



INTEGRATED DISTRICT DEVELOPMENT PLAN

KOLLAM

CONCISE REPORT

[<< VOL-I perspective plan](#)

[<< VOL-II execution plan](#)



[next >>](#)

DISTRICT PLANNING COMMITTEE, LOCAL GOVERNMENTS, SPECIAL TECHNICAL ADVISORY COMMITTEE - KOLLAM,
DEPARTMENT OF TOWN AND COUNTRY PLANNING - GOVERNMENT OF KERALA

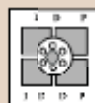
DRAFT
INTEGRATED DISTRICT DEVELOPMENT PLAN
KOLLAM
CONCISE REPORT

Volume III

[<< cover](#)

[<< VOL-I pers](#)

[next >>](#)



DISTRICT PLANNING COMMITTEE, LOCAL GOVERNMENTS, SPECIAL TECHNICAL ADVISORY COMMITTEE - KOLLAM,
DEPARTMENT OF TOWN AND COUNTRY PLANNING - GOVERNMENT OF KERALA

June 2009

JUNE 2009

DISTRICT PLANNING COMMITTEE, KOLLAM
LOCAL GOVERNMENTS, KOLLAM
SPECIAL TECHNICAL ADVISORY COMMITTEE, KOLLAM
DEPARTMENT OF TOWN AND COUNTRY PLANNING, GOVERNMENT OF KERALA

INTEGRATED DISTRICT DEVELOPMENT PLAN
FOR KOLLAM (Draft)

VOLUME- III
Concise Report

Editorial Committee:

Sri. Jacob Easow, Senior Town Planner, Office of the Chief Town Planner, Thiruvananthapuram
Sri. P. Anil Kumar, Town Planner, Kollam
Smt. P. R. Ushakumari, Town Planner, Office of the Chief Town Planner, Thiruvananthapuram
Sri. S. Ajay Kumar, Deputy Town Planner, IDDP-LDP Project Office, Kollam
Sri. Baiju. K, Deputy Town Planner, Office of the Chief Town Planner, Thiruvananthapuram

Technical Assistance:

Smt. Shary M.V., Assistant Town Planner, Office of the Town Planner, Kollam
Smt. Jinumol Varghese, Assistant Town Planner, Office of the Town Planner, Kollam
Kum. Priyanka P.J., Planning Assistant, IDDP-LDP Project Office, Kollam

Design Consultant:

Prof. Antony Ben, TKMCE, Kollam

Photography:

Sri. A. Sirajudeen, Artist, Office of the Chief Town Planner, Thiruvananthapuram

DTP Artists:

Sri. Arun Kumar. U, Sri. Praveen. S, Sri. Vinod Kumar. C

Printing:

Government Central Press, Thiruvananthapuram

Any part of this document can be reproduced by giving due acknowledgement.

The publishers make no representation, express or implied with regard to the accuracy of the information contained in this document and cannot accept legal responsibility for any errors or omissions.

<< previous

<< VOL-I pers

next >>

MESSAGE

Comprehensive development with social justice is the declared agenda of the Government. Development becomes comprehensive when the economic, social and physical dimensions are integrated. Equal accessibility to opportunities for all sections of the society will ensure social justice. Accessibility to opportunities shall be guaranteed to the present society, considering the ability of the future generation to meet their needs as well. Such a development ought to be achieved in a democratic manner for which people's participation in development is inevitable. In order to fulfil the Government's commitment towards decentralized planning, the People's Planning Campaign movement was introduced in our State during the Ninth Five Year Plan. Efforts were made in successive Five Year Plans to strengthen decentralization. District planning has become the most important link in the whole system of decentralized planning because this is the cutting edge of administration. The present system of decentralized planning needs to be perfected by giving adequate emphasis to district planning which in turn is the constitutionally envisaged function of the District Planning Committees.

The pilot project of preparation of Integrated District Development Plan and Local Development Plans for each Local Government, taken up by the District Planning Committee, Kollam with the Department of Town and Country Planning as nodal agency is highly noteworthy in this respect. This has to be viewed as a natural progression of decentralized planning. The viable methodology of preparation of local plans and district plans with the involvement of people, elected leaders and experts, piloted and validated at Kollam has gained nationwide acceptance.

Kollam District of Kerala now owns the pride of having a total Plan for its development and the District Planning Committee of Kollam has become the pioneer in fulfilling the constitutionally mandated responsibility of being the planning authority of the district. The success of any plan lies in its implementation. I am sure that District Planning Committee of Kollam will succeed in this regard too.

