalari Academy will be of great importance to popularize Kalari.

Thacholi Manikoth Temple, Vatakara

Thacholi Manikoth Othena Kurup (1584-1616AD) a remarkable personality and a Warrior, was the son of Puthuppanath Vaazhunnavar and Uppathi. He was well versed in Kalarippayattu and possessed extra ordinary physique. He was the greatest exponent of 'Urumi' and his martial powers were well known throughout the District and outside. Tacholi Manikoth is the temple and *kalari* where Thacholi Othenan practiced his martial feats and spent long days in deep meditation before every duel



Tacholi Manioth Temple

Lokanar Kavu, Villiappally

The temple is located 5Km east of Vatakara. The temples' name has made an indelible mark in the hearts of the people by its frequent mention in the famous Northern Ballads (*Vadakkm Puttukal*). These ballads describe the material exploits of heroes and heroines who lived in the region. Thacholi Othenan was the worshipper of Lokanar Kavilamma, he never did anything of importance without praying to the godess. The Temple attracts pilgrims and tourists.



Lokanar Kavu

Sandbanks, Vatakara

The sand bank on the western side of Vatakara is a place of tourist interest. The beach is not developed to provide the required infrastructure. The back waters, enthralling beach islands etc are the attractions.



Sand Banks beach

Sidhasramam, Vatakara

Swami Sivananda Paramahamsan was the person who established Sidhasramam. The asrama was found mainly to fight against the evil practices such as untouchability and caste system and certainly unattributed to the social reformation. It is a small settlement having an extent of 50 acres. This asram is also famous for Ayurvedic medicine, indigenously manufactured by the inmates themselves.



Sidhasramam

Kottakkal Kunhali Marakar Museum

This Museum is in Payyoli quite adjacent to Vatakara. Kottakkal has the remnant of historic fort of Kunhali Marakar. There is an important mosque, Kottakkal mosque. The remains of sword and cannon bulls made of stone and iron are kept here.





Kunhali Marakar Museum

Historical Fort at Vatakara

The historical fort originally belonged to the Kolathiri Royal House. For a short period, the Mysoreans held this fort. But in 1790, the British captured it from Tippu Sulthan and handed over to Kadathanad Raja. The Raja converted it in to a Brahmin feeding house and later transferred it to the historic temple of Paravantals.

Iringal Craft Village

Pioneering another novel model to promote tourism, Kerala Tourism Department has set up an exclusive craft village where traditional enticer can show craft skills and products, and sell them at fair prices while visiting foreigners can pick up one or

two lessons of subtleties of craft-making. The village showcases the varied and traits and traditions of Kerala craft. The wide array of products will be crafted with different raw materials from cheap natural options to modern alloys. Artictafts will be created with banana fibre, coir, bamboo, shells, palm etc.





Iringal craft village

Thazhe Angadi Valiya Palli

This is an architectural marvelous constructed with locally available materials and technology.



Thazhe Angadi Valiya Palli

12.3.2 Infrastructure for tourism

The tourism infrastructure available in Vatakara is shown below. There are no home stay facilities in the Municipality

Table 12.4 Tourism infrastructure facilities

Number of Hotels			Tourist information centre (s)
Four star and above	3 Star/2 Star hotels	Economy hotels	
NIL	3	13	1

All the above mentioned tourism destinations are shown in Vatakara Map below (Figure 12.4).



Fig 12.4: Major tourist destinations in Vatakara

12.3.3 Conclusion

There are a few tourist attractions in and around Vatakara which can cater both the local tourist and foreigners. The facilities available in these destinations are quite inadequate. Development in this sector in a proper way can certainly add to the economy of the Municipality.

12.4 Agriculture

Agricultural activities have diminished in Vatakara for the recent past. But the contribution from agricultural sector cannot be ignored. Vatakara is characterized by vast stretches of paddy fields and coconut plantations. In addition to this arecanut, pepper, cashew, rubber, banana and vegetables are cultivated.

12.4.1 Agricultural Sector

Coconut is predominantly cultivated throughout the Municipality and the area is about 1375 Ha and the production is about 110 lakh nuts per year. Vatakara is also known for the Ayurvedic products from Sidhasramam and Santhigiri asramam. About 2 Ha of land is utilized for herbal plantations. The yearly production of various agricultural products is given below.

Table 12.5 Crop area

Type of crops	Area (Ha)	Production/yr
Coconut	1375	110 lakh nuts
Rice	20	50 tonnes
Banana	25	750 tonnes
Tapioca	12	276.75 tonnes
Vegetables	25	125 tonnes
Pepper	10	0.92 tonne
Arecanut	6	109.5 tonnes

12.4.2 Productivity

The yield from various agricultural products are compared with that of Kozhikode Corporation and shown below. It can be observed that the productivity of Banana is higher and Coconut and paddy gives relatively good yields compared to pepper and vegetables.

Table 12.6 Crop Productivity

Crop Name	Kozhikode corporation			Vatakara		
	Area (Ha)	Production /yr	Productivity (Kg per yr per ha)	Area (Ha)	Production/yr	Productivity (Kg per yr per ha)
Coconut	4956	41630400 nuts	8400	1375	11000000 nuts	8000
Paddy	20	54 tonnes	2700	20	50 tonnes	2500
Pepper	12	12 tonnes	1000	10	1 tonnes	100
Vegetable	5	100 tonnes	20000	25	125tonnes	5000
Banana	30	750tonnes	25000	25	750 tonnes	30000

12.4.3 Yearly variation of crop area

The yearly variation of crop area is reproduced in Figure 12.5 and Figure 12.6 below. It can be seen that there is no much increase in the crop area for arecanut and paddy where as there is considerable increase in the crop area of pepper, banana, vegetables and tapioca. The increase is crop area suggests that the people of Vatakara have shown interest in developing primary sector activity such as agriculture and the dependence on other states have decreased to a minor extent.

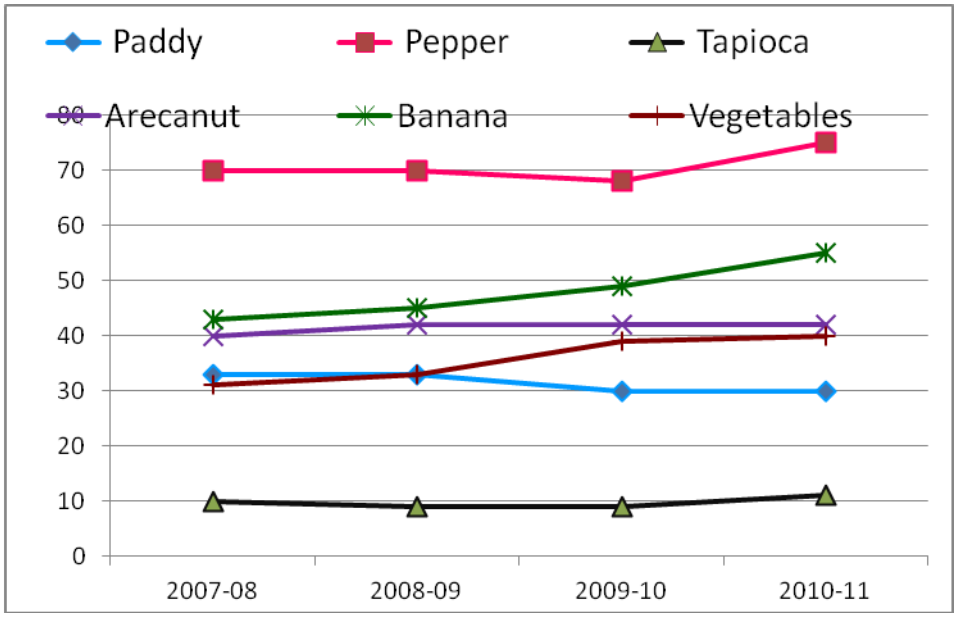


Fig12.5: The yearly variation of crop area (in Ha)

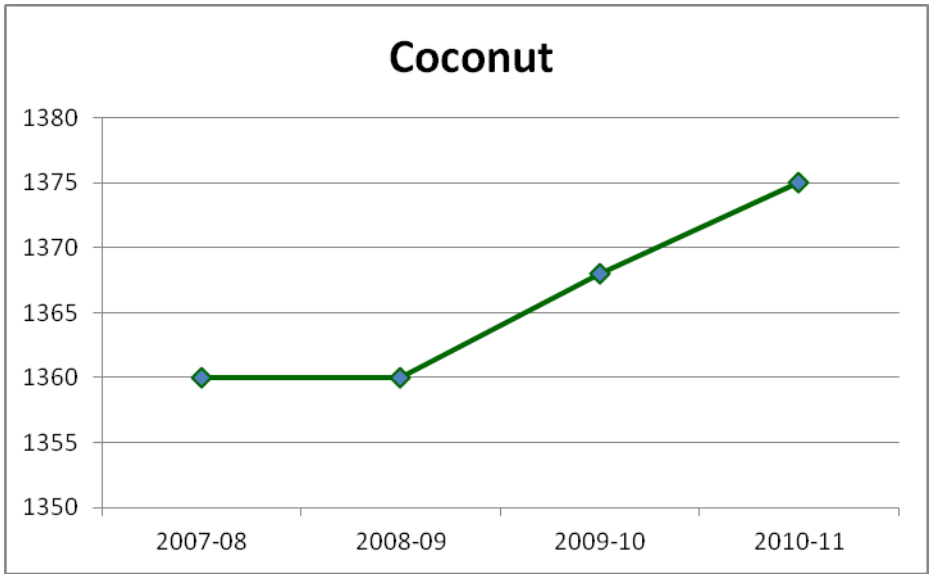


Fig12.6: The yearly variation of coconut cultivation area (in Ha)

12.4.4 Yearly variation of crop production

The yearly variation of prime crops is shown in Figure 12.7, 12.8 and 12.9. From the chart it can be seen that though the crop area for pepper and arecanut have increased slightly the production increase is not felt, as the crops may take a few years to yield. Paddy production is more or less same. Production of Tapioca, banana and vegetable which are short term products, shows an increasing trend. The increase in production of coconut is about 150T for last 3 years, which shows the scope for setting up industries in this field.

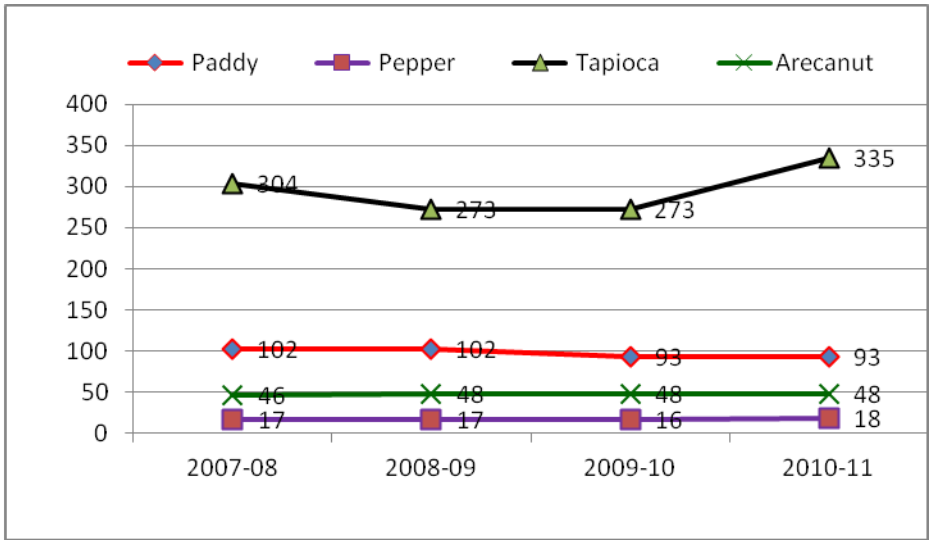


Fig12.7: The yearly variation of crop production (in Tones)

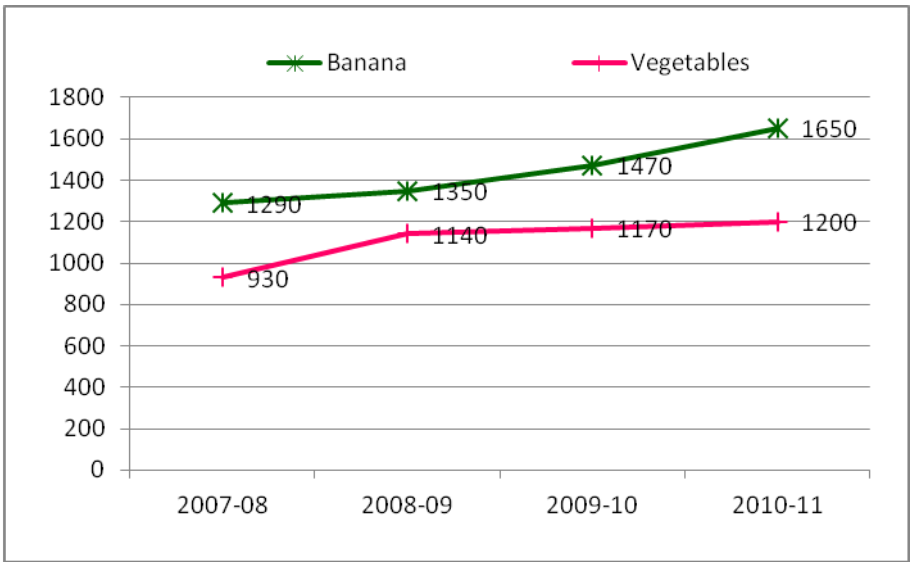


Fig12.8: The yearly variation of Banana and Vegetable production (in Tones)

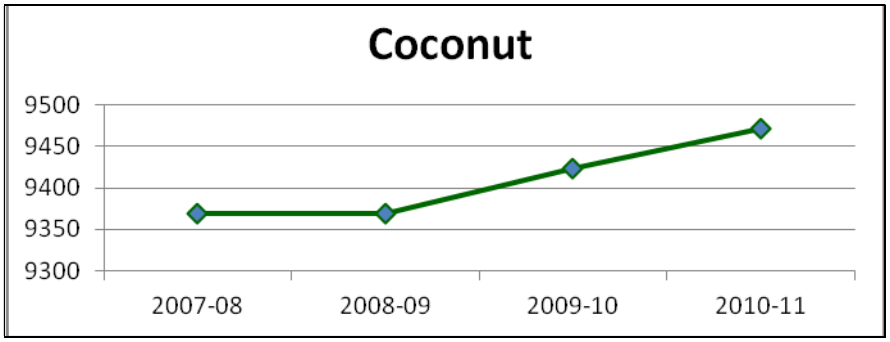


Fig12.9: The yearly variation of Coconut production (in Tones)

12.4.5 Work pattern

From the Table shown below it can be seen that there is a continuous decline of people from agricultural sector. The percentage of cultivators has decreased from 0.64 to 0.32 and the percentage of agricultural labourers has decreased from 5.49 to 1.68 for the last three decades.

Table 12.7 Cultivators and agricultural labourers

	Cultivators			Agricultural labourers		
Year	1981	1991	2001	1981	1991	2001
Number	93	104	58	803	425	302

12.4.6 Major issues of agriculture

Large scale conversion of paddy fields.

As the agricultural activities have become less remunerative, people have started with large scale conversion of agricultural land for other uses. The unscientific conversion has caused lack of drainage and flooding of low lying lands. Filling of canals and streams has affected the irrigation of the rest of the paddy fields. This also has reduced the ground water recharge and as a result, the availability of drinking water.

Salt water intrusion

In the coastal areas of Vatakara Municipality the intrusion of salt water is a major threat to agriculture.

Shortage of agricultural laborers

As the agricultural activities are less remunerative, people are shifting to other profitable fields. There is a wide shortage of laborers and especially coconut tree climbers.

Lack of drainage

Lack of drainage is the main reason for many diseases, especially for coconut tree. Subdivision of plots is a major hindrance in adopting scientific practices in agriculture.

12.4.7 Inference

The contribution of agricultural sector to the economic base of Vatakara cannot be ignored. The existence of vast stretches of paddy field is still seen in Vatakara and can certainly contribute to the food sufficiency. Similarly large scale production of coconut is a potential for setting up industry related to value added products and coir industry.

12.5 Animal husbandry

Vatakara has immense potential in the field of animal husbandry and yet to be tapped. There was a veterinary hospital even before the formation of Kerala State.

12.5.1 Present scenario

The livestock population in the Municipality is reproduced in Figure 12.10 below. The concentration indices for farmers having domestic animals are prepared based on socio economic survey data and the map is prepared as shown in figure. It can be seen that 6.37% of houses have at least one domestic animal. Vatakara is the home town for typical variety of Goats – 'Malabari goats' and could be profitably reared in the region. There is much demand for this in the internal market and in the States like Tamil Nadu and Karnataka.

Table 12.8 Livestock population

Livestock population				
Cow/Buffalo	**Goat**	**Hen**	**Duck**	**Pig**
1451 / 2	428	2044	0	0

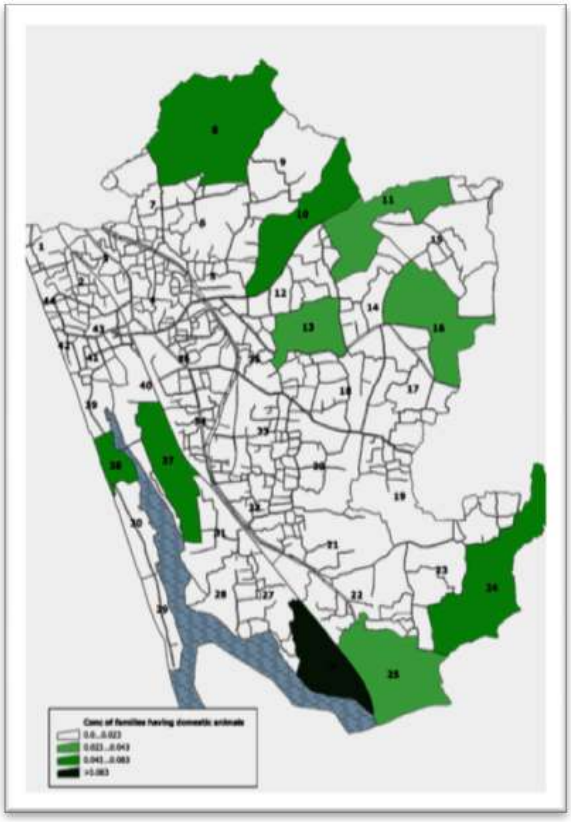


Fig12.10: CI of animal husbandry (From Socio economic survey analysis)

12.5.2 Milk production in Vatakara

Agricultural and animal husbandry are interrelated. There is plenty of paddy field with cultivation and without cultivation. Fodder cultivation in uncultivated areas can certainly help this sector. The data regarding the production of milk is given in Table 12.8. It can be seen that there is continuous increase in the production, which shows that more people are involved in this sector. It is remarkable to state that the increase in production of milk in December 2010 is about 41.6%

Table 12.9 Milk production in Vatakara Municipality

Month	Quantity of milk recorded as per society (L)
Apr-10	10470
May-10	11631
Jun-10	11769
Jul-10	12204
Aug-10	12730
Sep-10	13895
Oct-10	13573
Nov-10	14368
Dec-10	14827
Jan-11	14324

12.5.3 Major issues in Animal husbandry

1. There is no scientific slaughter house in Vatakara. There is no facility to examine the animal to be slaughtered so as to ensure that it is free from diseases. There are no proper waste disposal arrangements.
2. Lack of availability of hybrid variety of animals.
3. Infrastructure available for veterinary hospital is inadequate
4. There is no milk processing facility in Vatakara.

12.6 Fisheries

12.6.1 Introduction

In the primary sector employment, just after agriculture, more people are engaged in fishing. Fisheries play a vital role in internal and export sector. This sector provides employment for those who cannot have a chance of better employment, due to lack of education and hence development of this sector is vital for the welfare of such people. In Vatakara the main sources are Arabian Sea which is about 7 km from Kooriyadi to Azhithala and 4 Km length of Kottakal River.

As mentioned earlier coastal regions are educationally and socially back ward. More number of drop-out children are from this area and only a few could pass high school.

Vatakara had many resources for fisheries in the past. There were facility to land fishing boat, in Avikal and Chungam. A number of fish based industries such as extraction of oil, fish processing, etc. were seen in these areas. People were engaged in fishing, marketing and drying.

12.6.2 Present Status

Fisheries sector is also seen diminishing, as people are more shifting towards other jobs where better benefits are ensured. At present there are about 1120 fisherman families inVatakara. There are about 350 out board engines where nearly 1000 people are engaged. 9 inboard engines where 350 people are engaged. In addition to this there are about 30 country boats.

Fish catch In the shallow coastal areas ‘Ayila’,’Mathi’, chameen ‘manthal’ etc are seen and in deep areas ‘Eatta’, Shark, ‘Thirandi’ etc are seen. The seasonal variation of fish catch is reproduced in Figure 12.11 below.

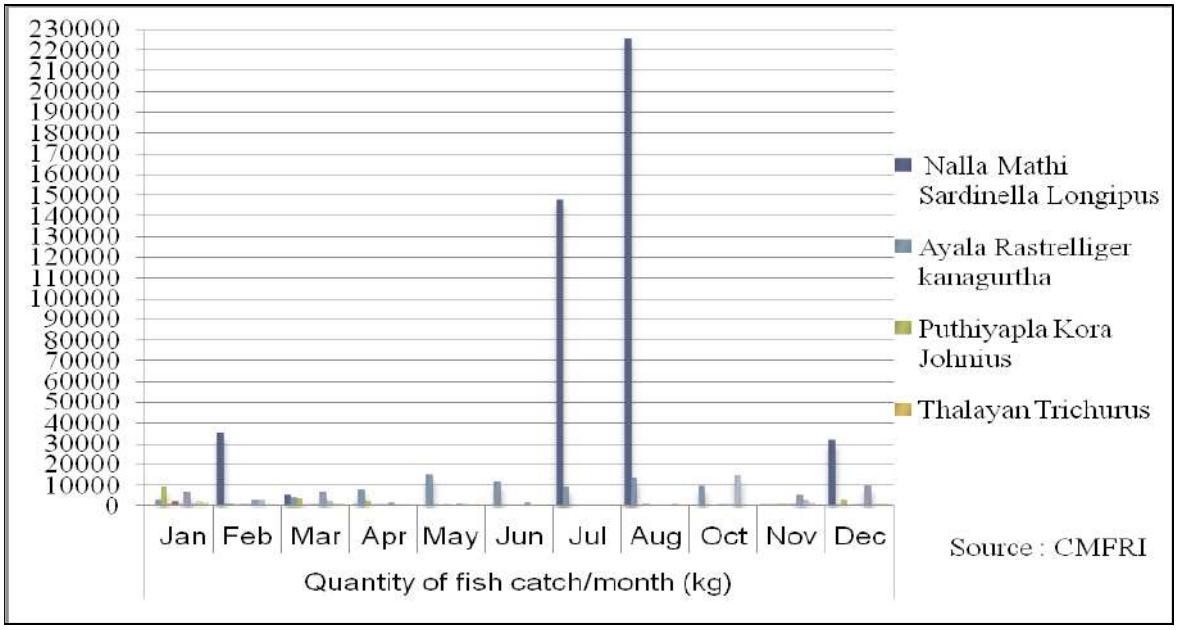


Fig12.11: Quantity of fish catches per month

Inland fishing

There are a number of ponds and water logged areas in Vatakara. But inland fishing is not popular.

12.6.3 Major issues in Fisheries

Coastal area experience high density of population. There is no fish landing facility in Vatakara. Health facility in the coastal region is to be improved. There is urgency of developing coastal road. Salt water intrusion is a major hindrance for availability of drinking water and it affects the portable water supply also. There are no rescue facilities for those who gets entrapped in sea.

12.6.4 Conclusion

Fishing and allied activities sustain around 5% of the house holds in the Municipality. The development in this sector is imperative as those who lives in this area are socially and educationally downtrodden. There is a good scope of improving the sector as the natural facilities are available.

13 TRAFFIC AND TRANSPORTATION

13.1 Introduction

Vatakara is the second biggest urban center in Kozhikode District. One of the main reasons for urbanisation in Vatakara is its well connectivity to nearby local bodies and other urban centres through road and rail networks. National Highway 66 (NH 17) bisects the town along with the Shornur - Mangalore rail line. The Villiappally road, Memunda road and Thiruvalloor road provide the eastern linkage for the town with the interior areas. The old highway alignment passing through the Central Business Area of the town is the arterial traffic corridor.

The road network in the town confirms to a grid iron pattern with a number of criss crossing roads. The area is served by public transport system consisting of both state owned Kerala State Road Transport Corporation (KSRTC) and private buses. KSTRC buses are operating from the new bus stand while private buses are operating from both old and new Municipal bus stands in Vatakara. There are 25 trains (one super-fast, 18 express trains and six passenger trains passing through Vatakara station in each direction in a day).