Thiruvananthapuram

Paloli Mohamed Kutty
Minister for Local Self Government
Government of Kerala

<< previous

<< VOL-I pers

next >>

FOREWORD

The 74th Amendment Act of the Constitution of India, mandated District Planning Committee to prepare a **draft development plan** for the district. As per Article 243 ZD of the Constitution, the District Planning Committee shall consolidate Panchayat / Municipality Plans in the district and prepare a draft development plan for the district as a whole. The Article specifies that while preparing draft development plan, due regard shall be given to matters of common interest between panchayats and municipalities including spatial planning, sharing of water and other physical and natural resources, the integrated development of infrastructure and environmental conservation. The Constitution stipulates to consult such institutions and organizations decided by the State while preparing the District Development Plan. The District Planning Committee, Kollam, wanted to fulfil its Constitutional obligation and to have comprehensive development of the District with the participation of local governments in the district. This led to the important initiation towards preparation of an Integrated District Development Plan (IDDP) for Kollam along with Local Development Plans (LDP) for each and every local governments in the district in an integrated manner. The entire process was implemented with the involvement of people, local governments, line departments, NGOs etc. The Department of Town and Country Planning gave technical support for Plan preparation besides coordinating the entire process.

It is of no doubt that this methodology of plan preparation qualitatively strengthens the Decentralized Planning Process. The planning process is 'top-down'- 'grass root-up' wherein data collection and preliminary analysis of the collected data is performed at local level and integrated regional development vision (development concept) is formulated at the district level. Thus multilevel integration between Plans (between different Local Plans, Local Plans and District Plan and between sectors) is achieved avoiding duplication of development proposals formulated at different levels of administration namely at Village(*Grama*) Panchayat/Municipality, Block (intermediate) Panchayat, District Panchayat levels and even State or National level. Over and above the process succeeded in blending technical dimension and local wisdom in the preparation of Development Plans.

Integrated District Development Plan, Kollam tries to achieve planned development of the district through optimum utilization of resources, both natural and man made, ensuring conservation of environment. This is a plan for and by all development partners of the district and it specifies the role of each local government in the integrated development of the district. The Plan provides objective and direction to all development sectors meanwhile identifying their linkages.

The IDDP, Kollam envisages a population of 29.36 lakhs for the district by 2021- an addition of 3.50 lakhs to the present population. Development needs of the future population in each sector - be it physical, economical or social - are addressed in the Plan. The Plan identifies agriculture, animal husbandry, fisheries and mining & geology as the potential development sectors of the district. Six development zones namely Bio reserve zone, Agro development zone, Agro allied development zone, Special development zone, Multi functional zone and Aqua bio reserve zone are demarcated with most suitable activities in each zone. The midland area of the district is earmarked as the Agro development zone and the environmentally sensitive regions in and around Ashtamudi kayal and Paravur-Nadayara kayal are designated as Bio reserve zone of the District. A rational distribution of facilities is proposed to be achieved in the district through a well established hierarchy of settlements. A connectivity plan ensuring proper connectivity between settlements also form part of the Plan. Based on this development structure of the district sectoral details were worked out giving due respect to inter sectoral linkages. Thus the IDDP, Kollam is a comprehensive plan for the development of the district. The Plan encompasses all features of a district plan envisaged by the Constitution.

The District Planning Committee of Kollam is proud to be the pioneer in preparing such a Development Plan. The consistent efforts of members of DPC, Kollam, local governments, District Collectors, members of the Special Technical Advisory Group for IDDP and the Department of Town and Country Planning, in particular their Kollam District Office, in making the endeavor a success need to be appreciated.

Here is a Plan, not only 'for the people' but 'by the people and of the people'. The success of the Plan depends on how far people own the Plan and co-operate in implementation of the Plan. I seek united efforts of central, state and local governments as well as the private and corporate sector for realizing the development vision of IDDP Kollam. I submit this comprehensive plan before the people of Kollam as their means for achieving optimum development of the district.

Adv. K. Somaprasad

Chairman

District Planning Committee, Kollam

Kerala State

Kollam

<< previous

<< VOL-I pers

next >>

PREFACE

As part of People's Plan, Kerala succeeded in developing and operationalising a viable methodology of decentralized participatory planning. This path-breaking innovation has now been adopted nationally and the Planning Commission recommended an analogous methodology to be followed by all States in the preparation of the XIth Five Year Plan.