13.2 Road network

The roads in Vatakara town are maintained by both PWD and the Municipality. Roads inside the town can broadly classified into two, namely Regional roads, which connects town to nearby local bodies and urban areas and local roads which gives mobility inside the town. The major roads coming under regional road category are,

- The National Highway 66 from Kochi to Panvel
- Villiappally road,
- Memunda road,
- Chorode road and
- Thiruvalloor

Apart from these major roads, there are a number of roads leading to places outside as well as within the town. These are:

- Market road,
- Old National Highway,
- Lokanarkavu road,
- Sidhashram road,

- Beach road
- Railway Station – New bus stand road
- Fire station road and
- Aravind Gosh road.

The road network of Vatakara Municipality is given in Figure 13.1.



Fig13.1: Existing road network

Particulars of roads with in the Local Body Limits are shown in the Table below.

Table 13.1 Particulars of roads

Category	Length of surfaced roads			Length of un surfaced roads	
	Concrete	Tarred	Metalled	Unmettalled (Gravelled)	Kutcha
National High Way	_	6.335	_	_	_
State Highway	_	3.000	_	_	_
Major District roads	_	9.900	_	_	_
Other District Roads	_	3.400	_	_	_
Local body roads	_	66.750	68.5	_	46.4
Others	_	_	_	_	_
Total	_	89.385	68.5	_	46.4

13.3 Transportation Facilities

Major facilities available in transportation sector are bus stands and railway station. One new bus stand and one old bus stand exists in Vatakara. Vatakara railway station situates in the western side of Municipality. Apart from this, one jeep stand, one lorry stand and few auto rickshaw stands are there in Vatakara.

Road density of Vatakara Municipality is around 2.08 Km/1000 Population, which is low compared to national average of 2.6 Km/1000 populations. But in Kerala context it is very low compared to the 4.7 Km/1000 populations. Road density of Municipality is 7.40Km/SqKm, where India's average road density is around 1Km/SqKm. From this itself, it can be inferred that, roads at municipal area are sufficient when considering its length, but it is very much insufficient while compared with the population density.

13.4 Road network characteristics

The inventory details of major roads link with in Vatakara town is given in Table13.2.

Table 13.2 Road inventory details

Chainage	Length (Km)	Width (m)		Footpath(m)		Shoulder(m)	
		CW	ROW	L	R	L	R
I. Old NH (Karimpanapalam-Peruvattomthazha)							
Karimpanapalam-Edodi	1.00	7.50	12.5	1.50	2.00		
Edodi-Anchuvilakku	1.00	8.00	11.50			1.50	2.00
Anchuvilakku- Ontham road Jn	0.50	8.00	12.00			1.50	2.00
ontham Road Jn- peruvattomthazha	0.50	8.00	12.00			1.50	2.00
II PWD Market Road (Anchvilakku JnTheruvathu Jn)							
Anchvilakku-Thevarathu Jn	1.00	8.50	12.00	1.00	1.00		
III PWD Villiappally Road (Theruvathu Jn-Villiappally Jn)							
Theruvathu Jn-Lokanarkavu Jn	2.00	7.00	12.00			2.00	1.00
Lokanarkavu -Kooteunjeri Jn	1.00	7.00	12.00			2.00	2.00
Kooteunjeri - Villiappally Jn	2.00	7.00	12.00			1.50	1.50
IV Lokanarkkavu Road Mayyannur-kovil Jn							
Lokanarkavu-Mayyannur	1.50	3.00	6.50			1.50	1.50
mayyannur- kovil jn	1.50	3.00	6.50			1.50	1.50
V PWD (fire Station Road)							
pazhankavu Jn-Chorode panchayath boubdary	2.00	4.00	8.00			1.00	1.00
VI PWD Sidhartham Road Lokanarkavu jn-Sidhartham Road							
lokanarkavu-Sithartham Road	1.50	5.50	14.00			2.00	2.00
Sithartham road-Ring Road Jn	1.50	4.00	12.00			1.50	1.50
VII PWD Beach Road							

Asha hospital-Beach Road end	2.50	3.0-4.0	7.0-8.0			1.50	1.50
VIII PWD Railway station - New Bus stand Jn	1.00	5.70	7.5-11.0	1.50	1.00		
IX PWD Sandbag Road	1.00	5.50	15.80			1.00	1.00
(From Beach Road jn To Sandbank)	1.00	5.50	16.00			1.00	1.00
X. Thiruvallopr Road							
From Narayana Nagar Jn-Town limit	1.00	5.50	12.00			0.50	0.50
XI NH. Byepass from Nooranadu Bridge to Chorodu (Town limit)	1.00	8.00	13.60				
	1.00	10.50	18.60			1.50	1.00
	1.00	10.00	18.60			1.50	1.00
	1.00	10.00	18.60			1.00	1.00
	1.00	10.50	18.50			2.00	2.50
	1.00	10.50	18.50			4.00	2.00
	1.70	10.50	18.00			2.50	2.50

The National Highway 66 constitute 6.335 Kms length of road within the study area. The carriage way width of this road varies from 8.0 m to 10.5 m. Nearly 3 Kms of this road passes through the Central Business District (CBD) area of Vatakara town. There are three major arm junctions (Karimbanapalam Jn, Cooperative Hospital Jn and Peruvattamthazhe Jn) and two major four-arm junctions (New Bus Stand Jn and Theruvath Jn) along this road.

The old NH takes off from Karimbanapalam Junction and ends at Peruvattam thazthe Junction. The road has 3 Km length with the carriage way width ranging between 7.5 m and 8 m. Two major junctions, Edodi (4-arm) and Anchuvilakku (5- arm) located in this road were found to be very congested even during the off peak time.

The carriage way width of Villyapally road from Thiruvath Jn to Villyapally Jn was found to be 7.0 m. All other roads except Market road have 3.0 to 5.5 m carriage way width. Mixed land uses including commercial, residential and open area are the major features of the roads in the study area.

13.5 Link volume

Data pertaining to traffic volume and its composition were collected for all the major roads in Vatakara town. The surveys were conducted by NATPAC in 2010. Composition of traffic on various homogeneous sections of the roads in Vatakara town is given in Table 14.3.

Table 13.3 Link Volumes

Sl. No.	Road Section	Sc/Mc	Auto (P)	Car/ Jeep	M. bus	Bus	Mini Truck	Truck	MAT	Auto (G)	Total	
											No	PCU
1	NH-66											
	Noorad-karimbanapalam	1324	1127	4795	124	1728	698	1864	644	868	13172	22359
	karimbanapalam - New bus stand	3532	3810	4680	150	1620	644	1814	641	850	17741	25484
	New bus stand-theruvath junctrion	4785	4742	5897	313	2032	849	2033	711	940	22302	31109
	Theruvath Jn-pazhagavu junction	4180	4630	5570	280	2020	809	2018	713	937	21157	30183
	Pazhagavu jn-Peruvattamthaze jn	4093	4542	5439	260	2012	803	1997	710	911	20767	29755
	Peruvattamthaze jn -Chorode	3498	2770	5577	184	2172	602	2237	710	1478	19228	29175
2	Old NH											
	karimbanapalam - Edodi Jn	4614	5543	1559	66	0	135	28	6	335	12286	10157
	Edodi jn- Old bus stand Jn	5904	6114	2603	248	1397	140	40	0	577	17023	17139
	Old bus stand-Anchuvilakku Jn	6621	11939	3391	244	1439	167	35	0	762	24598	24441
	Anchuvilakku Jn- ontham Jn	4449	11150	2330	236	1440	160	32	0	730	20527	21445
	Ontham Jn-Peruvattamthazhe Jn	3908	8516	1895	230	1429	144	46	0	830	16998	18181
3	Railway station jn-new bus stand Road											
	Railway station-Edodi junction	1012	2148	967	0	0	111	45	6	466	4755	4416
	Edodi jn- New bus stand jn	2436	4877	1968	248	1398	90	20	0	410	11447	13234
4	Govt hospital road	475	590	186	0	0	0	0	0	0	1251	1014
5	Fire station road	465	1864	238	6	14	175	27	0	148	2937	2877

6	Janatha hospital road	432	1362	214	24	0	22	0	0	94	2148	1955
7	Villyapally road	4921	5157	3484	70	528	393	214	4	715	15484	14755
8	Lokanarkavu road	2120	3074	1315	57	120	86	28	0	315	7115	6423
9	Market road	1432	6219	1540	315	932	72	43	0	566	11119	12547
10	Thazhe Angady road	1974	2420	686	12	48	147	55	0	466	5808	5107
11	Sand bank road	1392	1613	505	8	48	116	38	0	364	4084	3182
12	Beach road	633	876	211	4		37	18	0	115	1894	1634
13	Thiruvalloor road	3668	4980	2253	20	452	830	208	0	765	13176	13087
14	Sidhasram raod	866	676	324		20	14	22	0	64	1986	1644

On National Highway -66, the daily traffic volume varied from 22,359 PCU to 31,109 PCU. The maximum volume of traffic was observed between New bus stand Jn and Theruvath Jn, followed by 30,183 PCU of vehicular traffic on the homogeneous section between Theruvath Jn and Pazhagavu Jn.The old NH witnessed the high volume of 24,441 PCU on the homogeneous section between Old bus stand Jn and Anchuvilakku Jn, followed by 21,445 PCU in the next section up to Ontham Jn. The lowest volume of 10,157 PCU was observed in the first section between Karimbanapalam Jn and Edodi Jn.

The road section from Edodi Jn to New bus stand Jn carried 13,234 PCU of traffic per day and Villiappally road witnessed 14,755 PCU of vehicular traffic in a day. The average daily traffic on Thiruvalloor road and Market road were observed as 13,087 and 125,47 PCU respectively. Other roads carried traffic volume ranging between 1,014 PCU and 6,423 PCU per day.Capacity utilization of the road stretches was measured by volume to capacity ratio (V/C ratio). It is the ratio of volume of traffic plying on the road stretch to the capacity of road stretch.

13.6 Capacity Utilization

For working out the capacity of different road sections, the information compiled during the road inventory survey was compared with the specifications of IRC -106 -1990 (Guidelines for capacity on urban roads).

Table 13.4 Volume-Capacity ratio on major roads with in Vatakara Town

No	Road Name	V/C
1	NH 66	1.52
2	Thiruvalloor road	1.45
3	Villyapally road	1.23
4	Edodi jn- New bus stand jn	1.10
5	Market road	1.05
6	NH 66 Bypass	0.97
7	Lokanarkavu road	0.71
8	Thazhe Angady road	0.57
9	Railway station Jn-Edodi junction	0.49
10	Fire station road	0.48
11	Sand bangs road	0.35
12	Sidhasram raod	0.27
13	Govt hospital road	0.17

While working at the capacities due consideration was given to carriage way width, junctions, parking, lateral clearance, shoulder, surface condition etc. For this purpose, 8% of daily traffic is considered as peak hour traffic. The average V/C ratios of major roads are shown in Table 13.4.

Many road sections within the study area were found to be over–utilized. The road from Edodi jn to New Bus Stand jn is found to be highly over utilised. The V/C ratio of NH 66 is also near to it. Old NH, Villiyapalli road, Market road and Thiruvallore road are the other roads having V/C more than one.

A traffic assignment is made considering total traffic from N-S and E-W directions to the Municipality. It is noted that peak hour volume of inter city traffic in N-S direction is 3300PCU and that of E-W direction is 4950PCU.

13.7 Speed and delay characteristics

The speed and delay characteristics of main roads are presented in Table 13.5

Table 13.5 speed and delay characteristics

Road Name	Average Journey Speed Km/hr			
	Peak hour		Non peak	
	With delay	Without delay	With delay	Without delay
NH-66 Bypass	43	49	53	56
Old National Highway-66	25	35	35	41
Villyapally road	32	35	43	48
Thiruvallur road	41	43	43	45
Railway station- New bus stand road	23	28	31	38
Fire station road	24	26	26	29
Janatha hospital road	18	29	26	40
market road	17	22	29	36
Govt.Hospital road	20	34	26	40
Beach road	19	29	26	41

13.7.1 Causes of Delay

An analysis of the delay and causes of delay has revealed that traffic congestion, parking of vehicles, narrow and bad road conditions and heavy vehicle movements were the major causes of delay for traffic flow on major roads in Vatakara town.

A maximum of 37 seconds of delay was observed on old NH from Karimbanapalam to Edodi Jn. This is due to the vehicle crossing towards New bus stand direction and railway station direction along with pedestrian crossing at this staggered four arm junction. This is followed by 33 seconds delay at the road section from Ontham Jn to Peruvata thazhe Jn due

to the sharp curve just after the Ontham Jn and unorganized parking of vehicles near hospital area.

Unorganized parking of vehicles, loading and unloading activities and pedestrian interference were the causes of delay on market road from Anchuvilakku Jn to Theruvath Jn while sharp curves and different gradient were the reasons of delay on Janatha hospital road.

13.8 Traffic volume at major intersections

Turning movement surveys were conducted (By NATPAC) in the following 10 major intersections in the study area to ascertain the peak hour demand.

- Karimbanapalam Jn
- New bus stand Jn.
- Theruvath Jn.
- Pazhagavu Jn.
- Edodi Jn.
- Old bus stand Jn.
- Anchuvilakku Jn.
- Ontham Jn.
- Adakkatheru Jn
- Railway station Jn.

Distribution of peak hour traffic flow at the intersections is briefly described below;

Karimbanapalam Jn

This is a three arm intersection on NH-66 bypass. The old NH -66 arm joins this intersection and has poor sight distance resulting in accidents. The peak hour traffic volume at this junction was observed between 10.30 am and 11.30 am in the morning with a total volume of 1,854 PCU. The major directional traffic was along NH-bypass.

New bus stand Jn

This four arm intersection on NH 66 bypass is formed by the interesting Thiruvalloor road on the eastern side and Edodi –New bus stand road on the western side. Commercial and institutional activities were the major land use pattern around this junction. The presence of New bus stand generates a lot of traffic at this junction. A maximum of 4,488 PCU was found in the evening peak hour between 4.00 pm and 5.00 pm. Maximum traffic volume was observed on NH 66 while Thiruvalloor road carried about 20 % of the total traffic.

Theruvath Jn

This four-arm intersection is formed by the intersecting Villyapally road on the eastern side and Market road on the western side. Commercial activity was found to be the major land use along this road. The peak hour traffic volume of 4,075 PCU was observed during the period between 4.00 pm and 5.00 pm in the evening. Maximum turning movement was noted on NH followed by Villyapally road.

Pazhagavu Jn

This four arm intersection is located in the national Highway and formed by the intersecting Fire station road and the road leading to Cholavayal, from Market road near Anchuvilakku. Residential and commercial activities were the major land uses along the approaching arms of this junction. Poor visibility from all the side roads to the junction makes this junction an accident prone location.

The peak hour traffic volume of 2,101 PCU was observed between 4.00 pm and 5.00 pm in the evening. Maximum traffic was observed on NH segment toward Kannur and Kozhikode directions.

Edodi Jn

This is a staggered five arm intersection on the old NH 66 (old bus stand road). The third arm of the junction leads to Railway station and the fourth arm connect the NH bypass near KVR Jn on the eastern side. Another arm from this junction leads to New bus stand Jn on NH-66 by pass. Commercial activity is the major land use pattern around this junction.

The peak hour traffic volume of 2,526 PCU at this junction was observed between 9.30 am and 10.30 am in the morning. Maximum traffic flow was observed from old bus stand direction.

Old bus stand Jn

This is a congested four arm junction close to the old bus stand. Two other roads take off from this junction towards eastern and western directions and join at market road and Railway station road respectively. Loading and unloading, shopping and pedestrian interference make this junction over congested. One way traffic regulation is being imposed on the side roads. In the case of Kottaparambu road, traffic is permitted towards bus stand direction and on other road, movements are allowed only towards Market road.

The peak hour traffic volume of 2,467 PCU was observed at this junction between 11.00 am to 12.00 noon in the morning. Maximum traffic flow was found on both the arms of old NH.

Anchuvilakku Jn

This is a staggered five arm intersection located in old National Highway close to old bus stand Jn. Market road, Civil station road and a single lane road are the three roads taking off from this junction. The single lane road joins the NH bypass at Pazhagavu Jn via Cholavayal. One way regulation is enforced on two roads viz – the single lane road and market road. Commercial activity was the major land use around the junction.

The peak hour traffic volume of 3,042 PCU was observed between 10.45 am to 11.45 am in the morning. Maximum traffic was observed along old NH from /to Peruvattam thazhe and Edodi Jn followed by Market road.

Ontham Jn

This three arm intersection located on old National Highway carried around 2,100 PCU of peak hour traffic volume in the morning between 11.00 am to 12.00 noon. The third arm leading to Thazheangady carried about 32 % of the total volume. Commercial and residential activities were observed around the influence area of the intersection. A sharp curve and shops very close to this junction cause poor sight distance resulting in low speed, traffic congestion and accidents.

Adakkatheru Jn

This three arm intersection located in the Vatakara – Villyapally road is formed by the road leading to Lokanarkavu. Commercial activity is the major land use around the junction area. Parking of goods vehicles, autorickshaws and two wheelers around the junction area cause traffic congestion and bottlenecks.

The peak hour traffic volume of 1,576 PCU in this junction was found between 9.00 am and 10.00 am in the morning. Maximum directional traffic was observed from / to NH and Villyapally road.

Railway station road Jn

This three-arm junction on Railway station road starting from Edodi junction. A third arm takes off from this junction towards old bus stand. As construction work is progressing on this road, minimal traffic flow was observed on this arm of the intersection. Only goods vehicles from Thazheangady and Kottaparambu are at present utilizing this road. Commercial, public offices and residential activities were observed in and around this junction area. The peak hour traffic volume was observed between 8.45 am and 9.45 am in the morning with a total volume of 459 PCU.

13.9 Parking characteristics

Parking surveys were carried out on major road sections of Vatakara town to obtain the peak parking demands and parking duration of various categories of vehicles in these road sections. The procedure involved the noting of registration number of all vehicles parking on a given stretch of road. This was repeated once every 30 minutes over the same stretch. Major road stretches selected for parking survey is given below;

- Old bus stand road
- Old bus stand Jn – Edodi Jn
- Edodi Jn – Keerthi theater area
- Edodi Jn – New bus stand Jn
- In front of old bus stand including Kottaparambu area
- Market road
- Anchuvilakku Jn area.
    - on Ontham road
    - on Civil station road
    - on Old bus stand road
- OV Road from Ontham Jn to Janatha hospital jn
- Villiappally road
- NH-66 bypass from New bus stand Jn to Theruvath Jn

13.9.1 Parking accumulation

Table gives the summary of peak parking accumulation observed in the major parking corridors of Vatakara town.

Table 13.6 Peak hour parking accumulation on various road sections in Vatakara town

Sl, No	Name of Road/Section	Car/ Jeep Van	Two wheelers	Auto (P)	Auto (G)	LCV Truck	Total
1	Old bus stand road (fromnEdodi Jn -Bus stand Jn) (Peak hour 4.30-5.30 PM)	28	39	23	2	1	93
	Edodi Jn - Keerthi Theatre Jn (Peak hour 6.00-6.30 PM)	21	26	18	2	4	71
2	New bus stand road from Edodi Jn - Narayananagram Jn (Peak hour 6.30-7.00 PM)	39	129	28	3	1	200
3	In front of old bus stand area (including kottaparambu road) (Peak hour 9.00-9.30 AM)	37	11	45	10	3	106
4	Market road (Theruvath Jn to Anchuvilakku jn) (Peak hour 11.00-11.30 AM)	51	85	34	4	14	189
5	Anchuvilakku Jn area On Ontham road.(Peak hour 5.00-5.30 PM)	9	17	16	2	2	46
	On Civil station road (Peak hour 9.30-10.00 AM)	1	5	28	_	_	34
	On Old bus stand road (Up to bus stand Jn) (Peak hour 4.30-5.00 PM)	_	27	2	_	_	29
6	O.V road 9from Ontham Jn to Janatha hospital Jn (Peak hour 11.30-12.00 Noon)	24	14	15	3	6	62
7	Villyapally road (from Theruvath Jn - Temple road Jn) (Peak hour 11.00-11.30am)	12	32	5	4	9	62
8	NH By pass (from New bus stand Jn - Theruvath Jn) (Peak hour 5.30-6.00 pm	67	62	41	12	12	194

Maximum parking demand of 93 vehicles consisting of 28 cars, 39 two wheelers, 23 autorickshaws, two goods auto and one light commercial vehicle were found to be parked along old NH between Old bus stand and Edodi Jn at 4.30 PM. Parking demand on remaining

section of old NH from Edodi Jn to Keerthi theater was found to be maximum at 6.00 PM in the evening.

The parking accumulation along the stretch between Edodi Jn and New bus stand Jn in the CBD was found to be quite high at all the stretches selected for the study. Due to commercial activity along this stretch, the maximum parking demand of 200 vehicles, consisting of 39 cars, 129 two wheelers, 28 passenger autos and four goods carrying vehicles were found to be parked at 6.30 PM in the evening.

A total of 45 autorickshaws, 37 cars / jeeps, 11 two wheelers and 13 goods carrying light vehicles were found to be parked in front of Old bus stand and Kottaparambu area at 9.00 AM in the morning.

Out of the total 189 vehicles parked along market road between Anchuvilakku Jn and Theruvath Jn, 46% were found to the two wheelers, followed by cars (27%) and passenger autos (18%) at 11.00 AM in the morning.

The maximum parking accumulation of 62 vehicles was observed at 11.30 AM in the morning. along O.V road between Ontham Jn and Janatha hospital Jn. The maximum parking demand along Villyapally road from Theruvath Jn to Temple road Jn was noted at 11.00 AM with 62 vehicles.

The road stretch along NH bypass from New bus stand to Theruvath Jn witnessed 194 vehicles parked at 5.30 PM in the evening. They consisted of 67 cars, 62 two wheelers, 41 autorikshaws, 12 goods autos and 12 LCVs.

13.9.2 Duration of parking

Majority of vehicles parked in the parking corridors were found to be for short duration of less than 30 minutes. Vehicle type wise duration of parking on selected road stretches in Vatakara town is presented in Table 13.7

On Old bus stand road, 49 % of the vehicles were parked for less than 30 minutes, while 29 % were parked for duration of 31-60 minutes.

On the CBD area of the town between Edodi Jn and New Bus stand Jn, 71% of vehicles were parked for duration of less than 30 minutes and 15% were parked for a duration of 31-60 minutes along this road stretch.

Table 13.7 Parking duration of vehicles on major parking corridors in Vatakara town

Sl No	Road coridors	Vehicle Type	< 30 min	31-60 min	61-90 min	91-120 min	121-150 min	151-180 min	> 180 min	Total
1	Old Bus stand Road Old bus stand Junction -Edodi Junction	TW	87	41	19	4	3	5	3	162
		Car	27	39	30	2	7	3	12	120
		Auto	31	17	4					48
		G Auto	4	4		1				9
	Edodi Junction	TW	61	22	13	4	3		1	104
		Car	29	18	2		1	2		52
		Auto	37	14	2					53
		G Auto	1	1		2				4
		LCV		2				1		3
2	New Bus stand Road -From Edodi Junction - New Bus stand Junction	TW	137	24	9	8	4	5	3	190
		Car	45	12	9	10	7	10	6	99
		Auto	214	39	4	2				259
		G Auto	14	9	3			2		28
		LCV	6	2			1		1	10
3	Infront of Old busstand area including Kottaparamba	TW	12	7		2		1	1	23
		Car	117	39	20	7	4	2	6	195
		Auto	164	33		3		1		201
		G Auto	6	3	2	4	2			17
		LCV	7	14	3					24
4	Market Road	TW	181	76	25	17	2			301
		Car	92	32	20	7	3	2	4	160
		Auto	136	29	14		1			180
		G Auto	4	3	2	1			2	12
		LCV	12	21	7	4		2	1	47

Similarly, about 67% of vehicles in front of Old bus stand area were found to be parked for less than 30 minutes and 21% for a duration of 31-60 minutes.

On Market road, 61% of vehicles were parked for a duration of less than 30 minutes, 23% for 31-60 minutes and 10% for 61-90 minutes of duration.

13.10 Pedestrian volume

Pedestrian surveys were conducted at major locations where pedestrian cross movements were found to be high. Locations selected for pedestrian survey are given below.

- Co-operative hospital Jn on NH -66
- New bus stand Jn
- Theruvath Jn
- Ontham Jn
- Anchuvilakku Jn
- Old bus stand Jn
- Edodi Jn

Out of the seven locations studied, Anchuvilakku Jn area, old bus stand area, Edodi Jn and New bus stand were found to be the major pedestrian crossing locations. Location wise distribution of peak hour pedestrian volume is presented in Table.

Table 13.8 Peak hour pedestrian crossings at major road sections in Vatakara Towm

Sl No	Road / Intersection	Peak hour	L-R "	R-L"	Total	Remark
1	Co-operative Hospital JN NH-66	4.30 pm - 5.30 pm	148	237	385	R - Hospital side L - Opposite side
2	New Bus stand Jn					
	i) Kannur Road	4.45 pm - 5.45 pm	397	542	939	L - Bus stand side R - Opposite side
	ii) Kozhikode Road	9.00 am - 10.00 am	289	201	490	L - Bus stand side R - Opposite side
	iii) Thiruvalloor Road	9.00 am - 10.00 am	133	107	240	L - Vijaya Bank side R - Opposite side
	iv) Edodi Road (infront of Bus stand)	4.30 pm - 5.30 pm	740	937	1677	L - Bus stand side R - Opposite side

3	Thiruvath Junction i) Kannur Road	5.00 pm - 6.00 pm	219	214	433	L - Sharp building side R - Opposite side
	ii) Kozhikode Road	8.45 am - 9.45 am	274	211	485	R - Tiptop Furniture shop side L - Opposite side
	iii) Market Road	3.30 pm - 4.30 pm	397	89	486	L - Sharp building side R - Opposite side
	iv) Villyapally Road	6.15 pm - 7.15 pm	97	126	223	L - Raja Hospital side R - Opposite side
4	Ontham Junction Old NH	8.45 am - 9.45 am	93	96	189	R - Chandra studio side L - Opposite side
5	Anchuvilakku Junction i)Old Bus stand Road	5.15 pm - 6.15 pm	591	547	1138	L - Nataraj Jewlery side R - Opposite side
	ii) Market Road	3.30 pm - 4.30 pm	584	504	1088	L - ICH side R - opposite side
	iii)PeruvattamthazheRoad	5.00 pm - 6.00 pm	755	407	1162	L - Court building side R - opposite side
6	Old Bus stand Junction i)On old NH	5.00 pm - 6.00 pm	1040	1892	2932	L - Bus stand side R - Opposite side
	ii)Kottaparambu Road	11.00 - 12.00 Noon	1118	2614	3732	L - Bus stand side R - Opposite side
7	Edodi Junction i)Karimbanapalam	5.15 pm - 5.30 pm	217	415	632	L - Central Lodge side

	Road					R - Opposite side
	ii)Railway station Road	5.00 pm - 6.00 pm	211	219	430	L - Opal shop side R- Opposite side
	iii)New Bus stand Road	5.15 pm - 6.15 pm	476	633	1109	L -Shop side R - Opposite side

13.11 Mode Share

Volume count of all the vehicles entering / exiting the study region were conducted in all the five major outer cordon points of the study region. Classified volume counts of vehicles were recorded according to their direction of travel. The count locations were

- Chorode on NH 66
- Moorad on NH 66
- Vykkilassery on Villiyappally road
- Kuttoth on Thiruvalloor road
- Makkul Peedika on Lokanarkavu road

Out of the total 40,608 passenger vehicles observed at entry and exit points, about 10% of the through vehicles (1,001 trips) were found to be counted at more than one outer cordon point. In other words, these are the 'through traffic' i.e. vehicles passing through Vatakara town. Thus after deducting these double counted vehicles, the actual trips made by inter-city passenger vehicles was found to be only 39,607.

As many as 2.41 lakhs inter-city passengers interacted with the town through the five enter cordon points of Vatakara town in a day by road based passenger transport vehicles. Of them, public transport buses like private buses and KSRTC buses carried the maximum number of intercity passengers (1.45 lakhs), which accounted for 60 percent of total travel demand by road. This was followed by cars and jeeps which carried nearly 54,450 passengers in a day, accounting for 22.55 percent of inter-city passenger demand. Passengers traveling by three wheelers and two wheelers were found to be 22,345 and 16,433 respectively.

Table 13.9 presents the distribution of inter-city trips according to vehicle type.

SL. No	Mode of Travel	No. of Vehicular Trips	% of Total Trips
1	Bus	5,067	10.73
2	Mini bus	318	0.67
3	Car/Jeep	14,329	30.34
4	Two wheelers	10,955	23.20
5	Auto(p)	8,938	18.93
6	Multi Axle Truck	843	1.79
7	Truck	3,215	6.81
8	Mini truck	1,275	2.70
9	Auto (G)	2,285	4.84

13.12 Origin Destination Analysis

O D survey at major entry/exit points of the study area was carried out continuously for a period ranging between 8 hours to 24 hours on a working day depending on the importance of the road by NATPAC. During the survey period, vehicles were stopped at random with the help of police at the major entry/exit points to collect information on trip origin and trip destination. For the analysis, desire lines were plotted using the OD data (fig 13.2). For better understanding, lower PCU values were removed. The findings from OD analysis can summarise as below.



Fig13.2: Desire line diagram

- Through traffic from Kozhikode side to Kannur & Kasaragod 8100 PCU
- Town to northern areas around Villiapally road 6100 PCU
- Town to Eastern Areas of Taluk around Thiruvalloor Road 5000 PCU
- Town to Chorode and northern areas of Taluk 4200 PCU
- Through traffic from Southern Districts to Kannur and Kasaragod 3000 PCU
- Through traffic from Southern Districts to Karnataka 2500 PCU
- Very less through traffic from Kozhikode and Kannur side to Eastern areas of Vatakara below 250 PCU

13.13 Problems in Transportation Sector

Transportation problems in Vatakara can be summarised as below

- Narrow roads and narrow bridges in Vatakara.
- On road parking accumulation and unavailability of parking area at CBD area.
- Uncontrolled pedestrian movements in the CBD area.
- Carriage way width of internal roads are very less (Varies from 3.0 to 7.0 m)

- Few areas are still not directly connected to major roads
- Railway line bisects the Municipality into two and hence the accessibility of persons in the western area to CBD and major roads is limited.

13.14 Inference

Vatakara Municipality has good road network with narrow roads. Missing links are almost nil. Only need is to upgrade the existing roads for a better mobility. Existing master plan proposals were not implemented completely. Old NH and Villiyapalli Road are the most Congested roads in municipal area. Around 30% of traffic is through traffic. On road parking accumulation and uncontrolled pedestrian movements in the CBD area are the main reasons for delay in traffic inside the town.

14 WATER SUPPLY

14.1 Existing Water Supply System

Major source of drinking water in the Municipality is open wells. Socio economic survey reveals that 50.23% is using their own wells and 46.43% depends on Municipality/Kerala Water Authority supply. 20% of the population in Vatakara is experiencing water scarcity for more than six months.Scarcity details are shown in Figure 13.4.

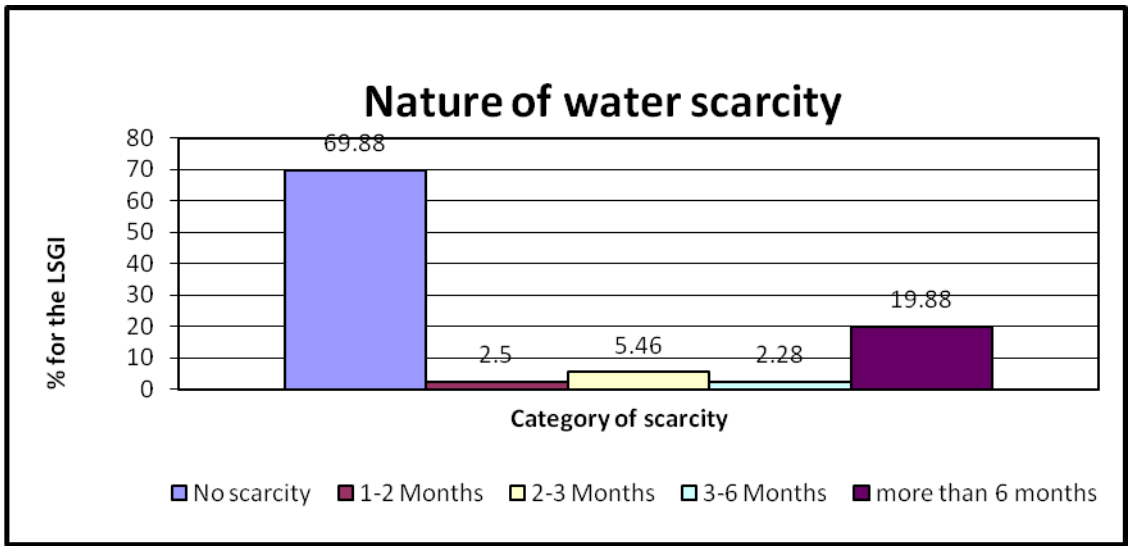


Fig14.1: Water scarcity details

The major sources of various drinking water supply scheme are given below.

- Rivers
  - Kuttiyadi River
  - Mahe River
- Open wells and bore wells
  - Arakkilad water supply scheme
  - Santhinikethan Water Supply scheme
  - Pannikkotti Water Supply scheme
  - Bajanamadam water supply scheme
  - Raroth WSS
  - Nethramala WSS
  - Kallada kuttikattilWSS
  - Sindhanthapuram J N M WSS
  - Valiyaparambath WSS

- Koilothbhagam WSS

- Public well
  - Ice road ,Near municipal office, Customs road, Near fire station and at Puthupanam

14.2 Water Supply Schemes in Vatakara

The two water supply schemes existing in Municipality are UIDSSMT Scheme and Schemes under Vatakara Municipality. The details of water treatment plant and distribution network are given below.

Table 14.1 Water treatment plants

SL. NO.	Location	Source of water	Capacity of the Plant	Types of treatment	Working Condition
1	Kappumala Velam	Kuttiyadi river	13 MLD	Filtration, Chlorination	Satisfactory
2	Puramery Panchayat	Mahe river	12 MLD	Filtration , Chlorination	Satisfactory

Table 14.2 Distribution network

Sl. No	Sources	Number of houses covered/no of connections	No and Capacity (ML)of OH tank	Total Quantity supplied /day	Quality of water
1	Kuttiyadi river and Mahe river	7473	OH tank Puthiyappa(MLD)- 18 lakhs OH tank Puthiyappa(New)- 10 lakhs OH tank Janatha Road- 20 lakhs GL tank Avangittumala – 6 lakhs litre GL tank Veeranchery – 6 lakhs litre	Average 6 MLD	Properly treated

14.3 Major Issues in Drinking Water Sector

- During summer season most of the region in Vatakara experiencing drinking water shortage.
- Overflowing drainage pollutes drinking water sources.
- There is no facility to ensure the quality of drinking water
- Shortage of funds for distribution of water during emergency

- Intrusion of salt water affects quality
- Presence of salt causes corrosion of distribution system.
- The source of UIDSSMT water supply scheme, the Kuttiadi river is facing threat of salt water intrusion due to river bed lowering caused by sand mining.
- The indiscriminate filling of paddy fields and water logged areas prevents ground water recharge and storage and this reduces the water available for drinking
- There is a problem of ground water receding due to sand mining from rivers.

15 SANITATION

15.1 Drainage and Sewage systems

The drainage canals are not fully connected. The depth and size is not adequate. In most of the places there is no cover for the drainage. The flows of liquid waste into natural streams which pass through human settlements render the lives in miserable condition. The choking of drainage lands by dumping solid waste especially plastic waste causes over flow during rainy season, which is a common phenomenon in Vatakara evoking public protest as well.

With the fast developing economic growth of the country as a whole and Kerala in particular, the Municipality is expected to witness tremendous growth in commercial, business and other activities in coming years. With change in lifestyle and migration, high rise buildings and residential complexes are increasing at a high rate. The existing system of waste water treatment is mainly onsite sanitation methods like leach pit, septic tank etc with exception of major institutions, residential complexes and hospitals. There is no public sewer system in the master plan area. This is severe problem as far as Vatakara is concerned.

15.2 Solid Waste disposal

There are about 20 tons of solid waste produced in Vatakara town daily. Out of this nearly 7 tones are collected per day. There is no waste disposal system available in Vatakara. At present the collected waste is transported to Puthiyappu trenching ground.



Fig15.1: Existing trenching ground

15.2.1 The details of waste collection.

The waste generated from hospitals are collected and disposed by 'IMA Image'. There is no waste management mechanism for markets and slaughter houses.

The socio economic survey reveals that as far as households are concerned 98% families are disposing the waste in their own compound. The details are given in Figure 15.2 below.

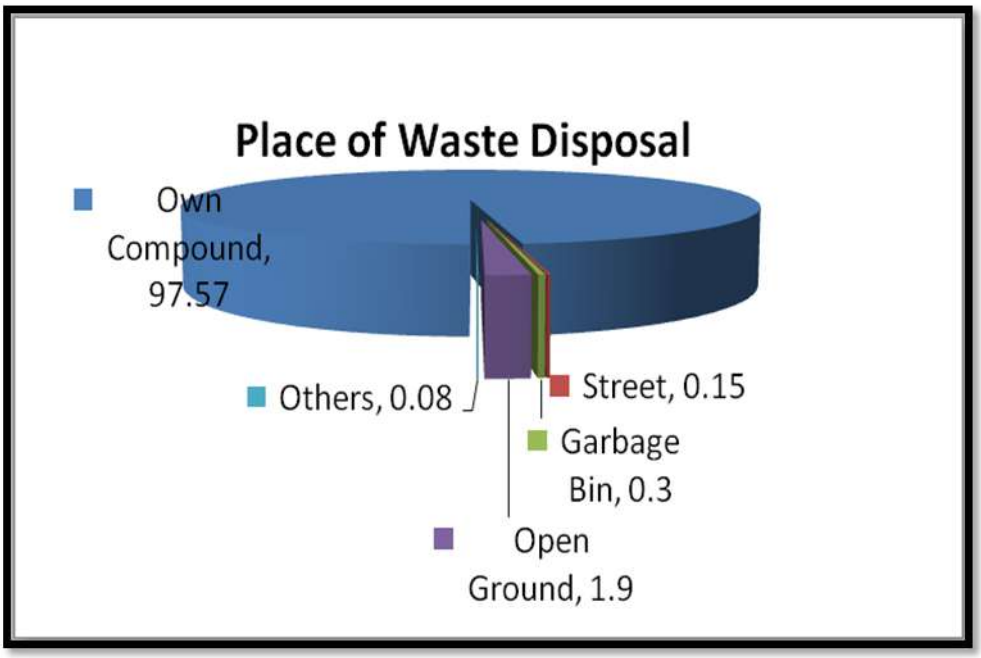


Fig15.2: Places of waste disposal (From Socio economic survey)

Sanitation survey revealed that only about 5% of houses are having septic tank. Remaining 95% uses soak pit or leach pit.

15.3 Inference

Just like any other towns, the waste management in Vatakara is a serious problem. But once treated systematically and scientifically, the potential of this sector can be widened. The Municipality has wider scope in agriculture which indicates the demand of bio-fertilizers. Organic waste can be treated to use as compost. Vermi composting at household level can be practiced, and bio gas plant can be installed at markets.

16 ENERGY

One 110 KV substation exists in the Municipality. There is no non conventional energy source in the study area. The sector wise breakup of number of connections and power consumption is shown in the Table below.

Table 16.1 Power connection and consumption details

Total Number of Connections	Category wise break up– No of connections				
	Domestic	Industrial	Commercial	Agricultural	Others
20230	12979	324	6732	195	20
Total Consumption (MKWH)	Category wise breakup of – Power consumption (MKWH)				
	Domestic	Industrial	Commercial	Agricultural	Others
3064398	1492585	151375	1413720	4902	1816

RAPDRP (Restructured Accelerated Power Development & Reforms Programme) Works, Voltage improvement works and 100 % electrification projects are running in municipal area.

The major issue in energy sector is the low voltage problem. Low voltage localities are Arakkilad, Eranchikkal, Pazhankkavu, Nademmal peedika, Fire Station, Veluthamalla, Aurobindogosh kuniyil area, Kayakkandi area, Kuttatah keezham and Shiva temple area.

17 EDUCATION

17.1 Literacy Rate

The literacy rate of Vatakara Municipality according to 2011 census is 94.88. The comparison of literacy rate of Vatakara with Kozhikode Corporation, District, and its rural and urban areas are shown below.

Table 17.1 Literacy rate

Literacy Rate (2011)	Total	Male	Female
Vatakara Municipality	94.88	97.12	92.91
Kozhikode Corporation	96.53	97.71	95.47
Kozhikode District	95.97	97.68	94.39
Kozhikode District Urban	96.20	97.81	94.73
Kozhikode District Rural	95.29	97.34	93.41

17.2 Education Institutions Type and Numbers

Total of 84 anganwadis are present in Municipality. Out of this, 46 only have own building. 24 are functioning in lease buildings and 14 are in Municipality owned land. The infrastructure facilities of some anganwadis are poor.

Table 17.2 Education institution details

Category	Number	Students (2011)
Primary School	45	8664
High School	9	3359
Higher Secondary School	6	630
Special School	1	100

Up to secondary level, the education infrastructure of Vatakara Municipality is good. 45 primary schools are present inside the 21.32SqKm area of Municipality. Other than this, 9 schools with high school facility and 6 with higher secondary facility is available. Among this, 5 schools have both high school and higher secondary school facility. The number of schools and current strength of students is given in the Table 17.2.

17.3 Facilities.

Most of the existing schools have good infrastructure facilities. Data regarding other facilities like road connectivity, playground, computer lab, internet and separate toilet for girls were collected in secondary data survey and are shown in the Table below.

Table 17.3 Facilities in Education institution

Facilities	Number of schools in which the facility available	Number of schools in which the facility Not available
Road(>3m wide) Connectivity	43	5
Play ground	22	26
Internet	7	41
Computer lab	31	17
Separate toilets for girls	34	14

17.4 Higher education sector

Higher education facilities are less in the Municipality. Eight unaided private sector colleges are present in Vatakara. The intake capacities of these are very low. Other than this, Kerala State Audio Visual and Reprography centre, Centre for Automobile Engineering, Govt. Model Poly Technic, Technical High School, Vocational Higher Secondary School and Centre for Folklore Studies are functioning in Vatakara Municipality.

17.5 Problems and potential

For identifying the deficiency/sufficiency of education facilities, the existing number and type of institutions were compared to UDPFI (Urban Development Plans Formulation and Implementation) standards. The comparison is given in the Table.

Table 17.4: Comparison with UDPFI standards

Category	Requirement as per UDPFI guidelines for Vadakara		Existing	
	Number	Students	Number	Students
Primary School	20	10000	45	8664
High School	6	4200	9 (4 HS + 5 HS &HSS)	3359
Higher Secondary	6	2400	6 (5 HS &HSS + 1 HSS)	630
Special Schools	2	800	1	100

It can be seen from the Table that, number of primary schools, high school and higher secondary schools are almost sufficient. For technical education, only one Poly Technique is available, ITIs are very few in number in this area.

17.6 Inference

Existing facilities in education sector are almost adequate for Vatakara Municipality. Number of institutions in Vatakara is more than the UDPFI Standards. But when considering the seat availability, strength of HSS should be increased. While considering the needs of surrounding Panchayats, more facilities in higher education field should be established, especially in professional and technical side.

18 HEALTH

18.1 General

Vatakara Municipality is having better facilities in health sector.

18.1.1 Existing facilities

The details of Allopathic, Ayurvedic and homeo facilities are shown in Table 18.1 and the bed availability in various sections in Table 18.2.

Table 18.1 Health Facilities

Category	No. of hospitals		
	Govt.	Private	Co-Operative
Allopathic Hospitals/Dispensaries	2	8	1
Ayurvedic Hospitals/Dispensaries	2	4	1
Homeopathic Hospitals/Dispensaries	Nil	1	Nil

Table 18.2 Hospital details

Category	No. of beds			No. of doctors		
	Govt.	Private	Co-Operative	Govt.	Private	Co-Operative
Allopathic	210	375	300	17	60	18
Ayurvedic	20	15	10	5	6	2
Homeopathic	0	0	0	0	1	0

18.2 Major issues in Health Sector

- Taluk hospital handles medico-legal cases, the facilities in general is inadequate.
- The health facilities is coastal areas are quite inadequate
- There has to be more de-addiction centers in Vatakara.
- The epidemic disease spreading during rainy seasons need to be controlled more effectively.

19 RECREATIONAL FACILITIES

Areas for recreational facilities are nearly absent in Vatakara Municipality. There are only two parks in the Municipality, and their size is very small. Other than this, the recreational open space is the sand bank area.

One small stadium is present in Municipality. Other than this, children's use small vacant lands as their playing grounds for playing football and cricket.

Few cinema theatres and auditoriums are present in the Municipality. The main uses of these auditoriums are as marriage halls.

The main problem in recreation sector is the unavailability of opportunities. Only two parks and one beach are available in the study area. The extent of them is also very low. According to UDPFI guidelines, the area required for recreational purpose is 18 to 20 percentage of area for a medium developed town. Here available area is less than one percentage.

20 OTHER CIVIC AMENITIES

One town hall is present in the Municipality (Figure 20.1). This is mainly used for the seminars and other functions conducted by Municipality and other governmental organizations.



Fig20.1: Town Hall

One crematorium is present in the northern side of Municipality. This is situated far away from the CBD area and surrounded by agricultural land. The residential concentration surrounding this area is very less. Hence it seems a proper location for the crematorium. One main problem faced is the less carriageway width of the road to this area.

21 HOUSING

Total Number of houses according to 2001 census in Municipality is 13092 and 2011 census in Municipality is 15787. There are very few high rise residential buildings at present. The results in socio economic survey regarding housing sector are given in Figure 21.1 and 21.2 below.

Table 21.1 Land ownership details

Land Ownership	% of LSGI
Own	98.41
Lease	0.08
Others	1.52

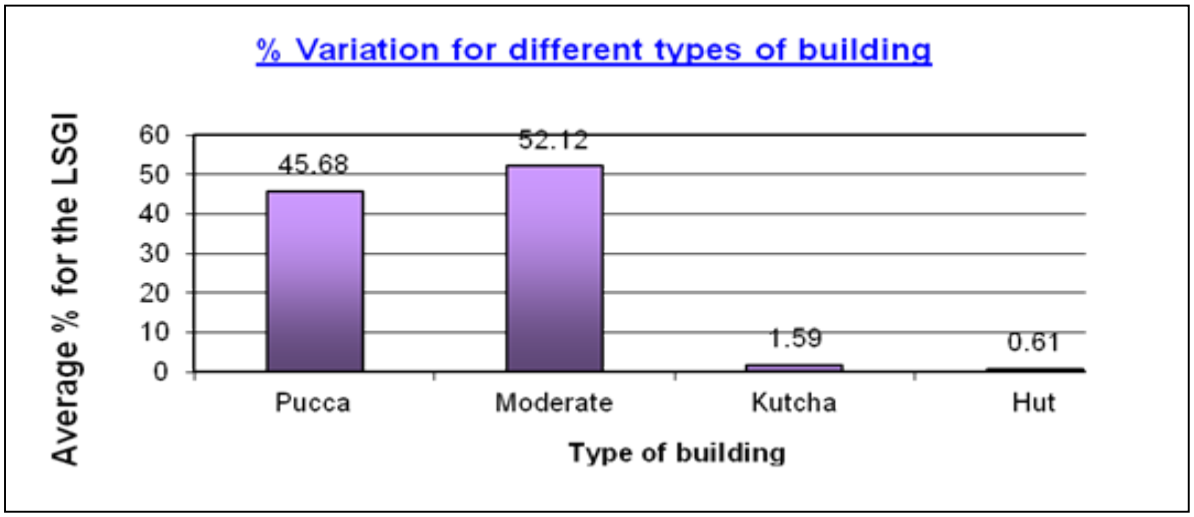


Fig21.1: Type of buildings in Municipality

From the survey results, it can be concluded that, kutcha houses are very low in the Municipality. More over most of the families have houses in their own land.

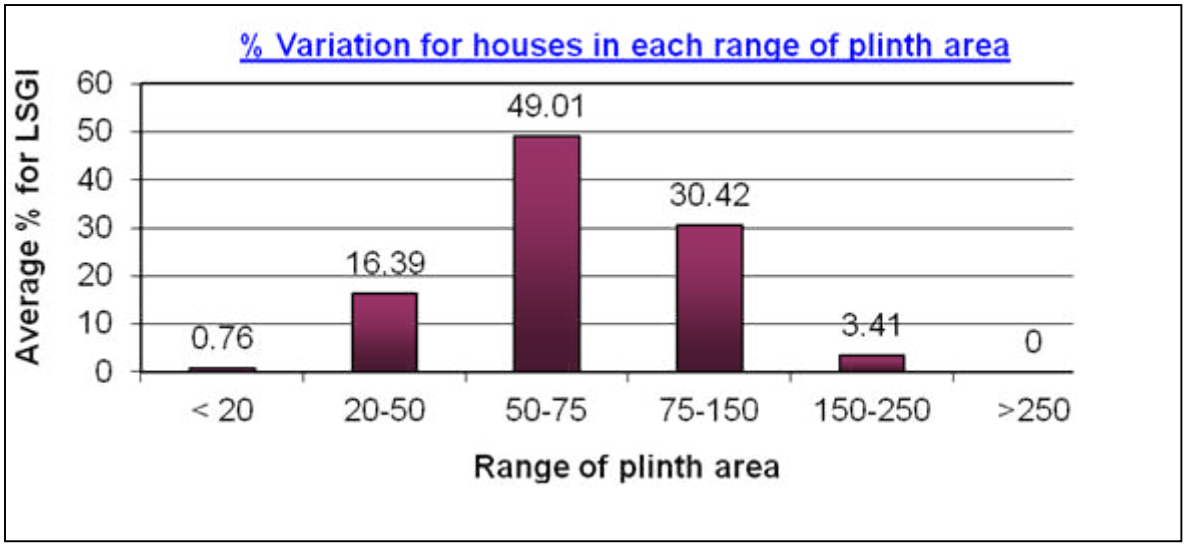


Fig21.2: Plinth area of buildings in Municipality (From Socio economic survey)

According to municipal records, there are 24 slums in Municipality. Out of this, only four are listed slums. Most of the slums have good infrastructural facilities. The details of four listed slums are given below.