In spite of the pioneering nature of decentralized planning, it must be admitted, the development priorities were set and development options chosen on the basis of perceptions and negotiations among the stakeholders under the leadership of elected local governments and not on the basis of analysis. To start with it was good enough.

Now that decentralization in Kerala has entered the institutionalization phase, time is ripe for upgrading the quality of planning, moving on to analysis of development data and trends, with people and their representatives in the centre stage, assisted by officials and experts, leading to a vision emerging from a deep understanding of the developmental situation and potential.

In this respect, Kollam has conducted an important experiment, crafted patiently and meticulously by a team of top quality professionals from the Town and Country Planning Department, in partnership with enlightened political leadership of Local Governments. Under the leadership of the District Planning Committee (DPC) and with the involvement of all the Local Governments in the district, officials from the Development Departments, co-ordinated by the District Collector in his capacity as the Member Secretary of the DPC, pooled in all available data, filled up gaps through primary collection and analyzed them to study spatial development patterns. Utilizing the techniques of spatial planning and the tools of information technology detailed analysis of the current situation both sectoral and cross-sectoral was carried out and mapped and the trends were projected into the future.

The collective spatial patterns of different sectors of development at the district level, shows the gaps as well as the potential. Analysis was enriched by the involvement of elected leaders and local resource persons which gave the all important people-dimension to the whole process. Through a cross fertilization of expert opinions and people's ideas, policies and strategies for the immediate future emerged. Based on further consultations, plans and projects began to take shape springing organically from the understanding of the development past and the prospects of development future. Priorities were dictated by people's preferences of course limited by availability of resources, resulting in the detailed execution plan.

The whole process took a long time being a path-breaking venture. Intense discussions and debates and even doubts and criticisms informed each stage, often delaying the process but resulting in greater understanding and stronger ownership at the end. Thus only after a series of trials and errors the IDDP emerged. The most important features can be summed up as follows:-

- A deep shared understanding of development patterns of the past and potential for the future based on objective analysis of all available data.
- The understanding cut across development sectors and departmental domains and resulted in a holistic development concept or vision and this perspective guided the choice of strategies for the future and plans to realize them.

IDDP is made robust by the strong organic linkages connecting each step to the previous and next one. The commitment and enthusiasm of officials and elected leaders of Kollam has resulted in the development of a viable methodology of participatory spatial planning, theoretically sound and practically valid. Now that the core features of the methodology are revealed in the document, it is easy to upgrade or modify or adapt them for different geographical, developmental and political regions.

Thiruvananthapuram

S.M. Vijayanand
Principal Secretary
Local Self Government Department
Government of Kerala

<< previous

<< VOL-I pers

next >>

ACKNOWLEDGEMENTS

The Integrated District Development Plan, Kollam is a long range comprehensive plan for the development of the district. Through preparation of IDDP, the District Planning Committee of Kollam has become the first ever DPC in the Country to own a District Development Plan prepared as envisioned by the Constitution. This path-breaking venture has become a model in participatory district planning in a spatial platform. The methodology adopted has proven to be theoretically sound and practically valid for the preparation of district and local plans in line with 73rd and 74th Constitutional Amendments and is easily replicable elsewhere in the country.

The Department of Town and Country Planning is deeply thankful to people's representatives, officials, experts and above all the people of Kollam who worked for materializing the Plan. The District Planning Committee, Kollam need to be specially acknowledged for the sustained efforts to fulfil their constitutionally mandated responsibility of having a development plan for the district. The support given by Sri. Paloli Mohamed Kutty, Minister for Local Self Government Department, throughout the period was invaluable. Sri. S.M. Vijayanand IAS, Principal Secretary, Local Self Government Department was always ready to help and advice. We are deeply indebted to him for his inspiring and invaluable support in materializing this Plan. Adv. K. Somaprasad, Chairman District Planning Committee, Kollam was the driving force behind the capacious task. The Plan preparation gained momentum on the initiative of Adv. P. Aisha Potti MLA, former Chairperson, DPC Kollam, who took keen interest at all stages. Smt. K. Devaki, former Chairperson of DPC also extended all supports. All members of the DPC actively took part in the planning process as Chairpersons of 'Sub committees of Special Technical Advisory Committee of DPC for preparation of IDDP'. Sri. B. Ajayakumar and Sri. George Mathew who played anchor roles as Chairmen of 'Spatial planning sub committee' during their respective tenures need to be specially acknowledged. The District Collectors of Kollam, during the period, in their capacity as the Member Secretary of the DPC, played crucial role in co-ordinating the entire task. Special acknowledgements are due to Sri.B.Srinivas, IAS former District Collector of Kollam for immense support rendered in putting the task in track and to Sri.A. Shajahan IAS, present District Collector of Kollam for the support extended during the completion period. The whole hearted cooperation extended by all the line departments was a determined in the event. The efforts of both official and non official members of the Special Technical Advisory Committee for IDDP need to be reckoned with gratitude at this juncture without which integration of sectors would have been out of question.