Table 21.2 Slum Details

Name of the Slum	Ward (s)	Total area (Sq.m)	No of Houses	Housing category			Number of Households
				Pucca	Moderate	Kutcha	
Pandikashala	29	65353	189	172	Nil	17	216
Mokhachery	43,44	104310	162	138	Nil	24	162
Kuriyadi	1	63826	123	106	Nil	17	123
Avikal	1,44	53993	111	101	Nil	10	111

The ongoing and committed projects under slum improvement are IHSDP (Integrated Housing and Slum Development Programmes) for 4 listed slums. Image of one slum is given in Figure 21.3 below.



Fig21.3: Slum area

From all these information's, it can be concluded that, the housing sector in Vatakara Municipality is presently not having any major problems.

22 SPECIAL CONCERN AREAS

22.1 BPL status

The latest BPL Survey conducted by the Municipality is analysed. There are 5980 persons (7% of total population) who are below poverty line. The community wise break up of BPL status is shown in the Figure 22.1. It can be seen that 70% of the BPL population belongs to general. SC/ST population below poverty line constitutes negligible percentage.

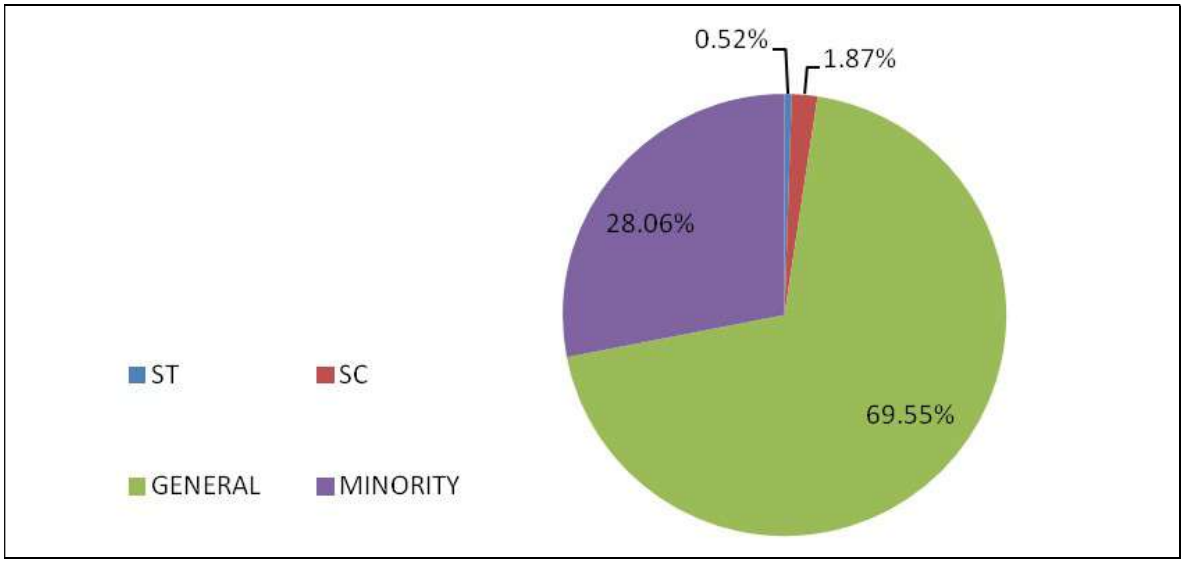


Fig22.1: BPL family percentage.

22.2 Social backwardness

The percentage variation of SC/ST population in Vatakara is compared with as that of Kozhikode Corporation, Kozhikode District etc. are shown in Figure 22.2. It can be observed that the percentage of SC/ST population is lowest in Vatakara. Economic status is also better in Vatakara as per the available data.

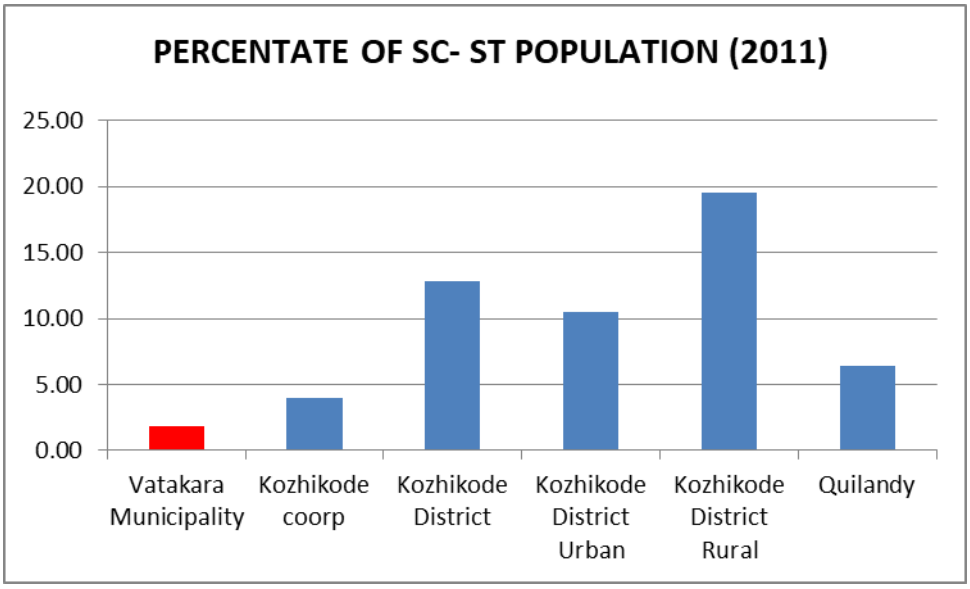


Fig22.2: Comparison of SC/ST population percentage.

As per Socio economic survey the average family income is about 8860/month. Highest income is reported in Wards 5 and 39. The concentration index based on average family income worked out is reproduced in Figure 22.3

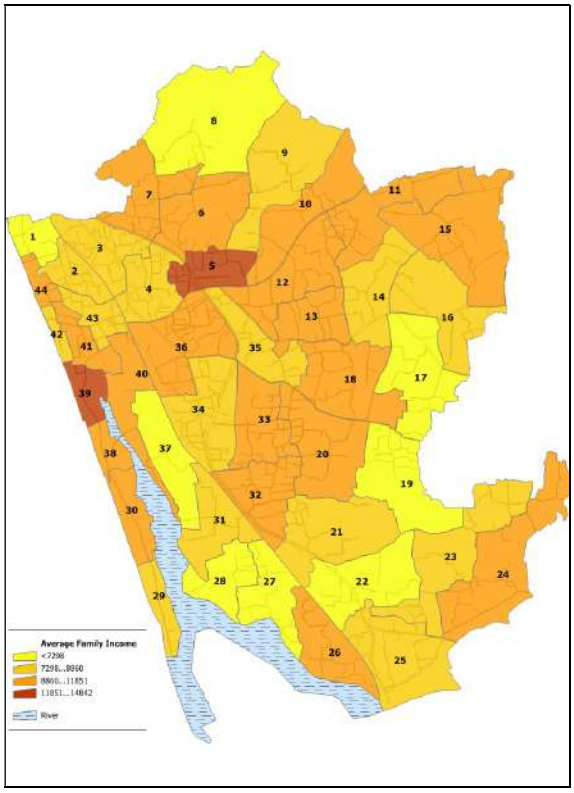


Fig 22.3 CI of monthly income.

23 ENVIRONMENT

23.1 Present scenario

Even though Vatakara Municipality is a medium town, lots of environmental sensitive areas are present in the Municipality. Western area of the Municipality is bordered by Arabian Sea. Mangrove area is also present in the western side of the Municipality. These are mainly concentrated in the area behind Vatakara railway station.



Fig23.1: Vatakara beach

Few ***Kavu***s (*traditional natural sacred space with dense vegetation*) are present in Municipality. Most of them are associated with temples. The major two Kavus are Kavu at Kalariyullathil Temple (20 cents) and Kavu at Bhajanamadam (20 cents).



Fig23.2: Island at sandbanks

A backwater is present in the sand banks area. Few ponds are also present in the Municipality. These are mainly associated with Temples, agricultural area and large houses.



Fig23.3: Pond associated with a house



Fig23.4: Pond inside a coconut field.

Vatakara has good environmental potential in the form of beach, mangroves, ponds, backwater, and kavus. The major problem in this field is that, no measures are taken to identify and preserve these areas. In this masterplan, an attempt is made to identify all these land uses. Among these environmental sensitive areas, ponds are the one, which faces severe damage. In olden ages, most of these ponds were made in connection with agriculture. When people show reluctance to agricultural activities, these ponds were also discarded and later on most of them disappeared. Also, when agricultural areas are converting for other purposes, rest share ponds were filled. Hence the numbers of ponds in the Municipality get reduced drastically in the last few years.

PART II:

INTEGRATED DEVELOPMENT VISION

24 SUMMARY AND FINDINGS

The findings obtained from the analysis of existing condition of different sectors are given in this chapter.

24.1 Findings Based on District Urbanisation Report

1. Vatakara is identified as the only existing second order settlement in Kozhiode District. Kozhikode Municipal Corporation is the sole local body in the District which has order higher than Vatakara Municipality. This shows the importance of Vatakara Municipality in the District.
2. Functional character of Vatakara is obtained as urban and all the surrounding Panchayats are semi-rural or rural. This necessitates the development of Vatakara Municipality as a service provider. Hence Vatakara should be developed as an educational and medical hub for surrounding Panchayats.

24.2 Population and Land Use Analysis.

1. Population growth rate of Municipality is very low. Work force participation rate is also small compared to the UDPFI guide lines (33% for a town) (Figure 24.1). This shows the poor economic basis of Municipality.
2. Large and medium scale industries are not present in Vatakara. Making of cement pots and handloom cloths are past glories of Vatakara. Now these household industries declined due to reduced demand, low monetary benefits and inclination of youngsters towards more attractive professions.
3. When looking at the land use of Municipality, around 70% of land use is residential. Individual plot area is high. Hence there are chances for homestead cultivation. Agricultural land use is concentrated in the northern side of Municipality. The interference from other sectors to this area is less and hence it still continues in its virgin state.

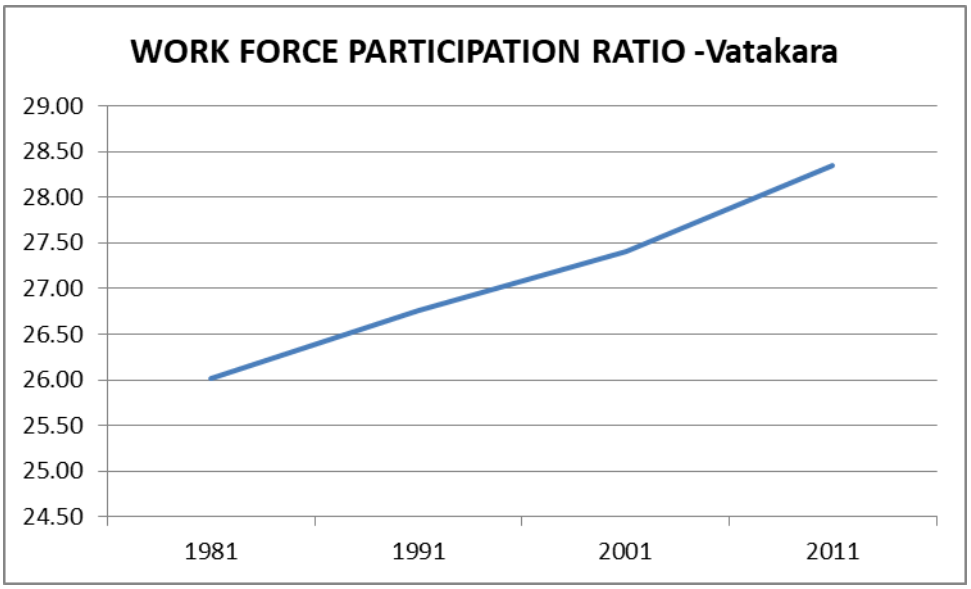


Fig24.1: Work force participation ratio of workers in Municipality

4. Percentage of Commercial Area has tripled in last two decades, indicating the flourishing commercial activities in Vatakara. But it covers only 1.7% of land area. Vatakara has a significantly higher share of water bodies and water logged areas compared to other ULBs. This suggests a potential for water front tourism.

24.3 Industrial Sector

1. Good opportunities for coconut based, fisheries based, and ayurvedic based industries exist in Vatakara Municipality.
2. Pakkayil, the area west to railway line is filled with household industries making cement pots and other artifacts. Now the intensity of these activities is marginal. But a proper upliftment plan will raise these activities in to the splendid history.
3. An industrial estate is functioning in Vatakara. This area currently does not hold any large or medium scale industries. But scope for further development is available in this area.
4. The vanitha vyavasaya kendram, present in ward 19 can be used as an area for training and implementation.

24.4 Commercial Sector

1. All commercial activities are concentrated in the CBD area. The commercial activities away from CBD are very less.
2. Congestion and improper waste management are the main problems of the CBD area.

24.5 Tourism Sector

1. Even though tourism is not a major activity in Vatakara, few tourism destinations are present inside and nearby areas of Vatakara Municipality
2. Vatakara Municipality is bordered with Arabian Sea and a back-water in the western side. This facilitates waterfront tourism.
3. The old religious and cultural structures in Vatakara can be used for activating heritage tourism inside it.

24.6 Agricultural Sector.

1. The main attraction in agricultural sector of Vatakara Municipality is its virgin paddy fields in the northern area. These areas are blessed with irrigation canal. Hence scope for paddy cultivation is live in Municipality.
2. One of the major street, where the handling of agricultural products in Vatakara is being done is the Nut Street. This name came over the past trade and commerce activities related to nuts in that area. This name is still valuable, because of the coconut cultivation in 1375ha with a yield of 10000t/year.
3. The average plot size of Vatakara is obtained as 31.8 cents (from net land use analysis). The land is highly productive in nature for vegetables. Hence the area is suitable for homestead cultivation.

24.7 Animal Husbandry & Fisheries Sector.

1. Vatakara is the home land for malabari goats, the goats shows high productivity and better resistance to diseases. The production of this can be promoted.
2. Increased demand for milk, egg and meat necessitate the requirement of production.
3. Good fish market is available in Vatakara Municipality near the Sea. Vatakara had one port and now it is in dilapidated stage. This historic port is to be revitalised.

4. Azhithala area is suitable for fish landing and boat repair. These activities can be promoted in this area.

24.8 Transportation Sector

1. Good road network is available in the Municipality. But most of the roads are narrow (old NH, Edodi road, Villyappalli road, Market road, Railway Station road etc.). Narrow roads and narrow bridges (Murad Bridge, Karimbanappalam) are the major problems in the transportation sector.
2. Volume capacity ratio of most of the main roads in Vatakara is more than one. This necessitates the improvements of major roads.
3. No proper parking space is available in the CBD area. Street vendors are encroaching the foot path
4. Accessibility to internal areas and western side of rail is inadequate.
5. Outer ring roads can be developed by connecting existing roads and with a few new constructions. Good accessibility to internal areas can be achieved by developing existing local roads. Missing links are less very few in major traffic corridors

24.9 Public and Semipublic Sector

1. Municipality needs solid waste management unit, sewerage treatment plant, stadium and central library.
2. Now solid waste is collecting at the trenching ground at Puthiyappu area. There is no solid waste treatment plant.
3. Decentralized solid waste disposal sites shall be planned at Puthuppanam, Meppayil, and Peruvattuthazham.

24.10 Water Supply Sector

1. UIDSSMT project is being commissioned in Vatakara Municipality. This will eradicate all the existing problems in water supply sector.
2. Small drinking water supply projects can be done as a support/backup for UIDSSMT at Palliyaranj and Areekulangara

24.11 Educational Sector

1. Existing facilities are almost adequate for Vatakara Municipality.
2. Infrastructure facilities of anganwadis are to be improved.

3. Vatakara should be developed as an educational hub for surrounding panchayats with more facilities in higher education fields.
4. When comparing with UDPFI standards, following institutions are required in Vatakara. Two high schools, one HSS, one Integrated school with hostel facility, one special school, one polytechnic, two ITI, and one Arts and Science College.

24.12 Health Sector

1. Better medical facilities are available in Municipality. There are more medical facilities when compared with UDPFI standards. But, while considering as a service provider for surrounding panchayats, more super specialty facilities are required.

24.13 Social Backwardness.

1. Numbers of socially and economically backward families are very low in Vatakara.

25 GOALS AND OBJECTIVES

25.1 Development Goals

From the analysis of existing situations and findings, it can be seen that, the economic basis of Vatakara is diminishing. This is mainly due to the fatigue in the traditional production sector, and the failing of old glorious trade and commerce activities. The economic basis of Municipality can be uplifted by reviving the traditional productive sector and enhancing the trade and commerce activities. Promotion of tourism will also help to strengthen the economy of the Municipality. The conservation of cultural and social heritages is another important thing to be done in Vatakara. Along with this, environmental sensitive areas like paddy fields and water bodies are to be protected.

One main problem faced by the Municipality is its waste management. Solid and liquid waste treatment is a major issue in this area. Hence this should be tackled in master plan proposals. Keeping all these things in consideration, the development goals can be summarised as below.

- To transform Vatakara as a trade centre and a service provider for nearby local bodies.
- To revive the indigenous production sector.
- To conserve environmentally sensitive areas.
- To protect the cultural and physical heritage and to promote tourism.
- To convert Vatakara a clean city/green city.
- To ensure equitable distribution of basic facilities to all sections of people.

25.2 Development Objectives

Old Vatakara was the foremost nut trade centre in Malabar region of Kerala state. Since it was major centre for nut trading, other commercial activities were also developed besides this. Hence in past, the economic basis of Vatakara was held in trade and commerce activities. Now these are in lay down stage. But the silhouette of old trading is still alive here and hence chances for reclaim is available. Large scale as well as small scale trading of nuts, ayurvedic raw materials, fish products, handicraft items and cement art crafts can be promoted in Vatakara Municipality.

It is obtained from DUR that, the functional character of most of the local bodies in Vatakara Taluk are semi-rural or rural. Hence Vatakara should act as a service provider for

satisfying their higher order activity needs. Education and health sector enhancements should be done at Vatakara keeping in view of surrounding local body's needs.

The main railway station, where most of the express/superfast trains have stops inside the Taluk is situated in Vatakara Municipality. The higher order activities are highly concentrated inside the Municipality. So persons from other areas are frequent travellers to this area and hence Transportation development with an efficient circulation network for intra zonal and inter zonal movements is highly essential in Vatakara Municipality.

Tourism is now not a revenue generating activity in Vatakara Municipality. Municipality has a good tourism potential with its enthralling beach islands, serene beach (Sand Banks), reminiscence of reforms movement (Sidhashramam), depictions of glorious past (Thacholi Manioth temple, Thazhathangadi Valiya Palli), etc. Extraction of these potentials in Municipality along with connectivity to nearby tourist areas like Iringal craft village, Kunjali Marakar museum and Lokanaarkkavu will fix its place in tourism map of Kerala.

Indigenous production sector of Vatakara was suspended in concrete art-craft products, agricultural byproducts, Ayurvedic medicines. Cement pots and art crafts were produced in large scale at Vatakara Municipality, expecially at Pakkayil area. This production is now reduced very much, but the requirement is comparatively high. Proper upliftments will bring back the past glory in this field. The opportunity for coconut based and ayurvedic based industries in Vatakara is high due to the splendid availability of raw materials. Hence chances for flourishing of small scale as well as large scale industries are high in Municipality.

Western area of Vatakara is bounded by Arabian Sea. The fishing sector of Vatakara is composed of 7 Km sea shore stretching from Kooriyadi to Azhithala and 4.5Km of Kottakal river banks. Around 1350 peoples are working in this sector. Since the usage of fish and its by-products are high, there is a bright future for this sector. Like fish, meat, egg and milk requirement is very high. In the case of Vatakara, domestic demand cannot be met by domestic production. Hence the scope for animal husbandry sector is also high.

Paddy, Coconut and Arecanut are the major agriculture products. Now a days, most of these cultivating areas are converted and the total area reduced to 1.99 Sq Km (9.34% of Municipality). But the hope is that, still few vast unconverted areas are present in Municipality. Proper land use regulations and promotion strategies will give better productivity in this sector.

Vatakara is the home land of Kalaripayattu. Kalari treatment and Marma treatment are traditional treatment methods of Kalari Gurukkal (Teachers). Kalari treatments is based on

the precise knowledge of the body's energetic channels (nadis) and vital spots (marmas), the wide selection of medicines, usually homemade by the Gurukkal, is entirely organic. Thailam, or oils, medicated with leaves, roots, barks, and even dairy products can be applied externally by massage, or taken internally. Numerous internal medicines are also available, namely churnam (powders), kashayam (decoctions), gritham (medicated ghee), etc. Presently few Kalari Sangams (Groups) are functioning in Vatakara. Promotion and exhibition of this traditional art and treatment form will raise social as well as economic strength of Municipality.

Around 70% of land inside Municipality can be classified as residential. All other activities are now concentrated in the remaining 30% area. As per UDPFI guidelines, the residential area of a medium town shall be 40 to 45%. Hence for sustainable development of the town, the activities should be properly distributed. This distribution can be achieved by proper land use zoning. In this distribution, the wet lands, rivers, streams, ponds, kavus and mangroves should be protected. Along with this, cultural and religious monuments and locations should be confined.

One major problem faced by the Municipality is its waste management. Solid as well as liquid waste treatment is a main problem in this area. A solid waste treatment plant and a sewerage treatment plant are the two unavoidable requirement of Municipality. Drainage network in the Municipality shall also be strengthened. Clean city –green city concept should be worked out in Municipality. For this, social forestry activities can be promoted and new public comfort stations shall be started.

The development objectives connected with each development goals are summed up as follows.

To transform Vatakara as a trade center and a service provider for nearby local bodies.

- Develop Vatakara as a major trade centre by promoting commercial activities.
- Educational and health sector enhancement.
- Transportation development with an efficient circulation network for intra zonal and inter zonal movements.

To revive the indigenous productive sector.

- Emphases on small scale industries like concrete art-craft products, agricultural byproducts, ayurvedic medicines, etc.
- Development of fisheries, agricultural and animal husbandry sectors
- Expansion and promotion of Kalari and Marma training and treatments in its homeland.

To conserve environmentally sensitive areas.

- Ensure compatible land use by properly organizing the activities
- Support for wetland agriculture especially for paddy.
- Protection of river, streams, ponds, *kaavus* and mangroves.

To protect the cultural and physical heritage and to promote tourism.

- Protection of heritage structures and areas like Thacholi Manikoth Temple, Tazhe Angadi Valiya Palli, etc.
- Support for ethnic cultural heritages like Kalaripayattu, Marma Treatment, Naadanpattu, etc.
- Explore the opportunities in tourism field, especially at Lokanarkavu, Kunjali Marakkar Museum, Iringal Craft Village, Sand Banks and Sidhashramam

To make Vatakara a clean city/green city

- Introduction of new methods in sewerage treatment and solid waste management
- Strengthening of drainage network
- Proper management of public comfort stations
- Promotion of social forestry activities mainly at road sides

To ensure equitable distribution of basic facilities.

- To ensure equitable distribution of basic facilities to all sections of people.

26 DEVELOPMENT CONCEPT

Revival of indigenous production sector and enhancement of trade and commerce activities are identified as the primary targets to be achieved for the sustainable economic development of Vatakara. Other than this, it was revealed from development objectives that, Vatakara should act as a service provider for nearby local bodies, environmentally sensitive and cultural heritage areas of Vatakara should be conserved, tourism should be promoted, etc. Considering all these aspects, a development concept is envisaged for Vatakara.

The developmental concept of Vatakara Municipality is "To strengthen the economic base by reviving the indigenous productive sectors and promoting industrial entrepreneurships and thus restore the erstwhile glory of Vatakara as the prime trade centre of North Malabar and to improve the infrastructural facilities to efficiently provide urban services not only for its residents but also for the remote local bodies of northern region of Kozhikode District; while enhancing the environmental quality, cultural heritage and the tourism potential; thus making the Municipality a better livable city for all segments of the society".

For preparing a detailed development concept, the spatial structure of the Municipality should be identified. The element that moulds the spatial structure of an area are the topography of that area, existing spatial distribution of activities, environmental sensitive areas and sites, population distribution and road network in that area. Detailed study of each items were given below.

26.1 Topography

Figure 26.1 shows the contour of different areas of Vatakara Municipality. The highest elevation in Municipality is less than 60m. It can be observed that most of the areas have slope below 10%. These kind of topography is very much favors human habitation and agriculture.