The untiring efforts of Sri. Jacob Easow as District Town Planner, Kollam and presently in his capacity as Senior Town Planner of the State Project Cell for the project was really an inspiration. Sri. K.Devarajan, Sri. S. Ajayakumar, Sri.J.Jayakumar, Sri. C.J. Poulose and Sri. P.Anilkumar as District Town Planners of Kollam during the period also contributed in this endeavor. Smt. P.R. Ushakumari, Town Planner, Sri. S. Ajay Kumar and Sri. K. Baiju, Deputy Town Planners exerted sustained efforts during the entire period. Members of the Spatial Analysis Team for IDDP and officials of Kollam District Office of the Department are also to be acknowledged. The officials of the IDDP-LDP Project Office took consistent efforts for the plan preparation among whom Smt. M.V. Shari and Smt. Jinumole Varghese, Assistant Town Planners need special mention. The Department also acknowledges the support and guidance rendered by the members of the State Level Steering Committee and Department Level Technical Implementation Committee.

The project of preparation of IDDP-LDP is a joint project of DPC, Kollam and the local governments in the district. All the local governments of Kollam district need to be specially acknowledged for being part and parcel of the project. It is hoped that they will exert continued effort and complete their local development plans in a time bound manner.

Eapen Varughese

Chief Town Planner

Department of Town and Country Planning

Government of Kerala

Thiruvananthapuram

[<< previous](#)

[<< VOL-I pers](#)

[next >>](#)

PROLOGUE

The report of the Integrated District Development Plan for Kollam is presented in two volumes viz. Volume I and Volume II. The report has two sections: 'Section 1 - Methodology of Preparation of Local Development Plans and Integrated District Development Plan' and 'Section 2 - The Integrated District Development Plan for Kollam'.

Volume I comprises of

- Section 1: Methodology of Preparation of Local Development Plans and Integrated District Development Plan
- Part of Section 2 : Perspective Plan.

Volume II comprises of

- The remaining part of Section 2: Execution Plan.

Perspective Plan include

- Settlement analysis comprising analysis of population, occupational structure, land use, functional character of settlements, hierarchy of settlements, hierarchy of nodes and urban profile.
- Sectoral analysis comprising detailed analysis of various development sectors including production, service, social and economic sectors.
- Spatial analysis which analyses the spatial patterns evolved based on settlement studies, study of resources, study of social aspects and from environmental studies.
- Goals and objectives and the District Development Concept.
- General and sectoral development policies and strategies.

The above are detailed in Chapters 2 to 33 of Volume I.

Execution Plan include

- Development proposals with priorities, phasing and agencies involved with costing.

The above are detailed in Chapters 34 to 50 of Volume II.

A Concise Report of the Integrated District Development Plan for Kollam is also given as **Volume III**.

CONTENTS

- Message
- Foreword
- Preface
- Acknowledgement
- Prologue
- List of tables & figures

[Cont.....]

METHODOLOGY	SECTION - I		
	Methodology of Preparation of Local Development Plans and Integrated District Development Plan		
	Methodology of Preparation of Local Development Plans and Integrated District Development Plan		
	1.	Introduction	3
	2.	Components of LDP	3
	3.	Components of IDDP	4
	4.	Concept of the Plan preparation process	4
	5.	Organizational set up for the preparation of LDP and IDDP	4
	6.	Preparation of the plans	6
	7.	Uniqueness	7
	8.	Kollam Experience	8