Fig. 26.1 Contour map of Municipality

26.2 The Existing Spatial Distribution of Activities

Vatakara Municipality shows distinct activity concentration. All the commercial activities are concentrated in the CBD area. Agricultural activities are concentrated in the northern side of Municipality. Few coconut gardens are concentrated in the eastern side. Residential activities are scattered all over the Municipality. Comparatively high concentration of this activity can be seen along the coastal belt and major roads in the Municipality.

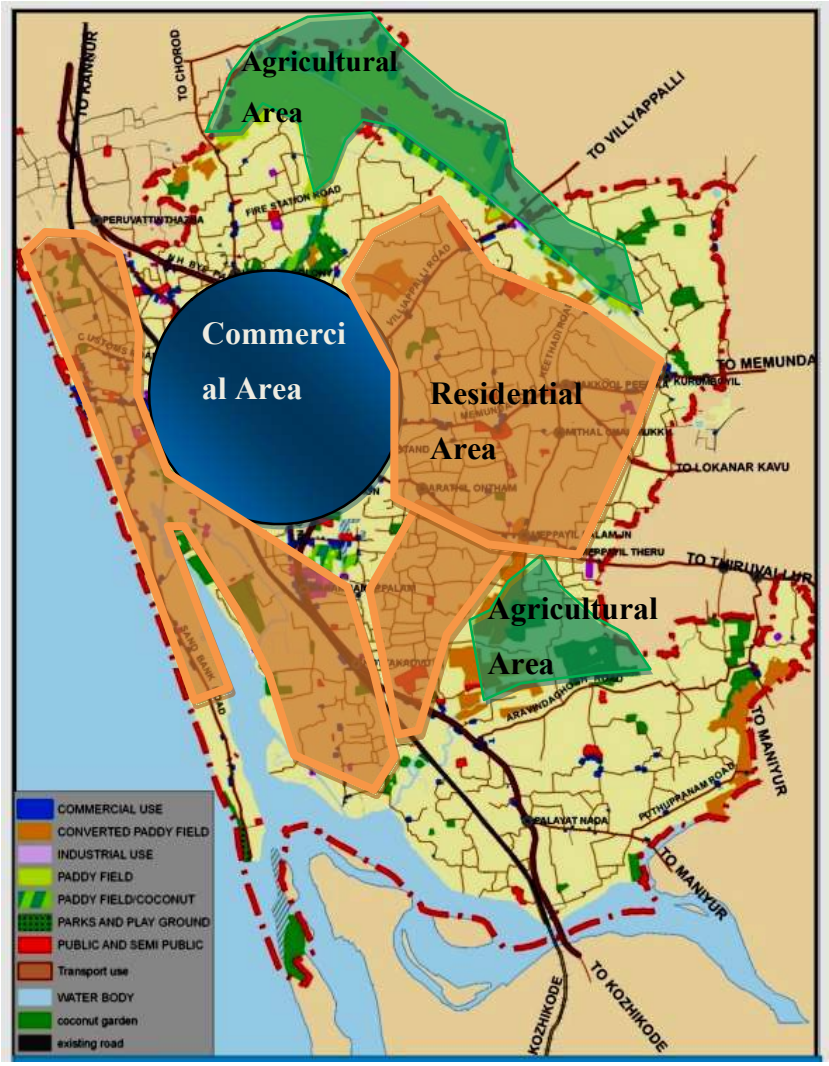


Fig. 26.2 Spatial Structure of Municipality

26.3 Environmentally Sensitive Areas, Heritage Sites and Tourism Important Places.

West and south west side of the Municipality is bordered with water. The areas besides the Arabian Sea in the western side and the backwater in the southern side, especially Sand banks and island in the south west area of Municipality are environmentally sensitive. Mangroves present near the railway station are also environmentally fragile area. Main heritage areas in Municipality are Tacholi Manikoth Temple, Thazhe Angadi Mosque and Sidhashramam



Fig. 26.3 Tourist important places in Municipality

26.4 Distribution of Population

Wards with highest population density are along the coastal belt.

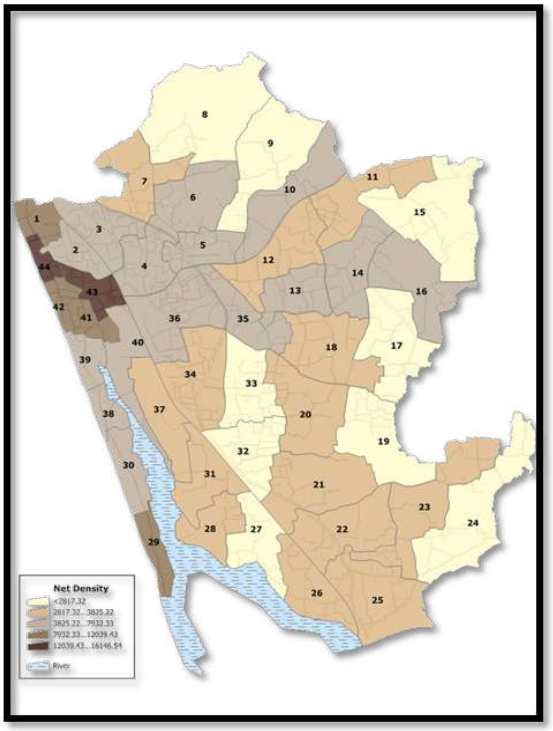


Fig26.4: CI of net population density

The North West corners of Municipality have more wards with higher population density. This is mainly due to the influence of coastal and CBD area. Areas with lesser density of population is scattered within the Municipality. Wards in the extreme north and extreme east ends of Municipality shows very low population density.

26.5 Network of Roads

Municipality shows ring and radial type of road network with broken rings. The radial roads are starting from the CBD area. Three major roads in the Municipality are identified as major connecting links in the Kozhikode Corporation. First one is NH 66, which connects Municipality to next major nodes Koyilandi and Mahe. Next is Villiyapalli road, which connects Municipality to Nadapuram and third one is Thiruvallore road, which connects to Perambra. These three roads are the major arteries in the Municipality. These roads have important role in the transport network of Municipality as well as Kozhikode Corporation. Also the roads are identified as major connecting roads in Kozhikode Corporation in the District Urbanisation Study. The developments in the Municipality are mainly based on these roads. Strengthening of these roads is an important task while planning the Municipality area. Ring roads connecting these radials are also necessary. Only a few connecting roads are now present. Final network of Municipality will be these radials with well connected rings.



Fig26.5: Major Roads in Municipality

26.6 Spatial Structure

The spatial structure of Vatakara Municipality can be determined by combining all the components described above. This is shown in Figure 26.6. The spatial structure thus determined, outlines the activity pattern of different locations in the Municipality.

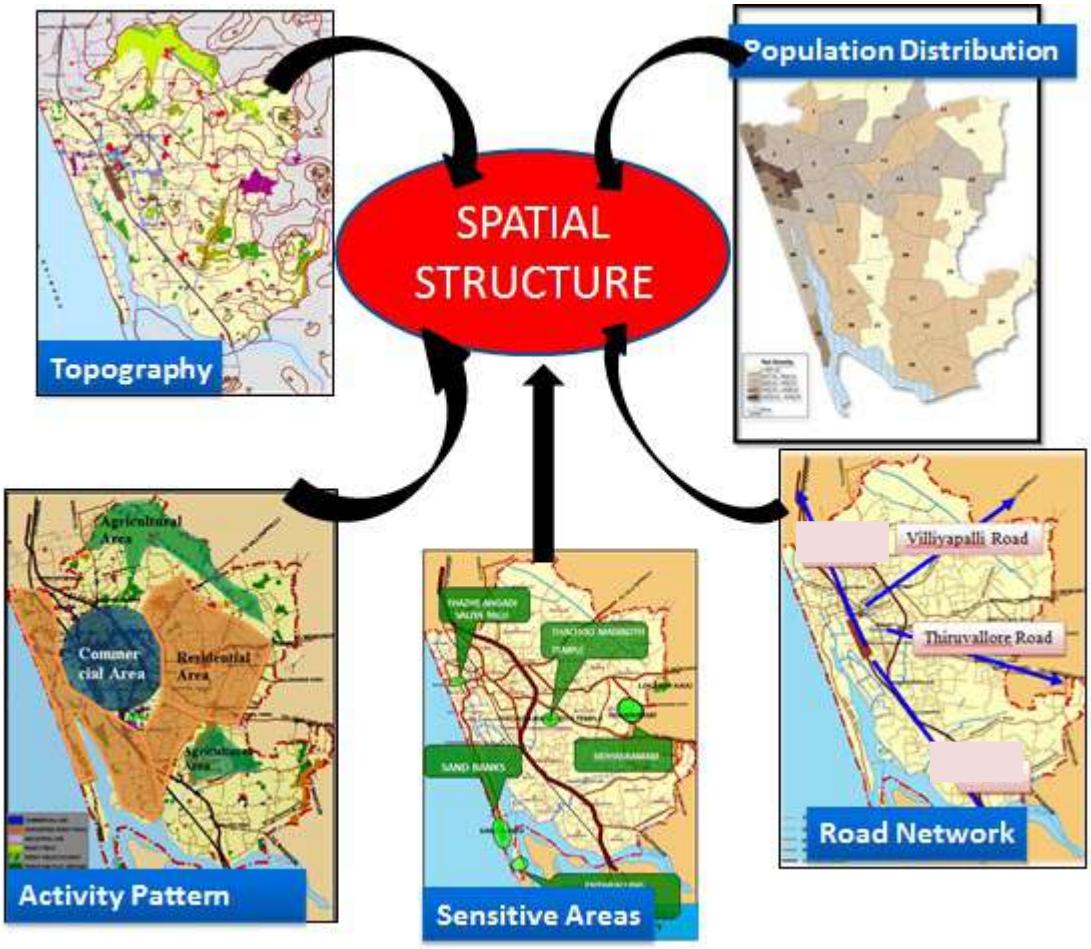


Fig 26.6: Arrival at Spatial structure

It can be inferred from distribution of activities in the Municipality that, agriculture activity is concentrated in the northern areas of Municipality and in the Eastern region. Northern area is low land area and is very much favorable for wet agriculture, whereas the eastern portion is suitable for dry agriculture. The commercial concentration is seen in the central area of Municipality, where the major three radial roads joins. The commercial activities are getting narrowed when these roads run away from the central area. All other areas in Municipality are very much suitable for human habitation except the areas very near to sea and the backwater.

26.7 Evolving the Development Concept

The development concept of the Municipality has now to be finalized in to account the spatial structure evolved. In the case of Vatakara, trade and commerce, agro-allied and small-scale industries are the sectors influencing the development concept. Tourism sector also needs to be given due importance.

Trade and commerce is identified as the major sector influencing the development of Vatakara Municipality. The existing CBD area of Municipality was one of the main trade centre in Malabar region. Now the glory has faded. But proper improvement measures will raise trade and commerce activities to grandeur level. The existing CBD area is identified as the area for trade and commerce activities. Moreover major junctions in Municipality other than those at CBD are identified as trade and commerce centers.

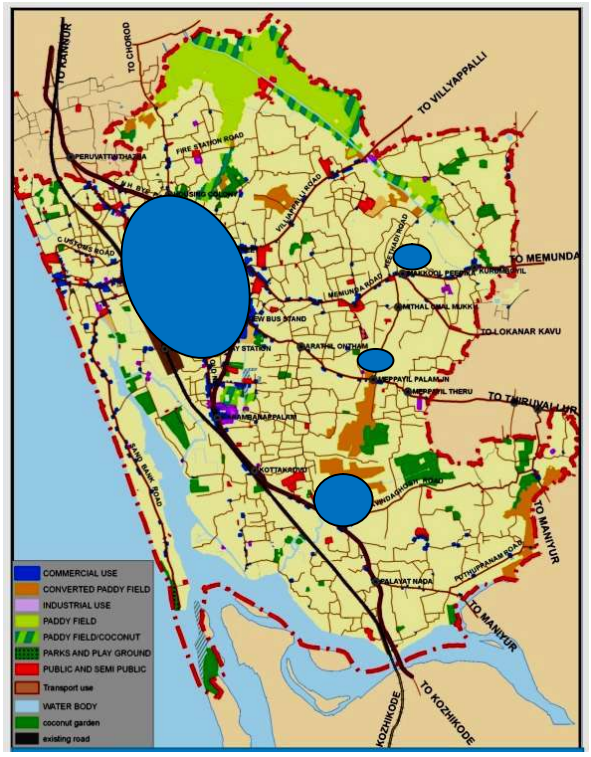


Fig. 26.7 Areas suitable for commercial activities

Small scale industrial activities are also identified as pillar for development in Municipality. Agro based and fisheries based industries have good scope in Municipality. Traditional pot and art craft making industry is also has its place in the industrial map of Vatakara. Existing industrial estate and Pakkayil area were identified as areas for industrial development (Figure.26.8). Similarly tourism is identified as one future development sector in Municipality.

As per the spatial structure evolved, the areas suitable for intensive agricultural activities and environmentally sensitive areas are shown in Figure 26.9.

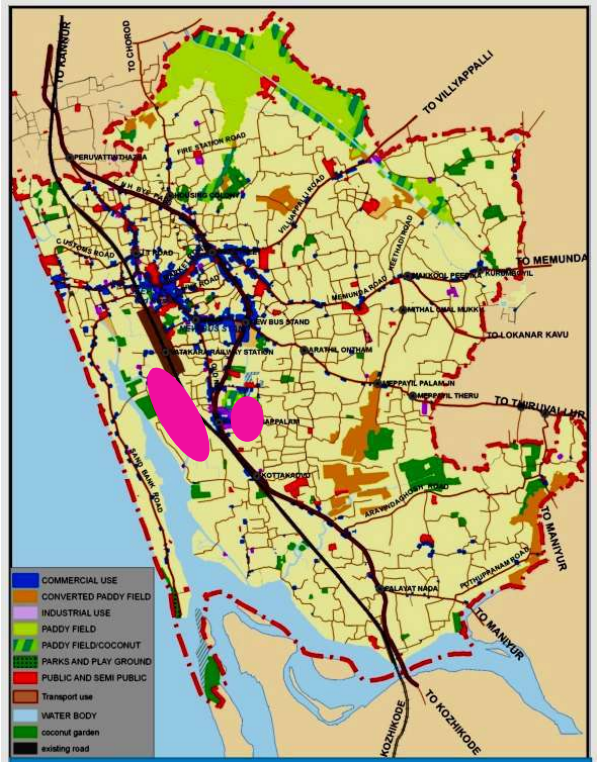


Fig. 26.8 Areas suitable for Industrial activities

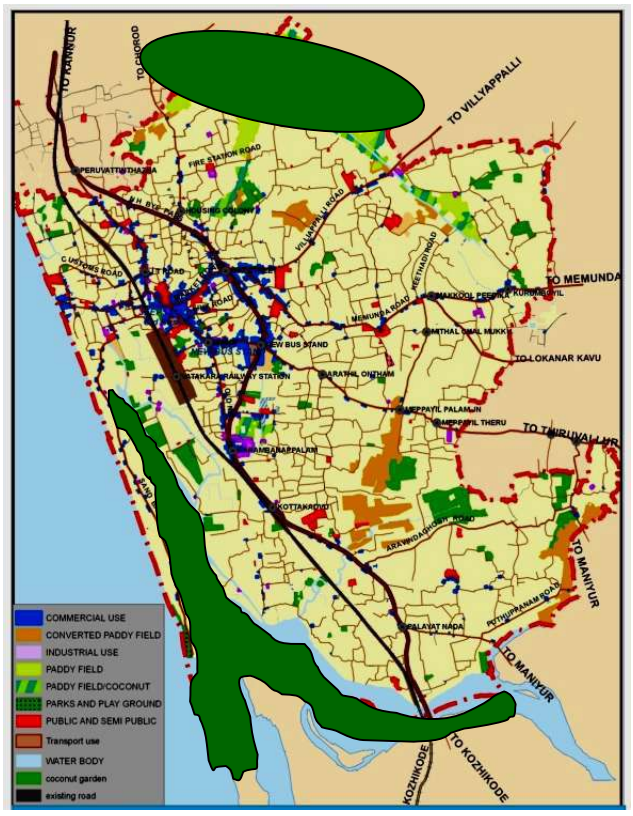


Fig.26.9 Environmentally sensitive areas.

Major activity locations of Municipality were identified. Future spatial distribution of development sectors can be formulated from this. The spatial structure of the Municipality

can be formulated by adding up all these activity distributions with ecologically sensitive areas and areas having heritage importance. The development concept for 2031 of Municipality can be formulated from this. The thematic representation of development concept for the year 2031 is shown in Figure 26.10.

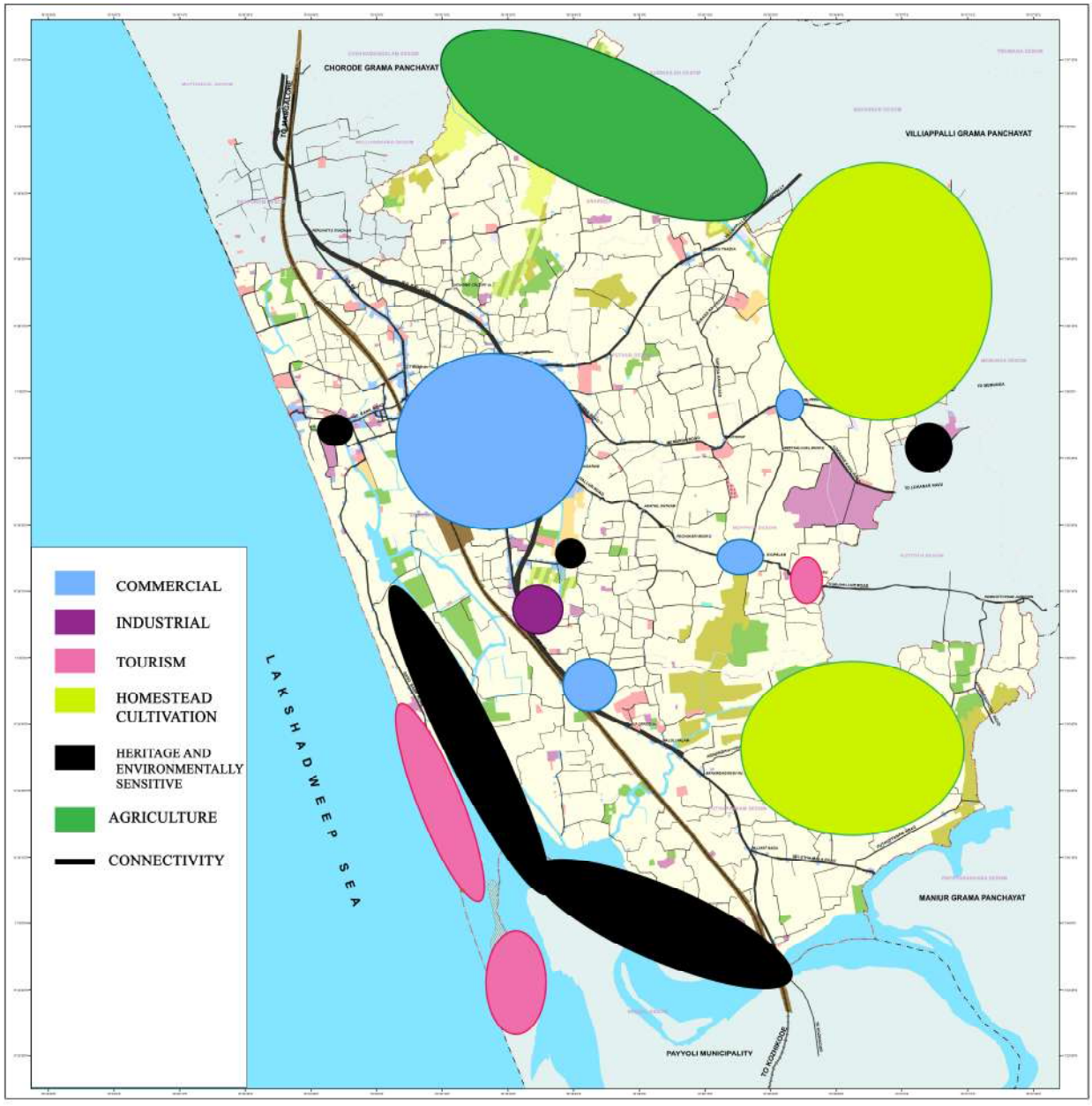


Fig.26.10 Development Concept 2031- Vatakara Municipality.

DEVELOPMENT CONCEPTThere for the land use of Vadakara exhibits Radio centric behavior with CBD at the center and arterial roads radiating from it, The CBD is zoned as Mixed use Zone and Commercial Zone, surrounded by Multi-functional zone followed by High density residential use and low density residential use. Agricultural zones which are mostly found in the periphery of the municipality are proposed to be retained. The

existing railway line divides the Municipality resulting in limited connectivity in western costal area. Besides, this area is highly dense with fishermen settlements. However it is not advisable from disaster risk perspective to have a high density residential development along the cost considering the development in connectivity over the years it is possible that the fishermen population can move further east, without much impact on their livelihood. Hence this high density residential area is envisaged to decongest in future and thus zoned as Low density Residential area.

27 GENERAL POLICIES AND STRATEGIES

27.1 General Development Policy

Raise Vatakara Municipality as the main trade and commerce centre in Vatakara Taluk and strengthen the financial backbone of Municipality by providing emphasis to indigenous productive sectors like concrete art crafts, ayurvedic medicines, animal husbandry, fisheries, etc. and connecting them to trade and commerce. At the same time, effort should be made to convert Municipality as a service hub for surrounding poorly developed panchayats. Thrust should be given to tourism sector, which is blend with tradition and culture of Vatakara.

27.2 Sectoral Policies and Strategies

27.2.1 Commercial Sector

The development policy in commercial sector is decentralisation of commercial areas. Now the only commercial centre in Vatakara is its CBD. Provide additional commercial centers at major nodes in the Municipality. Development of these additional centres will satisfy the need of peoples on the surrounding areas of these nodes and this inturn will reduce the travel requirement of them in to CBD. This will reduce the congestion problems inside the CBD and hence the policy is to increase efficiency in commercial and transportation sectors together.

The development strategies for commercial sector are given below.

1. The landuse shall be rationalised to promote development of commercial activities at Kottakadavu, Meppayil, Puthiyappu and Nadakkuthazha areas
2. Efficiency of CBD may be increased by providing parking area, junction and road improvements and pedestrian facilities.
3. Drainage plans, sewerage and sanitation programmes and solid waste management plans shall be introduced at CBD area.

27.2.2 Industrial Sector

Development policy is to create new rise in the industrial sector by the strengthening of household industries along with the strengthening of working of Kudumbasree, Self Help Group, etc. and identify the new scopes in large scale industries related to agriculture and fisheries.

The development strategies are

1. Provide selling outlets for house hold industrial products
2. Give training in various small scale industrial activities to Kudumbasree and SHG based *on vanitha vyavasaaya kendram*.
3. Plan large scale activities for the collection and storage of agricultural products and start large scale industries based on these products.
4. Develop heritage products based on *Kalari, Art-Crafts, etc.* for tourists.

27.2.3 Agriculture and Allied Sector

There are equal opportunities for puncha as well as nuncha cultivation in Vatakara. The development policy is to connect animal husbandry sector to agricultural sector and provide emphasis to fisheries sector.

The strategies identified for this sector are

1. Connect homestead cultivation and animal husbandry and provide necessary aid for indigenous verities like *Malabari Goats*.
2. Encourage organic farming along with support for biological solid waste management.
3. Create agriculture banks from where labour and agricultural equipments can deliver.
4. Connect inland fisheries and tourism
5. Facility for giving information as well as equipments for fisheries sector

27.2.4 Tourism Sector

Vatakara have the purity of rural nature and console of urban nature simultaneously. This will attract both domestic and foreign tourists. The culture of Vatakara is derived from the reign of ***Kalaripayattu*** and the vigour of ***Vadakan pattu.*** The Arabian Sea portion at sand banks, the island created there due to the spectacular blending of sea and backwater and the mysterious ***'Velliyankallu'*** which lies 3 km away from Vatakara coast in open sea, where the souls flying as dragonflies (the jewelled helicopters of the insect world) are making Vatakara a main tourist attraction. The policy in tourism sector is the exact squeezing of these above mentioned opportunities and projection of them to outer world through proper means.

The major strategies planned for achieving this policy are

1. Provide tourism opportunities at Tacholi manikkoth temple, Lokanaarkkavu, Sidhashramam, and Thazhatthangadi Valiya palli along with proper protection.

2. Increase infrastructure facilities at sand banks and island. Provide walk way, dormitory, lodging and boating facilities.
3. Publish the tourism potential of Vatakara.
4. Make one day/ two days packages for tourists by connecting the major tourist spots in Vatakara.

27.2.5 Transportation Sector

The existing transportation network of Vatakara is very good. The policy is to strengthen the network by solving the existing problems like lack of width, geometric problems, etc. and addition of new facilities to new planned areas along with measures for increasing accessibility to CBD area from outer areas/panchayats and decongestion by proper land use zoning.

The strategies that may planned are,

1. Create a transportation network by classifying roads based on their width and other specifications.
2. Provide parking and pedestrian facilities at road sections of commercial areas.
3. Assure good road connectivity to major physical and social infrastructure facilities.
4. Create a road monitoring committee. The committee shall record the defects in roads periodically and should take necessary actions to rectify them.
5. Provide well maintained roads to tourist spots.
6. Reduce the travel requirement of persons by decentralisation of activities by land use zoning.

27.2.6 Health and Education Sectors

Current facilities in health and education sector of Vatakara are almost adequate for Municipality. But when considering the service provider role and taluk headquarters role of Municipality, few more developments in these areas are required. Hence the policy is development of health and education sectors such that it can cater the needs of surrounding local bodies also.

The strategies are

1. Infrastructure facilities at ayurvedic, allopathic and homeopathic sectors for further developments.
2. Programme for large scale production for ayurvedic medicines.

3. Infrastructure improvements to anganwadis
4. New schools for high school and higher secondary education.
5. New technical institutions such as ITIs and Poly techniques.
6. New Arts and Science College.

28 PROJECTED REQUIREMENTS

According to development concept, more work opportunities will evolve in Vatakara. This will attract more peoples to the Municipality. The basic employment as well as service employment opportunities will increase and this will in turn generate more population in Municipality. The projected changes in population and work pattern are described in this chapter.

28.1 Projected Change in Occupation Structure

Vatakara holds vast stretches of paddy fields as well as vacant cultivatable land. From the analysis, it is obtained that the average land ownership of Vatakara is 31.8 cents. In this, 8 wards have average plot size more than 45 cents and 7 wards have average plot size between 35 and 45 cents. There are approximately 750 homesteads available for homestead cultivation in Vatakara. It is assumed that 100 persons will attract to homestead cultivation in the future years. Then total cultivators will be 58 + 100 = 158.

Assuming 50% increase in agriculture labourers in each decade. The total agricultural labourers at the end of plan period will be 1020.

The HH industrial sector is expected to create more job opportunities than the present scenario, mainly due to the enhancement proposals in the field of cement products and Kudumbasree works. Hence it can be assumed 33% increase of workers in every decade with the total HH industrial workers at the end of plan period will be 725.

Tourism sector will create additional job opportunities. Similarly there will be more job opportunities in the trade and commerce sector. Education, health, waste management etc will bring few more job opportunities. Taking all these in to account a 30% increase in the other category workers are expected at the end of plan period. Total number of other workers will be 22434. The distribution of workforce at the end of plan period (2031) is given in the Table 28.1 and Figure 28.1.

Table 28.1 The distribution of workforce

Sl.No	Type of Workers	No of Workers in 2031	Percentage
1	Cultivators	158	0.65
2	Agricultural Labourers	1020	4.19
3	House hold Industrial Workers	725	2.98
4	Others Workers	22434	92.18
	Total	24337	100.00

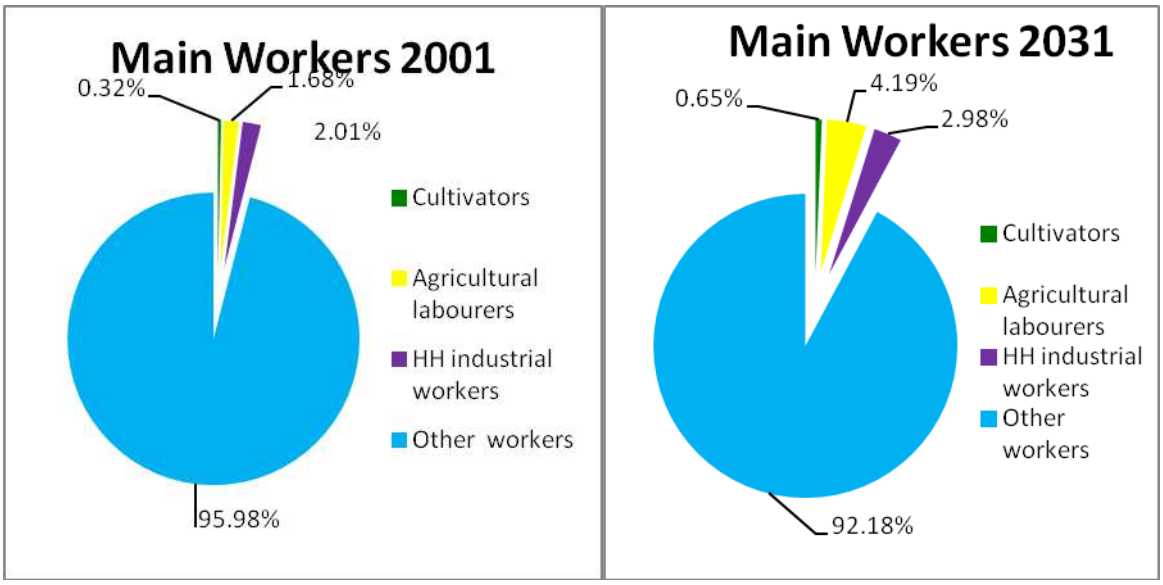


Fig28.1: Existing and proposed workers percentage

28.2 Projected Change in Population

The population in any area is directly related to its economic base. Planned development in Vatakara will strengthen its economic base and this will in turn develops more job opportunities in the Municipality. This will attract persons from surrounding panchayats and their families. The population in the year 2031 can be calculated by using the work force participation ratio and the labour force in the end of plan period.

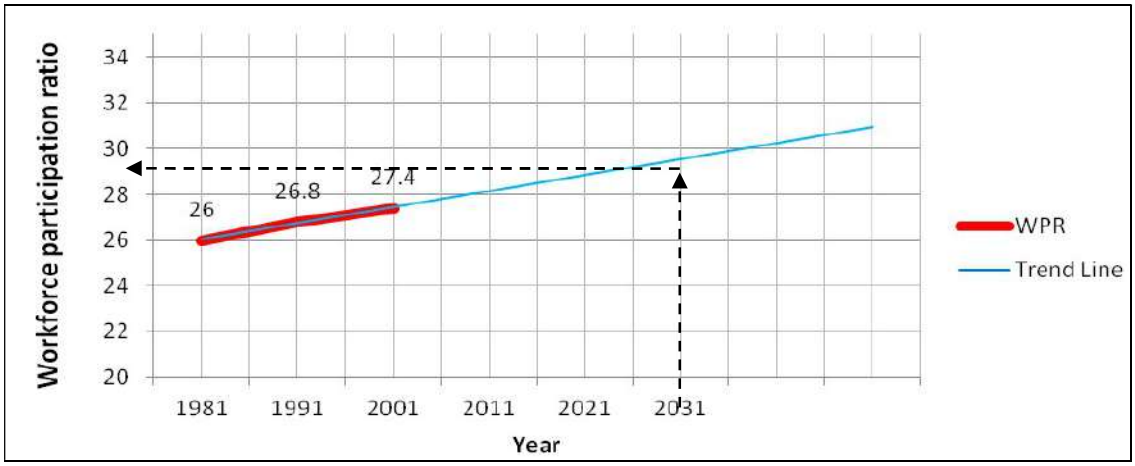


Fig28.2: Projected workforce participation ratio.

Linear growth trend is assumed in work force participation ratio. From the graph, it can be seen that the work force participation ratio for the year 2031 is 29.5. As per UDPFI guidelines, the WPR for a municipal area shall be 33%. Based on this, the WPR for Vatakara Municipality shall be assumed as 31%.

Total workers at the end of plan period are 24337.

Then the population at the end of 2031 based on WPR will be 24337/0.31 = **78506.**

Population is also projected in two other general projection methods

1. Decreasing rate method
2. Comparative method.

It is assumed that in both methods, the population growth rate of Vatakara Municipality will stabilise in the year 2021. The total population at the end of year 2031 is assumed as the average of population obtained from both methods.

The population obtained from decreasing rate method is **78133,** and from comparative method are **79119**

The expected population at the end of plan period is assumed as the average of these three methods, and is **78586.**

Ward wise distribution of population is assumed as in the same pattern as in 2001.

The area of influence of Vatakara Municipality will extend to nearby local bodies since it is the only higher order settlement in that area. Hence when calculating the total influencing population, one third population of surrounding local bodies shall also need to be added to Vatakara's population. Then the total influencing population will be **1,36,000.**

PART III:

LAND USE AND SECTORAL PROPOSALS

29 LAND USE PLAN

The area requirement of land for each sector is identified and is spatially allocated in this chapter.

29.1 Residential Land Use

Residential requirement is directly proportional to increase in population. The increase in population is obtained as 2739. Household size can be taken as 5 for the year 2031. Then the housing requirement will be 2739/5 = 548, say 550.

Additional requirement will arrive due to trade and commerce development and rehabilitation of persons from proposed project sites. This is estimated as 600 numbers.

Hence total additional houses required at the end of the plan period = **1150**.

Optimum area for residential development is East and South East area of Municipality. These areas are moderately away from CBD and highly accessible to it through Villiyapally road, Thiruvallure road, Memunda road and Arabindgosh road. These areas can be zoned as **Residential**.

Low Density Residential zone

The central area of the town is proposed for low intensity residential development along with agricultural activities. Such areas are zoned as “Residential Zone 1” and this constitutes for about 46.39 % of the total area of the town as per the proposed land use plan. Agricultural and allied activities, residential, commercial and other community needs of low intense nature are normally permitted in this zone. Uses of higher order are permitted with certain restrictions.

High Density Residential zone

Keeping in view the major trend and growth potential of residential areas as well as accessibility of area, potential residential areas have been identified contiguous to the existing residential areas which are likely to remain or develop as residential areas and which are most suitable to be developed as residential areas. The total residential area identified for the town is classified into two types, one is high density residential and other is low density residential (residential/agricultural mix zone). Residential Zone 2 Of this the high density residential zone constitutes about 12.48% of the total area of the town as per the proposed land use plan.

29.2 Commercial Zone

The backbone of every town is its commercial area. All the commercial activities in Vatakara are concentrated in its CBD area. This area is zoned as commercial zone.

29.3 Mixed Zone (Residential / Commercial)

There are areas which are part of the town where the usage of land can either be residential or commercial or a mix of both of these uses. This zone is proposed towards the land contiguous to the residential zone, and at those areas where minor commercial developments (secondary commercial nodes of the town) are suitable to be developed. In this zone, a mixed land use of uses permitted in residential and commercial zones is proposed with certain additional conditions. The zone mainly intends to house residential uses along with the most essential commercial activities which would not be a hindrance to the wellbeing of the residential use.

29.4 Multi-Functional Zone

While zoning a city, areas will be demarcated as residential, commercial, agricultural, industrials, etc. When one development activity is planned in a specific area in cit, these zonings will, sometimes, act as a barrier for development. Few areas in Municipality were identified, where currently activity concentration is less, but near to CBD. This area is suitable for any developmental activities. Hence it is zoned as Multi-Functional zone.

29.5 Industrial Zone

Vatakara was the hub for small scale industries like handloom, cement pot, etc. Now the intensity of these activities is less. But a proper upliftment plan will raise these activities into the glorious past stage. Moreover ayurvedic medicine production and kudumbasree works shows remarkable growth in past few years. Few proposals for the promotion of industries were given in the Master Plan and the areas where these proposals were planned are zoned as **Industrial**

29.6 Wet agriculture Zone

As per UDPFI guide lines agricultural area/water body required in a semi developed town is 0 to 10%. In the case of Vatakara Municipality, agriculture + waterbody area is around 15%. It is more than UDPFI guidelines. But this area should be preserved for environmental stability of Vatakara. Hence in the Master Plan, the paddy field/wet land areas

are zoned as **Wet agriculture zone**. The areas with small pockets of paddy fields surrounded by commercial or residential land uses and small pieces of dry cultivated area will gradually convert to other land uses. This is required for the economic development of a town. Hence these areas are removed from agricultural reservation. All the major water carrying areas in Municipality are zoned as **Water body**.

29.7 Park and Play Ground

Existing parks and open spaces were identified. These areas were zoned as Parks and Play Ground.

29.8 Transport Zone

Bus stands, jeep stands, lorry parking area ,railway etc. are included in this land use.

29.9 Public and Semi Public Zone

This zone accommodates all government and private owned buildings, which includes educational institutions, religious buildings, health related institutions, offices and other similar institutions. Specific requirements of land for any public/semi-public use will be met at the time of project implementation through locating within other permissible zones. Priority is to be given for accommodating additional facilities like new buildings for hospitals, schools, community hall etc. in the existing public and semi-public zones by utilizing the land optimally. Accordingly, the land zoned as “Public and Semi Public Zone” is intended for retention and expansion of the existing public and semi-public buildings.

29.10 Siddhashramam Settlement

Siddhashramam in ward 17 is a cultural settlement and it is now acting as a self-sufficient environment. Arrangements for satisfying the needs of habitants are done inside the settlement. Residential, industrial, agricultural, semipublic and recreational activities can see there.

29.11 Green Buffer

Buffer areas besides sea and lakes, ponds, mangroves, etc. are zoned as environmental sensitive areas and shown in the map as Green Buffer. The built developments in these areas are restricted.

29.12 Special zones

Few areas in the Municipality are zoned for special purposes. These are areas specifically demarcated for various projects which shall be taken into possession by the Municipality or Agency concerned within a period of seven years from the date of sanctioning of the Master plan.

Bus Terminal Complex - {RS no: 246(P), 247(P), 248(P), 239(P), 256(P), and 254(P) of Vatakara Desom}

Now the existing old bus stand in Vatakara is at the heart of Municipality and it is a very congested area. The plying of buses as well as passenger arrival through different modes to this stand causes high congestion in all surrounding streets. Moreover, the area of bus stand is not adequate for present volume of buses. Hence in this plan, it is proposed to shift the old bus stand in to the new bus stand (which situates near NH Bypass). A new bus terminal is proposed in the eastern side of existing new bus stand beside NH Bypass. The existing new bus stand is proposed to shift to this terminal. An undeveloped area of about 9.0 Ha is available in this area, including few areas of wet land/ Kandal. Out of this an area of 5.13 Ha is demarcated for bus terminal and remaining for municipal stadium. Bus terminal, office complexes and Government owned residential complexes shall be constructed in this area. The wet land / Kandals at this area shall be kept as such with beautification inside the terminal.

Stadium Complex - { RS no: 34(P), 35(P), 36(P), 32(P), 41(P), 42(P), 37(P) of Meppayil Desom and RS no:58(P) of Puthuppanam Desom}

An area of around 7.33 hectare is reserved for stadium in ward 20. The stadium shall be developed with areas for proper indoor and outdoor activities and associated commercial and office activities.

Higher Educational Center - {RS no:1(P), 2(P), 3(P), 4(P) of Puthur Desom}

It is found from the study of education sector that, higher secondary as well as higher education facilities are inadequate in Municipality. The converted agriculture area besides the Villiappalli road is marked as a zone for educational facilities. This area of 3.08 hectares can be preserved as area for higher education facilities.

Research and Administration - {RS no:35(P), 42(P) of Meppayil Desom}

An area of 0.69 Ha is zoned as research and administration for research oriented activities besides proposed stadium. This area is proposed for research centers and labs related to agriculture, animal husbandry, etc.

Port and Allied Development - {RS no:96(P) of Vatakara Desom}

An area of 0.43 hectares of land is reserved for port development related activities in Municipality.

Solid Waste Treatment - {RS no:3(P) of Meppayil Desom}

The extent of total area is 0.53 Ha. A solid waste treatment plant shall be initiated in this area. Existing waste shall be treated in an urgent manner and proper reject dumping method shall be identified. Geotextile liner technology may be adopted for dumping of rejects. A 50m construction free green buffer is proposed around the solid waste treatment/dumping area towards inside from boundary of plot.

Slaughter House - {RS no:136(P) of Vatakara Desom}

Existing slaughter house is in the CBD area of Municipality near Anchuvilakku ROB. Expansion of this one is proposed with acquisition of few areas near to it. The total proposed area will come around 0.45 Ha. A slaughter house is proposed here with advanced technologies and storage area for cattle.

Sewage Treatment Plant.

Now sewage is not a main problem in Municipality. But in the very next future, the problems raised by sewage and liquid wastes will be a prime problem in Municipality. Hence a detailed sewerage plan shall be prepared for Municipality by conducting contour and land use survey and a suitable location shall be identified for treatment plant by examining the contour and land use.

Heritage Park- {RS no:140(P), 66(P) of Vatakara Desom}

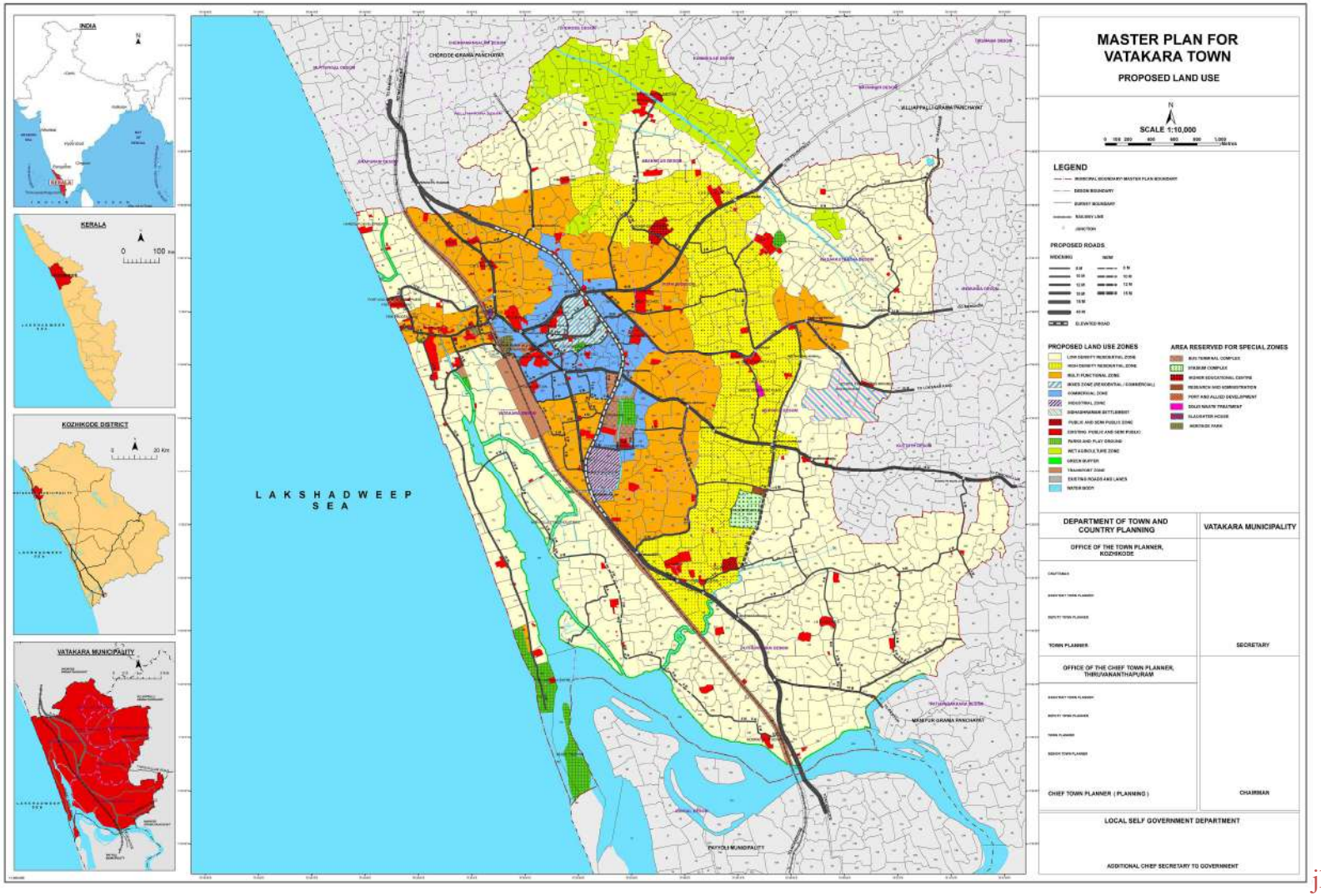
An area of 1.29 Ha is zoned as Heritage Park behind existing old bus stand. This area has historical importance as a Kotta (Fort) in Municipality. The huge compound wall of fort can be seen now also. This area can be preserved as Heritage Park and open space or developed as conventional center or amusement park.

29.13 Land Use Map

The land use zonal classifications have done based on above concept and is shown in the municipal map with appropriate colors as shown in the figure 29.1. An enlarged figure is attached as Annexes (2) GLS/1/Map No.2 - Proposed land use map. The area coming under each category of land use is shown in the Table 29.1.The permissible activities in all these zones are described in section IV, Zoning regulations.

Table 29.1 Proposed land use of Vatakara Municipality.

Proposed zones		
Land uses type	**Area in Ha**	**Percentage**
LOW DENSITY RESIDENTIAL ZONE	981.49	46.06
HIGH DENSITY RESIDENTIAL ZONE	263.97	12.39
MULTI FUNCTIONAL ZONE	284.69	13.36
COMMERCIAL ZONE	70.61	3.31
MIXED ZONE (RESIDENTIAL/ COMMERCIAL)	13.12	0.62
INDUSTRIAL ZONE	9.37	0.44
WET AGRICULTURAL ZONE	101.20	4.75
EXISTING PUBLIC AND SEMI PUBLIC	33.79	1.59
PUBLIC AND SEMI PUBLIC ZONE	1.52	0.07
TRANSPORT ZONE	35.15	1.65
PARKS AND PLAY GROUND	22.95	1.08
WATER BODY	128.61	6.04
RELIGIOUS AND CEMETERIES	15.54	0.73
SIDHASHRAMAM SETTLEMENT	19.65	0.92
GREEN BUFFER	5.32	0.25
CANAL	0.41	0.02
EXISTING ROADS	110.11	5.17
Special zones		
BUS TERMINAL COMPLEX	5.09	0.24
STADIUM COMPLEX	7.28	0.34
HIGHER EDUCATIONAL CENTRE	3.06	0.14
RESEARCH AND ADMINISTRATION	6.83	0.32
PORT AND ALLIED DEVOLOPMENT	4.23	0.20
SOLID WASTE TREATMENT	5.29	0.25
SLAUGHTER HOUSE	0.45	0.02
HERITAGE PARK	1.28	0.06
TOTAL	**2131**	**100**



jk

Fig29.1: Proposed land use map 2031

30 TRAFFIC AND TRANSPORTATION PLAN

It is identified from the former analysis that, Vatakara Municipality has a very good circulation network. It connects almost all the major activity centers in the Municipality. The only problem in the road network is that, it is very week in the coastal area and inner residential areas of the Municipality. The main arteries for good network are present in Municipality. Hence the road development concept is that, "***Strengthening the major roads in Municipality for efficient inter-zonal connectivity and improve the other local roads and construct missing links for intra-zonal accessibility".*** The road network for future Vatakara Municipality is planned by sticking in these aspects.

The road network is planned in such a way that, the establishment of concept plan will wipe out both connectivity and accessibility problems in transportation field of Vatakara. Other than these road proposals, few transport development projects are required for the Municipality. The major one is decongestion of old bus stand area by confiscating the existing bus stand from there. Other than this, some pedestrian friendly development proposals along with transit oriented developments and geometric corrections are proposed.

Being a small town catering for its 75000 population and a floating population of about 1 lakh, no major public transport facilities like metro rail, mono rail, BRT system etc. are required for Vatakara for the next two decades. Hence attempts for mass public transport planning have not done in this plan. Instead of these kinds of high tech, costlier methods, priority bus lanes can be introduced in Municipality. The transit demand will rise up to this prioritized bus lane level in next 5 to 10 years only.

The first face of transportation planning in small cities of developing countries is road widening and new road proposals. An efficient circulation network is planned for Vatakara Municipality with grid iron pattern. Few new roads and widening of existing roads are proposed in this plan.

30.1 New Road Proposals with Utilizing Existing Roads

Connecting Roads are proposed in Municipality; utilizing existing roads at most of the length and new alignment at some locations. These roads are

1. Paloli Palam to Makkool Peedika (Memunda road) through Meppayil. This road is mainly intended for the accessibility of peoples in North- East and South – East area of Municipality. Width of this proposed road is 8m to15m.
2. Similar to above, one road from Moorad to Sand banks Road is proposed for the ease of access of peoples at the North- West and South -West area of Municipality. This road will go through the west side of railway line utilsing existing roads. Here also few new alignments are proposed at inevitable areas. Width of proposed road is 8 m.

30.2 Strengthening of Existing Roads.

Other than the above mentioned two roads, a number of roads are proposed for widening. The roads with widening proposals are shown in the Figure 30.2 with corresponding proposed widths. A detailed road map is attached as annexure. Major roads proposed for widening are

- NH 66 (Existing 10m, Proposed 18m)
- NH 66 Bypass (Existing 20m, Proposed 45m)
- Market road - Convent road - Villiyapalli road (Existing 12m, Proposed 18m)
- Thiruvallore road (Existing 12m, Proposed 18m)
- Memunda road (Existing 12m, Proposed 18m)
- NH Bypass – Memunda road besides Govt. Hospital
- Sandbanks road
- Lokanarkkavu road from makkoolpedika
- Aravindghosh road
- Customs road.