CONCISE REPORT	SECTION - II		
	Integrated District Development Plan for Kollam District (Draft)		
	Part 1		
	Analysis		
	1.	Introduction to the District	11
	2.	Analysis	12
	2.1	Settlement Analysis	12
	2.1.1	Population	12
	2.1.2	Occupational Structure	12
	2.1.3	Land use	13
	2.1.4	Functional Character of Settlements	14
	2.1.5	Hierarchy of Settlements	14
	2.1.6	Hierarchy of Nodes	15
	2.1.7	Urban Profile	16
	2.2.	Sectoral Analysis	18
	2.2.1	Agriculture	18
	2.2.2	Irrigation	20
	2.2.3	Watershed Development	21
	2.2.4	Animal Husbandry	22
	2.2.5	Fisheries	24
	2.2.6	Industries	26
	2.2.7	Health	28
	2.2.8	Drinking water and sanitation	30
	2.2.9	Infrastructure	32
	2.2.10	Forest	34
	2.2.11	Environment	35
	2.2.12	Mining and Geology	36
	2.2.13	Education	37
	2.2.14	Social Welfare, Women and Child Development	38
	2.2.15	Poverty Reduction	40
	2.2.16	Power	42
	2.2.17	Scheduled Caste and Scheduled Tribes	43
	2.2.18	Tourism	44
	2.2.19	Finance	46
	2.3	Spatial Analysis	49
	2.3.1.	Major Roads	50
	2.3.2.	Sub Major Roads	50
	2.3.3.	Minor roads	50
	2.4	Spatial Structure	50

Part 2
Integrated Development Vision

1.	Major findings from Analyses	53
2.	Development Goals and Objectives	54
3.	District Development Concept	54
3.1	Development Zones	55
3.2.	Hierarchy of Settlements	56
3.3.	Hierarchy of Nodes	56
3.4.	Transportation network	56
3.5.	Development Policies and Strategies	59

Part 3
Development Proposals

1.	Sectoral Proposals	61
1.1	Agriculture	61
1.2	Irrigation	67
1.3	Watershed Development	68
1.4	Animal Husbandry	70
1.5	Fisheries	73
1.6	Industries	77
1.7	Health	79
1.8	Drinking Water	83
1.9	Infrastructure	86
1.10.	Forest	89
1.11	Environment	91
1.12	Mining and Geology	94
1.13	Education	95
1.14.	Social Welfare, Women and Child Development	97
1.15	Poverty Reduction	102
1.16	Scheduled Castes and Scheduled Tribes	106
1.17	Tourism	108
1.18	Finance	113

List of Tables

Table 1.1	Land use break up - Kollam District	13
Table 1.2	General character of the higher order settlements	15
Table 1.3	Urban profile – phasing	17
Table 1.4	Facilities in general to be provided	17
Table 1.5	Overall trend in ecological conservation	34
Table 1.6	Overall trend in economic development	34
Table 2.1	Zone wise projected population	58
Table 2.2	Zone wise projection of WPR and total workers	59
Table 2.3	Projected occupational structure	59
Table.3.1	Final priority area for Watershed Development for each spatial development zone	69
Table.3.2	Proposals for strengthening distribution side	105
Table 3.3	Different Proposals submitted by the departments and the sources identified	114

List of Figures

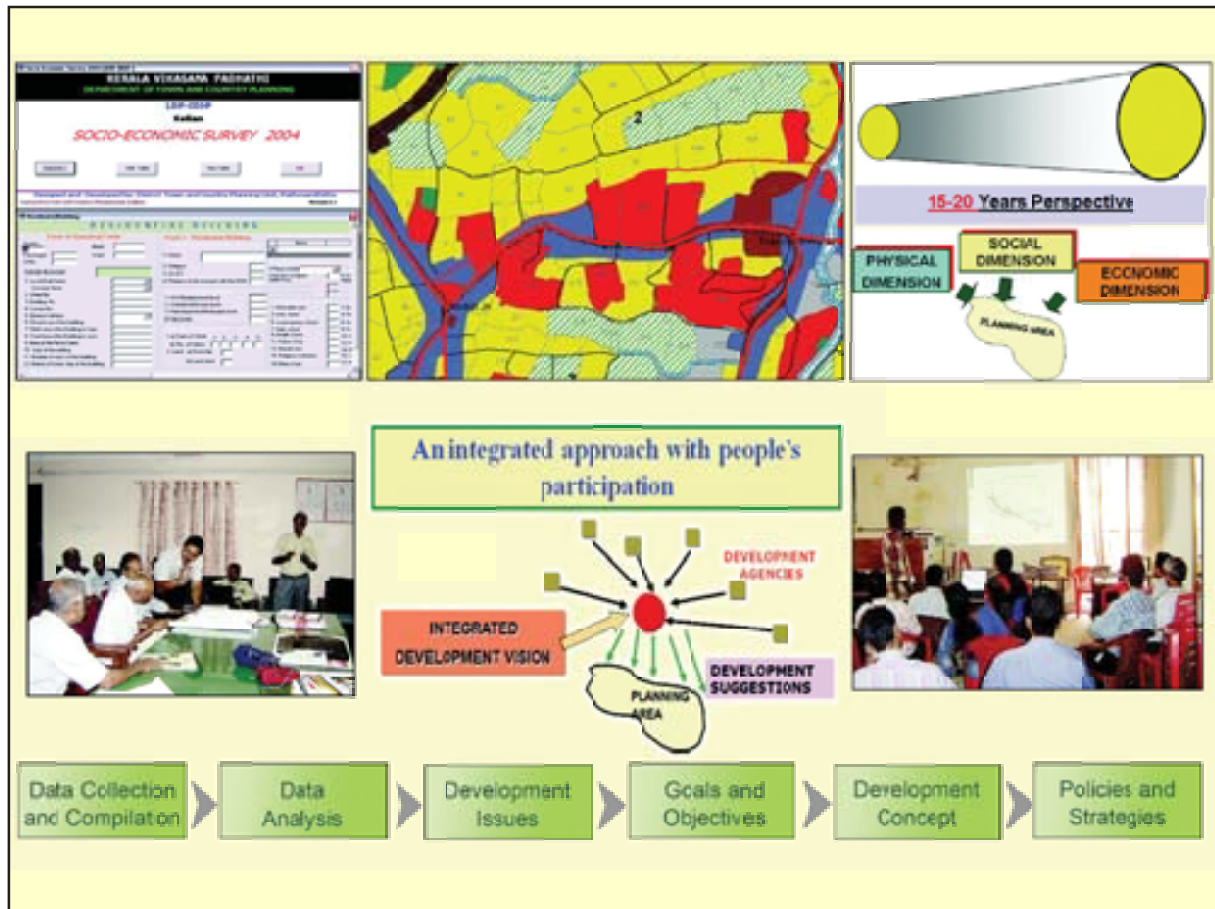
Fig. i	General planning process for preparation of LDPs and IDDP	4
Fig ii	Organisational Setup for preparation of IDDP and LDP	5
Fig. 1.1	Regional setting of Kollam District	12
Fig. 1.2	Distribution of Gross population density (2001 census) – Local Body wise	12
Fig. 1.3	Population concentration pattern	13
Fig. 1.4	Land use – Kollam district	13
Fig. 1.5	Functional classification of settlements	14
Fig. 1.6	Hierarchy of settlements – Existing	14
Fig. 1.7	Hierarchy of settlements – Suggested	15
Fig. 1.8	Spatial Distribution of Rural Nodes (Existing)	16
Fig. 1.9	Hierarchy of nodes (Suggested)	16
Fig. 1.10	Future urbanization profile – Kollam District	17
Fig. 1.11	Shift in cropping Pattern	18
Fig. 1.12	District soil conservation priority map	22
Fig. 1.13	Temporal variation of livestock population	22
Fig. 1.14	Percentage of SSI units by type	26
Fig. 1.15	Major diseases in the order of prevalence	28
Fig. 1.16	Trend in no. of house connections	30
Fig. 1.17	Condition of Houses	32
Fig. 1.18	Percentage coverage of forest area in Kollam district	34
Fig. 1.19	Trend of pollution – Number of Red category industries and number of Orange category industries without effluent treatment plant	35
Fig. 1.20	Trend of revenue generated from mineral extraction	36
Fig. 1.21	Trend of Atrocities against women	38
Fig. 1.22	Trend of Suicides among women	38
Fig. 1.23	Trend of thrift and internal loan among NHGs	41
Fig. 1.24	Category wise power consumption details – Kollam	43
Fig. 1.25	Occupational pattern among SC	44
Fig. 1.26	Backwater tourism network in Kollam	45
Fig. 1.27	Existing tourist circuits in Kerala	45
Fig. 1.28	Trend in total tourist's arrival (foreign and domestic) in Kollam 2004-06	46
Fig. 1.29	Pattern of credit plan 2005-06	47
Fig. 1.30	Trend in percentage advance in development	48
Fig. 1.31	Trend in credit flow in priority sectors	48
Fig. 1.32	Activity pattern of the District	49
Fig. 1.33	Hierarchy of settlement and nodes	49
Fig. 1.34	Schematic representation of the road net work	50
Fig. 1.35	Spatial Structure of the district obtained by overlaying the activity pattern, road net work and hierarchy of settlements	50
Fig. 2.1	Integration of the findings of spatial analysis of sectors and settlement studies	55