Other than these roads, few roads are proposed to widen to 8m. These roads are shown in the map showing road widening (Figure.30.2).

Length of roads of different carriage way widths proposed in this masterplan is shown in the Table below.

Table 30.1 Road length as per masterplan

Proposed Road Width (m)	Type	Length (Km)
8	Proposed New road	2.38
	Widening of Existing road	22.51
10	Proposed New road	0.53
	Widening of Existing road	13.58
12	Proposed New road	0.17
	Widening of Existing road	4.99
15	Proposed New road	0.82
	Widening of Existing road	7.10
18	Widening of Existing road	5.32
45	Widening of Existing road	6.39
	Grand Total	**64.10**

30.3 Railway Over Bridge.

Western side of Municipality is having very low connectivity to other areas of Vatakara, mainly due to the railway line, which divides the Municipality to two portions. The only way to give connectivity as well as accessibility to this dark transport area of Municipality is the railway over bridge. A Railway Over Bridges are proposed in this master plan in the Municipality at Moorad.

Moorad is the entry point of Municipality. Here, railway line is constructed at a lower level, approximately 5m down from ground level. Hence a simple bridge can function as a good ROB due to this topographic advantage.

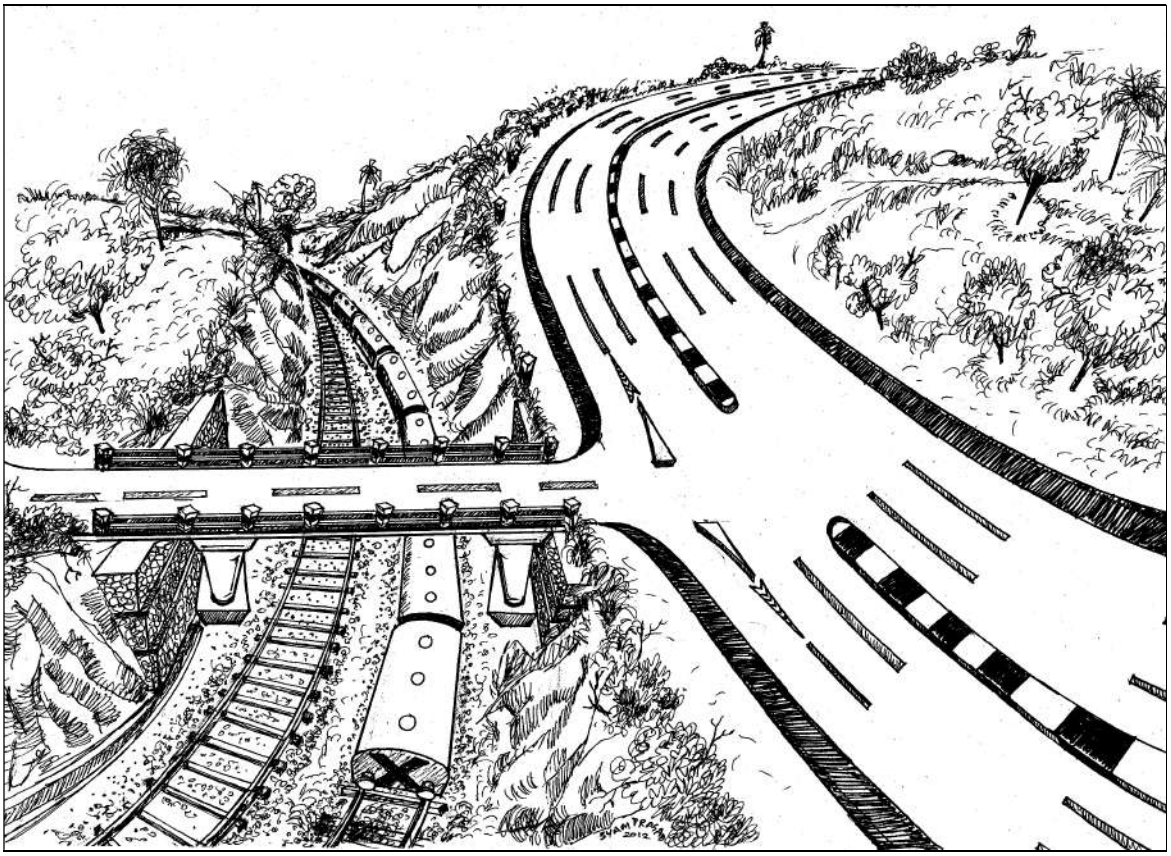


Fig 30.1 Proposed over bridge at Moorad

30.4 Elevated Road

Major traffic corridor of Vatakara Municipality is NH 66 Bypass. In this bypass itself, most congested corridor is the road section between Villiyapalli road and Thiruvallore road. Existing new bus stand and proposed bus stand are by the side of this section. Entry to Thiruvallore and Villiyapalli roads are from this NH 66. All this will create congestion in this road section. Hence the through traffic in NH 66 Bypass will get delayed in this section of road. The chances for accidents will be high in this area due to the continuous entry of vehicles from connected roads as well as from the bus stands. Hence an elevated road shall be constructed in this area, starting from Karimbanapalam area to Pazhankavu area.

30.5 Junction Improvement Program

Junctions in Vatakara Municipality are suffering with inadequate maneuvering area, site distance, pedestrian facilities, etc. The improvements have to be done at all major junctions in

Municipality, especially at Villiyapalli road – memunda road junction, Makkoolpedika junction, Housing colony junction, Edodi junction, Old NH – Market road junction, Meppayil palam junction, Palayatnada junction and Pazhankavu junction.

30.6 Parking Area Identification

- New Bus Stand Road from Edodi Jn to Narayananagaram Jn, NH 66 from New Bus Stand Jn to Theruvath Jn, Market Road from Theruvath Jn to Anchuvilakku Jn, Old Bus Stand area & Kottaparambu road are the major areas where parking problems exists.
- 2 parking plazas must be developed somewhere near to these areas.
- Organised parking shall be done in the existing old bus stand.

30.7 Pedestrian Facilities at Junctions and Road Stretches.

Pedestrian facilities like footpaths, handrails, road markings, signals and sign boards should be provided at appropriate places on the roads and junctions identified above.

The major connectivity proposals are shown in the Figure 30.2, the proposed connectivity map.

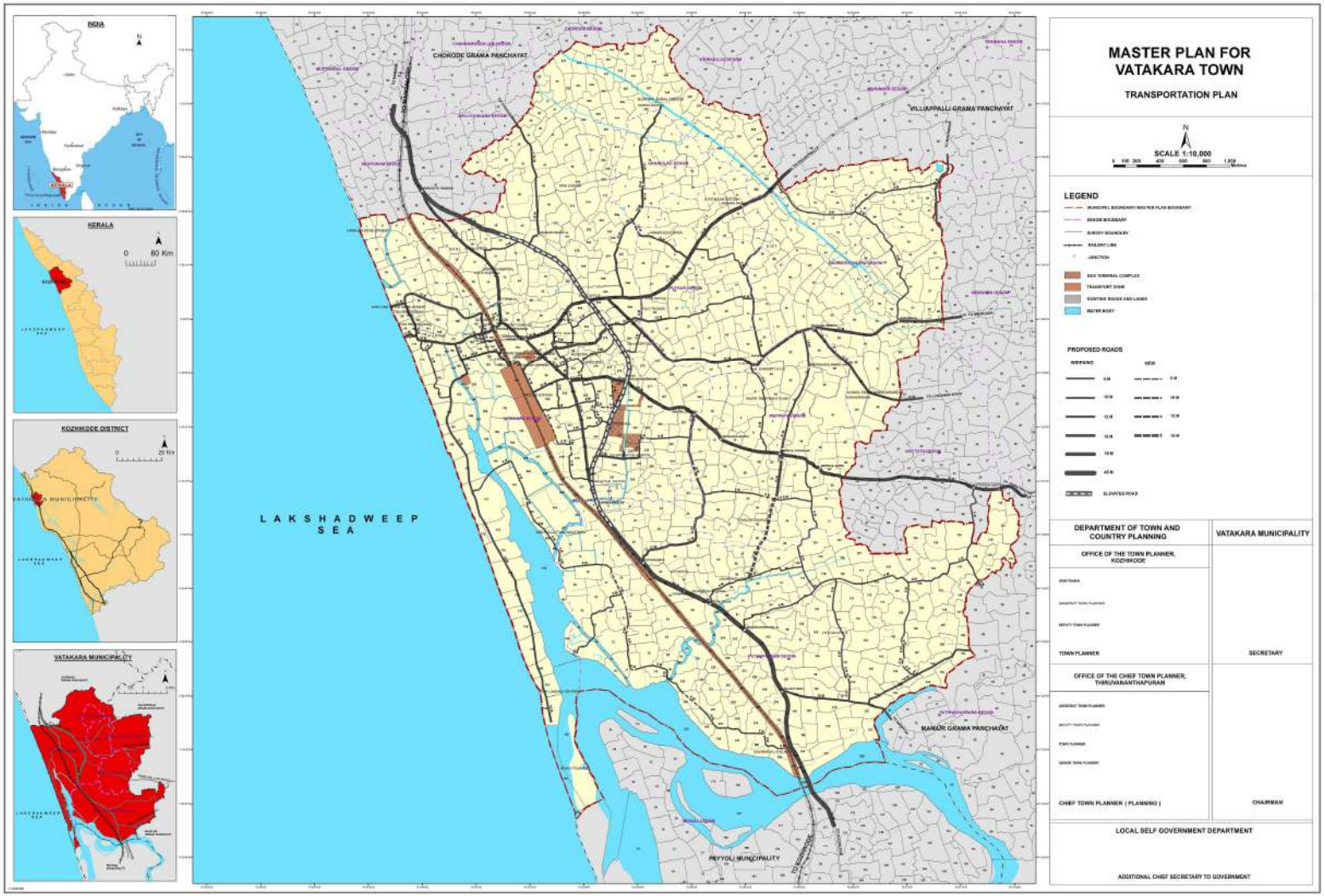


Fig30.2: Proposed Connectivity map

31 SECTORAL PROPOSALS

31.1 Industrial Sector

- Major Industrial Units

Now a days, agricultural sector shows declining trend. But still good production of coconut, arecanut and vegetables are seen in the municipal area. Moreover, as a taluk headquarters and a major trade centre, good quantity of agricultural products are coming to Municipality for trade. Hence the raw material for a good functioning of major industrial units for processing of Coconut, Arecanut, Cashew, etc is available in Municipality. These units can be started at areas shown as industrial in land use map, expecially at old industrial estate area. Arrangements for large scale storing of raw materials shall also be provided.

- Programs for upliftment of traditional industries

The traditional industrial sector is now not productive. But still lots of persons are working in this field. Coir production units are working in Municipality. Small units for cement pot production and cement artcraft production with employee strength varying from five to twenty five is functioning in Pakkayil area. Arrangement shall be done for centralized production and selling of these traditional products. Areas shown as industrial in land use map especially in areas west of railway line shall be developed for this purpose. Infrastructure facilities for this shall be developed by Municipality and subsidies/loans shall be given for purchase of machineries.

- Industries in food processing section.

Small harbours were functioning at Azhithala and Kooriadi areas in Municipality. Now most of the activities were shifted to Chombal Harbor, which situates at around 10Km from Municipality. But still lots of peoples are working in fisheries field, and the availability of fishes is good in Municipality. Hence a fish processing industry can be started. The areas at azhithala or Kooriadi can be considered for this purpose.

Better vegetable production is there in Vatakara. Comparable quantities of vegetables are coming from near by panchayats to Municipality for trade. Hence chance for a vegetable production unit is also high in Vatakara.

- Ayurvedic medicinal production enhancement.

Ayurveda is now a prominent medical sector. Foreigners coming to Kerala for ayurvedic treatment are increasing year by year. From the olden times itself, Vatakara was known for its ayurvedic expertise. Ayurvedic treatment as well as medicinal manufacturing is taking place at Sidhashramam. Two more ayurvedic medicinal production units are functioning in Vatakara. Once proper support is given to this field, this can be used as an attraction to Vatakara.

Small industrial units in the control of Kudumbashree, SHG, etc for ready made garments, coir products, fishing net, paper bag, book binding, candles, sandal sticks, chappals, matchbox, etc can be started in Municipality. Municipality should take control over them and provide support to them.

31.2 Trade and Commerce Sector

- Decentralised commercial development

Now all commercial activities are concentrated in the CBD area. This increases the congestion in that area. Hence decentralization of commercial activities are planned. Commercial areas shall be developed at Kottakadavu, Meppayil, Puthiyappu and Nadakuthazha.

- Projects for CBD

Major problem faced by the CBD area is traffic congestion. Road and junction improvement plans will reduce congestion to a considerable extent. Parking is also a major problem. Hence few parking areas and multi level parking plazas have to be identified in CBD area. Pedestrian facilities like footpaths, handrails, pedestrian signals, comfort stations, etc shall also be provided.

31.3 Tourism Sector

- Advertise tourism potential of Vatakara

Even though Vatakara has few tourists attract places, people in and around are not aware of it. Advertising of these potentials through internet, fares, DTPC, etc shall be done.

- Tourism Infrastructure facilities

  Increase infrastructure facilities in Sand Banks and Island. Provide dormitory / lodging facilities, boating facilities and walk way to island. Few houses can be identified for home stay of tourists.

- Heritage tourism

Vatakara have strong cultural heritage. The heritage tourism development by utilising the potentials of Lokanaarkkavu, Thacholi manikoth temple, Kunjali Marakkars museum, Thazhe angadi Mosque and Sidhashramam can be done.

- Provide one day/ two days tour packages by connecting major tourist attractions inside and near Vatakara Municipality.

31.4 Agricultural Sector

- Protection of paddy fields

Vast stretches of paddy fields exists in the northern area of Municipality. The major fields are Nalom Vayal and Nadakuthazha vayal. These areas are zoned as agricultural reservation. So no activities other than agriculture can be done in these areas. Once the Municipality starts some promotion measures in this area, the agricultural activities will increase and this in turn will strengthen the economic basis of Municipality. Supply of seeds and fertilizers can be done at free of cost for the cultivation in these areas.

- Formerly, Vatakara was the prime trade centre of Kuttiyadi coconut in Malabar region. The past glory of Vatakara as a nut trading centre can be regained by promoting the commercial activities and providing research centres for generating better indigenous agricultural varieties.
- Protection of the existing water bodies.

  Major ponds are identified in the master plan. All these ponds are to be protected. Restoration works of dilapidated ponds shall be done by the Municipality or NGOs keeping in mind that, these are the future water sources. Proper protection to the backwater present at the sand banks area shall be given.
- Start Agriculture development centre / Agricultural bank. Collect agriculture labours data, provide seeds, machineries and training on new methods from bank.
- Create paddy field protection committee and labour group. Monitor the agriculture activities by these committees.

- The land ownership in the north and north east parts of Municipality is high. Households having 30 to 50 cents of land around their houses. Here homestead cultivation shall be promoted. Necessary guidance and aid shall be promoted by the Municipality.
- Provide facilities for independent sale of agricultural products.
- Provision of agricultural product insurance.
- Infrastructure setup for scientific storage of agricultural products.

31.5 Animal Husbandry

- Fodder cultivation in vacant land and in agricultural land at the off time of main crop cultivation
- Goat and cow farms with new technologies and equipments, especially for *Malabari Goats* (The Malabari breed of goat is famous for its low fat meat and high prolificacy. Animals are well adapted to the hot and humid conditions of Kerala state and are seen in large quantities in north Malabar region). Studies relating to malabari goats can be conducted at the research centre proposed in this plan.
- Centralised arrangements for collection and distribution of milk, egg and meat.
- Big units as well as small scale co operative units for chicken, duck and Kada production.
- Slaughter house with modern facilities.
- Information centre

31.6 Fisheries

- Start fish processing unit and related industries.
- Start a fisheries school with emphasis on fisheries science, marine biology, etc.
- Development of Azhithala and Kooriyadi fish landing centers.

31.7 Drinking Water

- The existing water supply schemes shall be maintained as a support/backup for UIDSSMT.

- Renovation of existing small water supply schemes at Paikkattumala, Avangottumala, Puthiyappu, Rayaroth and Mullankunnu.
- New project is to be started at Karuka Area.

31.8 Waste Disposal

- Construction of solid waste treatment plant at trenching ground. The biodegradable waste shall be converted to compost and the rejects shall properly land filled. As mentioned earlier, geotextile liner can be used for this purpose.
- Prepare a drainage masterplan for Vatakara Municipality and implement immediately.
- Prepare a sewerage masterplan for Vatakara Municipality. Suitable biological/bacteriological technology can be adopted for it. All houses, hotels, apartments, etc should be connected with sewer lines and gravitational flow of sewer shall be established wherever possible.
- Waste treatment and disposal at sources should be promoted. For this purpose, awareness campaigns shall be conducted and bio gas plants and vermi composting units shall be given in subsidised rate.

31.9 Education

- Renovation of dilapidated anganwadis shall be done with high priority.
- 2 high schools should be started (2 x 1.6 =3.20 ha) or strength of existing should be increased.
- 1 HSS should be started or strength of existing should be increased.
- 1 Integrated school with hostel facility (3.90 ha) should be started.
- 1 more special school (0.50 ha) has to be started.
- One polytechnic (2.40 ha), two ITI s (2 x 1.6 = 3.20 ha) and one Arts and Science College (4 ha) are to be started.
- These activities can be done at existing schools by upgrading them or at the area demarcated for educational purpose in the masterplan.

31.10 Health

- Increase the infrastructure facilities in Ayurveda hospital.
- One hospital to be started in beach area
- One De-addiction center is to be started.

31.11 Housing

- Slum improvement programs for infrastructure developments in slums.
- Housing schemes for evicted families for road and other proposal sites.

31.12 Recreation

- Provide tourism opportunities at Tacholi manikkoth temple, Lokanaarkkavu, Sidhashramam, and Thazhatthangadi Valiya palli along with proper protection.
- Increase infrastructure facilities in sand banks and island. Provide walk way, dormitory, lodging and boating facilities.
- Publish the tourism potential of Vatakara.
- Made one day/ two days packages for tourists by connecting the major tourist spots in and around Vatakara.

31.13 Other Civic Amenities

- Stadium

  Municipality is lacking one stadium, and is proposed in the south west side of Municipality in this plan.

32 Environment

- Special zoning for environmental sensitive and heritage areas.

  Environmental sensitive wet lands are zoned as wet agricultural zone. No construction activities are permitted in this area. A *No Development* buffer of 20m width is provided at shores of river and lakes in the Municipality for protection of them.

  Heritage areas are identified in this masterplan, namely, Thacholi Manikoth Temple, Thazhe Angadi valiya Palli and Kottapuram. Kottapuram area is zoned as Heritage Park with controlled developments.

- Protection of Kavus and Kandals

  Kavus and Kandals in the Municipality shall be protected. A committee for monitoring environmental sensitive areas, heritage structures, Kavus and Kandals shall be organized in the Municipality and regular checking of former structures and areas shall be done by the committee.

- Heritage tourism

  Heritage tourism shall be promoted in and around the Municipality, especially at Lokanaarkavu, Sidhashramam, Thacholi manioth temple, Thazhe Angadi valiya Palli and Kunjali Marakkar museum.

33 FINANCIAL RESOURCE PLANNING AND PHASING

In this chapter, the approximate expenditure for implementation of development proposals and the time period required for implementation are detailed.

33.1 Finance

The expenditure required for implementation of the development proposals are detailed in Table 33.1

Table 33.1 Development Expenditure

Sl	Proposal	Amount in Lakhs				
		Taking Pocession of Land	**Land Development and construction**	**Infrastructure facilities**	**Support**	**Total**
1	Bus Terminal	3240.00	100.00	50.00		3390.00
2	Higher education centre	2872.50	20.00	180.00		3072.50
3	Solid waste treatment area, including land, vehicles, waste treatment, Leachate treatment, Landfilling, etc	1240.00	100.00	160.00		1500.00
4	STP including pipe laying, and all	Detailed study and planning is required. Hence a detailed plan shall be prepared for it.				
5	Market and Slaughter house	975.00	20.00	20.00		1015.00
6	Stadium	4512.50	20.00	350.00		4882.50
7	Port Development	322.50	20.00	30.00		372.50
8	Road widening and new roads					
	8m Existing		124.00			124.00
	8m Proposed	2667.16	154.20			2821.36
	10m Existing		211.95			211.95
	10m Proposed	988.39	30.00			1018.39

	12m Existing		411.40			411.40
	12m Proposed	3214.23	108.40			3322.63
	15m Existing		272.25			272.25
	15m Proposed	3558.19	120.00			3678.19
	18m Existing	6209.04	209.40			6418.44
	45m Existing	19322.96	391.00			19713.96
9	Elevated road from Thiruvallore Jn to Villiyapalli Jn		1500.00			1500.00
10	Railway Over Bridge		2000.00			2000.00
11	Junction Improvements					
	– Villiyapalli road – memunda road jn		15.00			15.00
	– Makkoolpedika jn		15.00			15.00
	– Housing colony jn		10.00			10.00
	– Edodi jn		15.00			15.00
	– Old NH – Market road jn		15.00			15.00
	– Meppayil palam jn		10.00			10.00
	– Palayatnada jn		10.00			10.00
	– Pazhankavu jn-		10.00			10.00
12	Pedestrian Facilities					
	Foot Paths		997.50			997.50
	Hand Rails		665.00			665.00
	Road Markings		266.00			266.00
	Signages		50.00			50.00
	Signals		18.00			18.00
13	Major Industrial Units		180.00			180.00

14	Upliftment of Traditional Industries					
	Coir			20.00	76.00	96.00
	Art Crafts			20.00	30.00	50.00
15	Food Processing Industry					
	Fish			10.00	40.00	50.00
	Vegetables			10.00	40.00	50.00
16	Small Industries like net making, bag making, book binding, candles, matchbox, etc		10.00	90.00		100.00
17	Tourism Advertising		5.00	100.00	100.00	205.00
18	Paddy Field protection				500.00	500.00
19	Protection of existing water bodies			10.00	50.00	60.00
20	Agriculture bank		20.00			20.00
21	Homestead cultivation promotion				30.00	30.00
22	Goat/cow/chicken farms			10.00	40.00	50.00
23	Collection and distribution centre for milk, egg etc		5.00	5.00		10.00
24	Fish Processing unit			10.00		10.00
25	Fish Landing centre		40.00	10.00		50.00
26	Renovation of existing water supply schemes		100.00			100.00
27	New water supply scheme		40.00			40.00

28	Drainage master plan (Amount shown is only for preparing the master plan. Execution will requires few Crores)		50.00			50.00
29	Small Bio gas plants and vermi composting units			20.00	130.00	150.00
30	Bio gas plants and vermi composting units		15.00	15.00		30.00
31	Anganwadi renovation		150.00	50.00		200.00
32	Education					
	HS	1600.00	60.00	60.00		1720.00
	HSS	1750.00	30.00	30.00		1810.00
	Integrated School	1950.00	40.00	40.00		2030.00
	Special School	250.00	20.00	20.00		290.00
	Poly Technic	1200.00	40.00	40.00		1280.00
	ITI	1600.00	40.00	40.00		1680.00
	Arts and science college	2000.00	50.00	50.00		2100.00
33	Hospital in beach area	3750.00	50.00	50.00		3850.00
34	Kavu/Kandal Protection			10.00	30.00	40.00
		68749.97	**9654.10**	**1710.00**	**1066.00**	**81180.07**

Phases of Development

The proposals given in the master plan is envisaged for a perspective period of 20 years. The implementation of the master plan in different period are given in Table 33.2

Table 33.2 Phasing of proposals

Sl No	Proposal	2011-2016	2016-2021	2021-2026	2026-2031
1	Bus Terminal	Land acquisition, planning and design	Construction and operation	Maintenance	Maintenance
2	Higher education centre	Land acquisition, planning and design	Construction and operation		
3	Solid waste treatment area, including land, vehicles, waste treatment, Leachate treatment, Landfilling, etc	Land acquisition, planning , design and construction of Land fill and LTP	Maintenance	Maintenance	Maintenance
4	STP including pipe laying, and all	Planning and design	Land Acquisition and initial constructions	Construction and Operation	Maintenance
5	Market and Slaughter house	Land acquisition, planning , design and construction			
6	Stadium	Land Acquisition, planning and design	Construction and operation		
7	Port Development	Planning and design	Construction and operation		
8	Road widening and new				
	8m				
	Existing	Land acquisition, construction			
	Proposed	Land acquisition	Alignment study and construction	Alignment study and construction	
	10m				
	Existing	Land acquisition, construction	Land acquisition, construction		
	Proposed	Land acquisition	Alignment study and construction		
	12m				

	Existing	Land acquisition, construction	Land acquisition, construction		
	Proposed	Land acquisition	Alignment study and construction		
	15m				
	Existing	Land acquisition, construction			
	Proposed	Land acquisition	Alignment study and construction	Alignment study and constructio n	
	18m				
	Existing	Land acquisition, Alignment correction and construction	Land acquisition, Alignment correction and construction		
	45m				
	Existing	Land acquisition, Alignment correction and construction	Land acquisition, Alignment correction and construction		
9	Elevated road from Thiruvallore Jn to Villiyapalli Jn	Design and construction	Design and construction		
10	Railway Over Bridge	Design and construction	Design and construction		
11	Junction Improvements				
	– Villiyapalli road – memunda road jn	Maintenance works	Maintenance works		
	– Makkoolpedika jn	Maintenance works	Maintenance works		
	– Housing colony jn	Maintenance works	Maintenance works		
	– Edodi jn	Maintenance works	Maintenance works		
	– Old NH – Market road jn	Maintenance works	Maintenance works		

	– Meppayil palam jn	Maintenance works	Maintenance works		
	– Palayatnada jn	Maintenance works	Maintenance works		
	– Pazhankavu jn-	Maintenance works	Maintenance works		
12	Pedestrian Facilities				
	Foot Paths	Construction	Maintenance		
	Hand Rails	Construction	Maintenance		
	Road Markings	Construction	Maintenance		
	Signages	Construction	Maintenance		
	Signals	Construction	Maintenance		
13	Major Industrial Units	Land identification, acquisition	Construction		
14	Upliftment of Traditional Industries				
	Coir	Land acquisition	Construction	Necessary aid shall be provided	Necessary aid shall be provided
	Art Crafts	Land acquisition	Construction	Necessary aid shall be provided	Necessary aid shall be provided
15	Food Processing Industry				
	Fish	Land acquisition	Construction	Necessary aid shall be provided	Necessary aid shall be provided
	Vegetables	Land acquisition	Construction	Necessary aid shall be provided	Necessary aid shall be provided
16	Small Industries like net, bag, book binding, candles, matchbox, etc	Necessary aid shall be provided		Necessary aid shall be provided	

17	Tourism Promotion	Planning and construction	Necessary aid shall be provided		
18	Paddy Field protection	Identification, promotion of cultivation and protection.	Necessary aid shall be provided		Necessary aid shall be provided
19	Protection of existing water bodies	Protection works			
20	Agriculture bank	Necessary aid shall be provided		Necessary aid shall be provided	
21	Homestead cultivation promotion	Necessary aid shall be provided		Necessary aid shall be provided	
22	Goat/cow/Chicken farms	Necessary aid shall be provided		Necessary aid shall be provided	
23	collection and distribution centre for milk, egg etc	Necessary aid shall be provided	Necessary aid shall be provided		
24	Fish Processing unit	Planning and construction	Necessary aid shall be provided		
25	Fish Landing centre	Planning and construction			
26	Renovation of existing water supply schemes	Maintenance works	Maintenance works		
27	New water supply scheme	Land acquisition, planning and construction	Maintenance works		
28	Drainage Master Plan	Planning and design	Land acquisition, construction	construction	Maintenance
29	small Bio gas plants and vermi composting units	Necessary aid shall be provided	Necessary aid shall be provided		
30	Bio gas plants and vermi composting	Construction			

	units				
31	Anganwadi renovation	Land acquisition, planning and design	Construction and operation		
32	Education				
	HS	Land acquisition, planning and design	Construction and operation		
	HSS	Land acquisition, planning and design	Construction and operation		
	Integrated School	Land acquisition, planning and design	Construction and operation		
	Special School	Land acquisition, planning and design	Construction and operation		
	Poly Technic	Land acquisition, planning and design	Construction and operation		
	ITI	Land acquisition, planning and design	Construction and operation		
	Arts and science college	Land acquisition, planning and design	Construction and operation		
33	Hospital at beach area	Land acquisition, planning and design	Construction and operation	Maintenance	
34	Kavu/Kandal Protection	Necessary aid shall be provided	Necessary aid shall be provided		

PART IV:

DEVELOPMENT REGULATIONS

34 ZONING AND ZONING REGULATIONS

Land use zoning for sustainable development has been done for Municipality and is described in previous chapters. For proper enforcement of zoning, few zoning regulations are to be made.