Fig. 2.2	Different Development Zones of the District	56
Fig. 2.3	Hierarchy of settlements	57
Fig. 2.4	Future transportation network with hierarchy of nodes	57
Fig. 3.1	Integrated rice cultivation – A schematic diagram	62
Fig. 3.2	Integrated vegetable cultivation–A schematic diagram	62
Fig. 3.3	Organic farming zone	63
Fig. 3.4	Marine Bio-Reserve	75
Fig. 3.5	Proposals on transmission side	106
Fig. 3.6	Proposed tourism Network	108
Fig. 3.7	Ashtamudi lake Tourism circuit	112

ABBREVIATIONS

IDDP	- Integrated District Development Plan
LDP	- Local Development Plans
DPC	- District Planning Committee
Spl TAC	- Special Technical Advisory Committee
LSGI	- Local Self Government Institution
LSGIs	- Local Self Government Institutions
NCU	- National Commission on Urbanisation
WPR	- Work Force Participation Rate
GP	- Grama Panchayat
TCPO	- Town and Country Planning Office
LLA	- Local Level Analysis
GIS	- Geographic Information System
GPS	- Global Positioning System
CFI	- Composite Functional Index
BPL	- Below Poverty Line
CI	- Concentration Index
SAT	- Spatial Analysis Team

[<< previous](#)[<< VOL-I pers](#)[next >>](#)



Section - I

Methodology of Preparation of Local Development Plans and Integrated District Development Plan

1. Introduction

As per Article 243 ZD of the Constitution, every State shall constitute a District Planning Committee (DPC) to consolidate Grama Panchayat / Municipality plans in the District and to prepare a **Draft Development Plan** for the District as a whole. It also specifies that while preparing the Development Plan, due regard shall be given to matters of common interest between the Grama Panchayats and Municipalities, including **spatial planning**, sharing of water and other physical and natural resources and the integrated development of infrastructure and environmental conservation.

As per section 175 of the Kerala Panchayat Raj Act, a long-range development plan for each Grama Panchayat is to be prepared giving importance to spatial planning. As per section 51 (3) of the Kerala Municipality Act, 1994 the Municipal Corporations shall

prepare a long-range Master Plan and submit it to the District Planning Committees. This clearly indicates why spatial planning is regarded as the essential tool in any planning process.

Therefore, steps were taken to introduce spatial approaches into the system so that a Development Plan is prepared at every local self government institution level in order to strengthen the process through a comprehensive rather than a piece-meal approach. The Development Plans prepared for the Local Self Government Institutions are termed as **Local Development Plans (LDP)** and Development Plan prepared for the district as a whole is termed as an **Integrated District Development Plan (IDDP)**.

District Planning Committee (DPC) of Kollam has taken up an initiative in this regard. The DPC has conceptualized a project for the preparation of Integrated District Development Plan for the District

and Local Development Plans for all the Local Self Government institutions of the District with the technical support of the District office of the Town and Country Planning Department. The project was submitted before the State Government and Government gave approval to start the project in the District as a pilot project [G.O(Ms)/62/03 Planning, Thiruvananthapuram Dt: 01-08-03].

2. Components of LDP

The Local Development Plan consists of:

- A Perspective Plan for 15-20 years, comprising of
 - A Policy Plan
 - Spatial strategies for optimum utilization of resources
 - Infrastructure plan
- An Execution Plan for 5 years, comprising of
 - Strategy for development – incorporates physical, social and economic dimensions
 - General land use plan

- Infrastructure plan
- Sectoral strategies for integrated development
- Development code

3. Components of IDDP

The Integrated District Development Plan consists of:

- A Perspective Plan for 15-20 Years comprising of
 - Settlement pattern giving hierarchy and functions of settlements
 - District level policies and strategies for integrated development
 - Regional infrastructure plan
- An Execution Plan for 5 Years comprising of
 - Strategy for integrated development
 - Transportation network
 - Location criteria for services and facilities
 - Specific projects to be implemented at block and local levels

4. Concept of the Plan preparation process

The process of preparation of these two plans (LDP and IDDP) is sequentially linked and the plans are prepared in an integrated manner. Draft Local Development Plans are prepared first. Then, the Integrated Development Plan for the District is prepared. Afterwards, the Draft Local Development Plans are modified and finalized based on the



Release of the Guideline for the preparation of LDP on 19.01.2009

Sanctioned Integrated District Development Plan (Figure 1.1).