The CBD area of Municipality is the proper place for commercial development. Hence commercial activities can be permitted into extreme extent at this area. Residential activities are also taking place in this area. Hence residential activities upto some extent can be permitted here.

There must be an area inside every Municipality for calm and quiet residential livelihood. So in this plan also, few areas are zoned as low density residential zone. For holding the increase in land price and higher order developments in this zone, maximum number of floors of building in this area is restricted to three.

The developments proposed in this plan will add few more peoples in to Municipality. For accounting the housing need of the future population, a high density residential zone is proposed in this plan.

Major Industrial and hazardous uses are restricted at commercial and residential zones. So an area in Municipality shall be demarcated for this purpose and hence regulation is made such as all these activities are permitted in Multi Functional zone.

All special zones are controlled with appropriate regulation for proper activity distribution at those areas.

34.1 REGULATION GUIDELINES

1. All future developments shall be in conformity with the provisions of the Master plan for Vatakara Town.
2. For the implementation and enforcement of the proposals envisaged in this Master plan areas have been zoned under various categories such as Low density residential, high density residential, multi-functional, commercial, mixed(commercial / residential) , wet agricultural, industrial, public and semipublic ,special use zones etc. Details regarding the nature of uses ‘ permitted’, uses ‘restricted’ and uses ‘prohibited’ in each zone are given in the accompanying sheets. These regulations shall be enforced in conjunction with other specific provisions if any mentioned elsewhere in this Master plan.

Uses 'permitted' in a zone cover the uses that can be normally accommodated in the relevant zone. Such uses may be permitted by the Secretary Vatakara Municipality, hereinafter referred to as the Secretary. 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 special locational factors. Such cases which come under this category are classified as "Uses Restricted". Restricted-1 category deals with the uses that shall be restricted by the Secretary with the concurrence of the Town Planner of the District office of the Department of Town and Country Planning, Restricted -2 category deals with the uses that shall be restricted by the Secretary with the concurrence of the Chief Town Planner concerned of the Department of Town and Country Planning.

Uses 'prohibited' enlists the various objectionable uses in each zone which shall not be permitted under normal circumstances.

3. All places of heritage importance such as Kavu, Temples etc have to be conserved with due regard to the historical significance and architectural character of the area.
4. Zoning regulations are not intended to prohibit existing uses that have been lawfully established prior to the enforcement of these regulations, unless otherwise specifically mentioned in this scheme. All existing uses in every zone shall be permitted to continue. In case of addition/extension/alteration of the existing building is proposed, the total area shall not exceed 1.5 times the existing floor area.
5. If any portion of a zone is put to a 'Use prohibited' as stated in Para 2, before the sanctioning of the scheme, such use shall be termed as non-conforming use. A non-conforming use may be allowed to continue in its existing location and essential repairs and maintenance for the structure may be permitted by the Secretary, provided that the said use create no adverse environmental influence in the zone. Addition, alteration or reconstruction, if found necessary as part of any mitigation measures may be permitted for such uses by the Secretary with the concurrence of the Chief Town Planner concerned.
6. Existing areas and structures of archaeological importance, agricultural uses and religious uses may be permitted in all the zones and shall not constitute non-conforming uses.

7. Regulation of constructions and land developments on the sides of new roads/roads proposed for widening as per the Master plan shall be governed by the distance from the centerline of the road, unless otherwise specified in the scheme or in any detailed road alignment approved by the Chief Town Planner.
8. Expansion of existing public and semi public 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.
9. An additional FAR corresponding to the area of pond existing within the plot shall be permitted for promoting the conservation of ponds. Once the developer acquires this option he shall make a legal agreement with Municipality that he will preserve the pond. Filling up of pond after utilizing the option shall be treated as a serious offence, and the permission of building shall be cancelled.
10. Coverage and floor area ratio (FAR) of all constructions shall be the values prescribed in the Kerala Municipality Building Rules, 1999 except stated in rule 9 above and **time to time amendments shall be adhered to.**
11. Construction and/or land developments, if any, in paddy lands and in wetlands, shall be in conformity with the paddy land and wetland Act in force in the state.
12. The provisions of costal Regulation Zone will be applicable to the Master plan area.
13. The government shall have the power to issue clarifications in respect of technical interpretations, if any, required in any of the provisions of the Master plan in consultation with the chief Town planner concerned.
14. Any use not specified in the ‘use permitted’ or ‘uses restricted’ category of a particular use zone, but which is of a similar nature to any use permitted or restricted in that particular use zone , can be considered by the secretary , with the concurrence of the chief Town planner concerned.

ZONING REGULATION FOR VATAKARA MASTER PLAN				
Sl. No	**Uses permitted**	**Uses restricted-1**	**Uses restricted-2**	**Uses prohibited**
I	**Residential Zone**			
1.1	**Low Density Residential Zone**			
1	All Residences including apartments limited to three floors excluding Basement floors,Tourist resort, Night Shelters, Orphanages, Old Age Homes, Dharmasala, Residential Quarters.	Ashram/Mutt,Hostels,Guest house, lodge, and Boarding Houses,Higher secondary Schools.	Vehicle fuel filling stations	Any other use not specified
2	Shops, professional offices, banks & other financial institutions, restaurants, hotels, limiting built up area up to 100 m2	LPG distribution centres (excluding bottling plants and bulk storage) limiting the built up area to 50 sq. m. provided that the access road has a width of 8m minimum. Cultural buildings, Public utility areas and buildings other than those included in the permitted use		
3	Cottage Industries, Service Industries of non-nuisance Nature (See Annexe-I), with number of workers limited to 6 without power or 3 workers with power limited to 5 HP	Telecommunication towers		
4	Educational institutions essentially serving the needs of residential community such as nursery schools, kindergartens and schools offering general education (up to high school level).			
5	Health institutions essentially serving the needs of residential community such as dispensaries, clinics, nursing homes etc. and having a built up area not more than 200 m2.			

6	Community facilities such as community halls, recreational clubs, gymnasium/yoga centers, libraries etc. having a built up area not more than 100 m2.			
7	Utility installations and civic amenities essentially serving the needs of residential community such as post office, police station, telephone exchange, electric substation, fire station, tot lots, parks, play grounds, water treatment plants below 5 MLD.			
8	Plant nurseries incidental to community needs			
	Provided that the access road has a width of 5m minimum.			
9	Automobile workshops for two/ three wheelers – floor area upto 100 m2			Any other use not specified
	Provided that the access road has a width of 8m minimum			
10	Hospitals , Convention Centres/ Auditorium/ Wedding Halls/ Community halls/ Exhibition Centers and Art Gallery-floor area upto300 sq m			Any other use not specified
11	Poultry farm, Diary and Kennel up to 200M2			
	Provided that the access road has a width of 12m minimum			
12	Auditorium / Wedding Halls / Community halls-floor area upto 1500 sq m			Any other use not specified
13	Poultry farm, Diary and Kennel above 200M2			

Notes:	*For all permissible uses under Low Density Residential use except item no:1, the maximum permissible coverage and FAR shall be 80% of the corresponding value as prescribed in the Building Rules.*			
1.2	**High Density Residential Zone**			
1	All Residences including apartments, Tourist resort, Guest house, lodge, Night Shelters, Orphanages, Old Age Homes, Dharmasala, Residential Quarters, Hostels and Boarding houses.	Ashram/Mutt	Fuel Filling Stations	Any other use not specified
2	Shops, professional offices, banks & other financial institutions, restaurants, hotels, limiting built up area up to 100 m2	Transmission towers, Telecommunication towers and Wireless Station, cultural buildings, Public utility areas and buildings other than those included in the permitted use		
3	Cottage Industries, Service Industries of non-nuisance Nature (See Annexe-I), with number of workers limited to 6 without power or 3 workers with power limited to 5 HP	Places of Worship, Higher Secondary schools		
4	Educational institutions essentially serving the needs of residential community such as nursery schools, kindergartens and schools offering general education (up to high school level).			

5	Health institutions essentially serving the needs of residential community such as dispensaries, clinics, nursing homes etc. and having a built up area not more than 200 m2.			
6	Community facilities such as community halls, recreational clubs, gymnasium/yoga centers, libraries etc. having a built up area not more than 100 m2.			
7	Utility installations and civic amenities essentially serving the needs of residential community such as post office, police station, telephone exchange, electric substation, fire station, tot lots, parks, play grounds, water treatment plants below 5 MLD.			
8	Plant nurseries incidental to community needs			
	Provided that the access road has a width of 5m minimum.			
9	Automobile workshops for two/ three wheelers – floor area upto 100 m2			Any other use not specified
	Provided that the access road has a width of 8m minimum			
10	Shops/ Professional Offices/ Commercial Offices/ Banking and Financial institutions - floor area up to 200 sq.m	LPG distribution centres (excluding bottling plants and bulk storage) limiting the built up area to 50 sq. m.		Any other use not specified
11	Hospitals, Convention Centres/ Auditorium/ Wedding Halls/ Community halls/Exhibition Centers and Art Gallery-floor area upto 300 sq m			
12	Poultry farm, Diary and Kennel upto 200M2			
	Provided that the access road has a width of 12m minimum			

13	Shops/ Professional Offices/ Commercial Offices/ Banking and Financial institutions - floor area up to 500 sq.m			Any other use not specified
14	Hospitals up to 2000m2 of Floor area.			
15	Auditorium / Wedding Halls / Community halls- floor area up to 1500 sq. m			
II	**Commercial Zone**			
1	All Shops including shopping Complexes, Shopping malls, Multiplex, Hypermarkets, Restaurants, Hotels, Professional offices, Commercial Offices & Establishments, Banking and financial institutions, IT Software units	Places of Worship,cultural buldings	Fuel Filling Stations	Any other use not specified
2	Cottage Industries, Automobile workshops, Automobile Service Stations, Cold storage, Service Industries of non-nuisance Nature (See Annexe I) with number of workers limited to 19 without power or 9 workers with power limited to 30 HP), weigh bridges, Printing Press, IT Hardware/Electronic industries. white and green category industries as enlisted by kerala pollution control board	Outdoor Games Stadium		
3	Godowns/Warehouse/Storage of non-hazardous materials, stacking yards .	Other public utility areas & buildings, Hospitals & health centers above 50 beds, Higher educational institutions, provided the access has a minimum width of 8m		

4	Expansion of existing residential buildings/ Residences floor area up to 300 sq.m, Residential apartments with at least two lower floors for commercial use, night shelters, orphanages, old age homes, Dharmasala, hostels and boarding houses, lodges and guest houses, ashram/mutts.	Diary farm, Poultry farm		
5	Clinics, diagnostic centers and hospitals up to 50 beds.			
6	Govt. or Public sector offices, Expansion of existing educational institutions, Day care and Creche, Nursery/Kindergarten, schools up to higher secondary level,			
7	Social Welfare centers, Museum/ Auditorium / Wedding Halls / Community halls and Convention Centers, up to 1000M2 .			
8	Telecommunication towers ,Transmission towers and Wireless Stations			
9	Public Utility areas & buildings ,Parking Plazas, Transport terminals, Plant Nursery, storage of agricultural produces and seeds, Fair Grounds, Markets, Parks & playgrounds, Open air Theatre			
III	**Existing Public & Semi Public**			
1	Additions and alterations to the existing buildings and addition of new blocks without altering the use, Buildings for incidental uses with floor area up to 100sq.m		Cremation ground,crematorium,burial ground/common vault	Any other use not specified

2	Local/State/Central Government/Public sector buildings			
3	Public buildings including Hospitals, educational institutions, libraries and parks			
IV	**Public & Semi Public Zone**			
1	Additions and alterations to the existing buildings and addition of new blocks without altering the use, Buildings for incidental uses with floor area up to 100sq.m		Cremation ground,crematorium,burial ground/common vault	Any other use not specified
2	Local/State/Central Government/Public sector buildings			
V	**Industrial Zone**			
1	All industries other than obnoxious and nuisance type	Automobile wash stalls, automobile service stations, service garages with repairing facilities, welding workshops, telecommunication towers	Storage, handling Manufacturing, processing of highly combustible, explosive, poisonous, irritant, corrosive, toxic or noxious materials or any product or materials producing dust.	Any other use not specified
2	Industrial estates & industrial parks, IT software units			
3	Residential uses incidental to the industrial use			
4	Any other activity incidental to industrial use			
VI	**Mixed Zone (Residential / Commercial)**			

1	All uses permitted in High density Residential Zone and Commercial Zone	All uses Restricted – I in High density Residential Zone and Commercial Zone	All uses Restricted – 2 in High density Residential Zone and Commercial Zone	Any other use not specified
VII	**Transport Zone**			
1	Transport terminals including constructions which form an integral part of the transportation use			Any other use not specified
VIII	**Parks and Play Ground**			
1	Tot Lots, Pump House up to 20 sqm, wells and irrigation ponds, ATM			Any other use not specified
2	Incidental buildings such as Club, Swimming pool, Open Air Theatre, Reading Room, Cafeteria, etc., up to 100sqm and Water Treatment Plant below 5 MLD			
IX	**Multi Functional Zone**			
1	All Residences including apartments, Tourist resort, Guest house, lodge, Night Shelters, Orphanages, Old Age Homes, Dharmasala, Residential Quarters, Hostels and Boarding houses.	Places of Worship, cultural buildings, Higher Secondary schools, Printing Press, Gas godown.	Fuel Filling Stations	Any other use not specified
2	Tourist resort up to 1000M2, Ashram/Mutt.			
3	Cottage Industries, Service Industries of non-nuisance Nature (See Annexe I , with number of workers limited to10 with power limited to 10 HP or 20 workers without power.) Cold storage, weigh bridges, Printing Press,IT Hardware/Electronic industries. Automobile workshops for 2/3 Wheelers , Smoke house, Automobile service station, provided that the		Following uses up to 200Sqm Floor area.storage, handling, manufacturing processing of highly combustible, explosive, poisonous, irritant, corrosive, toxic or	

	access road has a width of 5m minimum and also Godowns/Warehouse/Storage of non-hazardous materials, stacking yards, IT Software units, white and green category industries as enlisted by kerala pollution control board.		noxious materials or products or any products or materials producing dust	
4	Residential apartments with lower floors for commercial use.			
5	Govt. or Public sector offices, Social Welfare centers,			
6	All educational institutions up to Higher Secondary Level including Technical Institutions, Educational institutions of higher order			
7	Public Utility areas & buildings, Telecommunication towers, Transmission towers and Wireless Stations, ,Parking Plazas, Transport terminals, Plant Nursery, Fair Grounds, Markets, Parks & playgrounds, Open air Theatre, Pump House.			
8	Professional Offices/ Commercial Offices/ Banking and Financial institutions			Any other uses not specified
9	Following uses up to 200Sqm Floor area. Automobile wash stalls, automobile service stations, service garages with repairing facilities, welding workshops.		Bus Terminals/stand, lorry stand	Any other uses not specified
10	Automobile workshops/Automobile Service Stations for Heavy vehicles			Any other uses not specified

11	Hospitals & Health Centers- (up to 300 beds)			Any other uses not specified
12	Shopping malls, hyper markets, Multiplex, Movie Halls/ Auditorium/Wedding Halls, Museum/Community halls, Convention Centers			Any other uses not specified
X	**Wet Agriculture Zone**			
1	Paddy Cultivation, Agriculture/ Horticulture/Fodder cultivation, Fish Farms/ Seed Farms/ Pump House/ Wells and Irrigation Ponds without any building construction.	Storage of Agricultural produces and seeds area up to 100m2 Minor Public Utility areas & buildings which will not affect the character of the area		Any other use not specified
2	Constructions /land developments in conformity with the Conservation of Paddy land and Wet land Act in force in lands designated as Paddy land or Wet land under the said Act			
XI	**Water Body**			
1	Bridges, side protection walls, fish landing centers, boat jetty and water transport			Any other use not specified
XII	**Sidhashramam Settlement**			

	Residential, educational units and Manufacturing of Ayurvedic medicines, Hospitals for popularizing Ayurvedic treatment for both inmates and for other people			Any other use not specified
XIII	**Green Buffer**			
	In areas zoned as green buffer, 3m or width of water body, whichever is less, on either side of water body and around mangroves.			
		No constructions shall be permitted in this area. Green canopy may be provided and sufficient protection shall be provided to the green belt		
XIV	**Special zones**			
	Special zones are the areas specifically demarcated for certain projects. Proposed Bus Terminal Complex, proposed Stadium Complex, Proposed Higher educational Centre, Proposed Research and Administration Centre, Port and allied development, Solid waste treatment, slaughter house and heritage park shall be taken into possession by the Municipality or Agency concerned within a period of seven years from the date of sanctioning of the master plan. If the land is not taken into possession within this stipulated period, this land may be released and returned to that land use zone which may be deemed appropriate based on the surrounding land use and developments with the concurrence of the Chief town planner concerned. The following uses shall be permitted in the Special zones by the Secretary.			
1	**Bus Terminal Complex** { RS no :246(P), 247(P) ,248(P), 239(P), 256(P), 254(P) of Vatakara Desom }	Bus Terminal, Government office complex and Government owned Housing Schemes as main uses and commercial uses along with it. Commercial uses shall be permitted to a maximum of 25% of floor area of the main uses along with the main use or separate.		
2	**Stadium Complex** { RS no :34(P), 35(P), 36(P), 32(P), 41(P), 42(P), 37(P) of Meppayil Desom and RS no :58(P) of Puthuppanam Desom }	80% of the buildup area should be Indoor and outdoor stadium and parking plazas. Incidental activities such as commercial, public and semipublic shall be permitted at the remaining 20%.		

3	**Higher educational Centre** { RS no :1(P), 2(P), 3(P), 4(P) of Puthur Desom }	70% of the buildup area should be educational institution labs and related facilities. Remaining 30% can be used for incidental uses like residential quarters, canteen, waiting rooms,etc.
4	**Research and Administration** { RS no :35(P), 42(P) of Meppayil Desom }	Research Centre and incidental uses like Offices and Quarters, Laboratories, Green house nurseries and study centers.
5	**Port and allied development** { RS no :96(P) of Vatakara Desom }	Area intended for the development of Vatakara port, Port development related structures.
6	**Solid Waste Treatment** { RS no :3(P) of Meppayil Desom }	Buildings/structures incidental to the main use only permitted. A construction free buffer of 7.5M towards inside from plot boundary shall be provided. Green canopy may be provided at this area.
7	**Slaughter house** { RS no :136(P) of Vatakara Desom }	Slaughter house and uses incidental to it.
8	**Heritage Park** { RS no :140(P), 66(P) of Vatakara Desom }	This area can be preserved as park and open space or developed as conventional center or amusement park. All permitted and restricted uses under park and playground zone shall be permitted in this zone without area limitation.

General notes:			
1	Zoning Regulations will prevail the provisions in KMBR		
2	Subject to zoning regulations of the respective use zones, more than one use may be combined in a building, provided that the total floor area of such a building shall not exceed the maximum floor area permitted for any of such use premises in that use zone.		
3	For the purpose of these regulations, floor area means the total floor area of the building on all floors.		
4	Concurrence and layout approval shall be obtained as per provisions of KMBR 1999 from District Town Planner/ Chief Town Planner for all activities in special zone.		
5	Irrespective of zoning regulations, public utility areas and building under government approved schemes can be implemented anywhere in the municipality **except at special zones.**		

6	The zone Existing public and Semipublic includes the existing Public and Semi Public Uses, limited to their existing extent. The proposed Zone Public and Semi Public Zone covers the areas proposed to be additionally utilized for Public and Semipublic Uses. The secretary, Vadakara Municipality, with concurrence of the District Officer of the Department of Town & Country planning having jurisdiction over the area, shall permit in privately owned land which is zoned for "existing public & semipublic use", such uses that are permissible in adjacent land use zone, If there is no records available with Vadakara Municipality regarding any proposal for acquiring that particular privately own land for any public use at the time of application for building construction or land development.		
7	Large Scale development proposals in an area not less than 2 hectares, exceeding and investment of Rs.50 crore's, which provide direct employment (after commissioning of the project) to the tune of not less than 500 may be permitted in all zones except parks and play ground, wet agriculture, water body and special zones, subject to the recommendation of a committee to be constituted by the Government for this purpose, under the Chairmanship of the Secretary, Local Self Government Department, consisting of Chief Town Planner of Kerala State Town and Country Planning Department, the Town Planner, Regional Town Planning Office, Kozhikode being the convener and the Secretary of the Municipality and satisfying 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 from 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 ma intained by the developer at his /her cost. **d)** Adequate Memorandum of understanding between the developer and Secretary of Local body concerned e) Maximum floor area ratio shall be 2 and Minimum access width 12 meter. f) The project shall be completed within a period of 3 years if not specified otherwise.		

ANNEXE I

TYPE OF NON-OBNOXIOUS AND NON-NUISANCE TYPE OF SESRVICE OR LIGHT INDUSTRIES PERMISSIBLE IN VARIOUS 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 Khandsri 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) appalam.
15	Production of vinegar.
16	Manufacture of soda, water, lemonade 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 and paper hand.
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 chap pals.
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	Serving 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	industries classified in to GREEN category by State/Central government

ANNEXE II

LIST OF OBNOXIOUS OR NUISANCE INDUSTRIES SUBJECT TO OBJECTIONABLE ODOURS, FUMES EFFLUENTS OR PROCESSORS	
(Grouped under Indian Standard Industrial Classification)	
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 and chorine.
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
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., or 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	**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.