Clearly, the process starts with the collection of data and moves almost in parallel for both the plans up to the analysis stage. The data and the results of the analysis for the preparation of LDP for each Local Self-Government Institution is an input for the preparation of Integrated District Development Plan. Later on, based on suggestions and proposals of the Sanctioned Integrated District Development Plan, the Local Development Plans are modified and finalized. Actually the concept of this process is based on a combination of top-down and grass-root approach wherein policies and strategies flow down wards, while plans, programmes and projects are conceived and implemented at grass root level which can be integrated to obtain the desired spatial pattern at higher levels at any given point of time

(National Commission on Urbanization, 1988).

5. Organizational Set Up for the Preparation of LDP and IDDP

District Planning Committee (DPC), constituted under 74th Constitutional Amendment Act, is the apex body for the preparation of these Development Plans with the Department of Town and Country Planning acting as the nodal agency (Figure 1.2). A coordination committee is formed at district level consisting mainly of elected political heads of Local Self Government Institutions (LSGIs), for activating the preparation of LDP in each LSGI.

For the preparation of LDP, respective Grama Panchayat Committee /Municipal Council is the apex body. Eleven Working Groups, namely agriculture, industries, poverty reduction and social security, schedule caste and tribe, health, education, infrastructure, environment, financial resources and watershed development, will be attending the data collection and the brief analysis of the collected data for the LDP. Working Groups consists of elected representatives, government officials, NGOs etc. A core committee of selected members of these Working Groups viz. Spatial Integration Committee (SIC) is constituted for each LSGI. This committee has a key role in the preparation of LDP and has the overall responsibility right

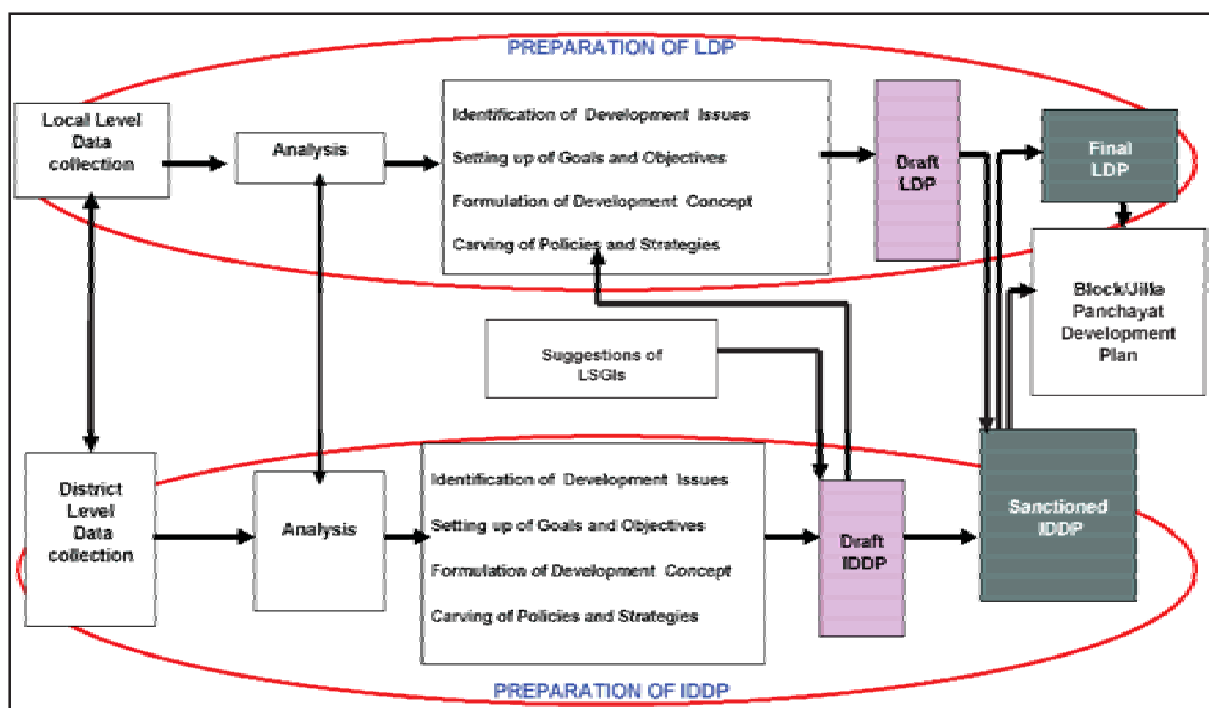


Fig. 1 : General planning process for preparation of LDPs and IDDP

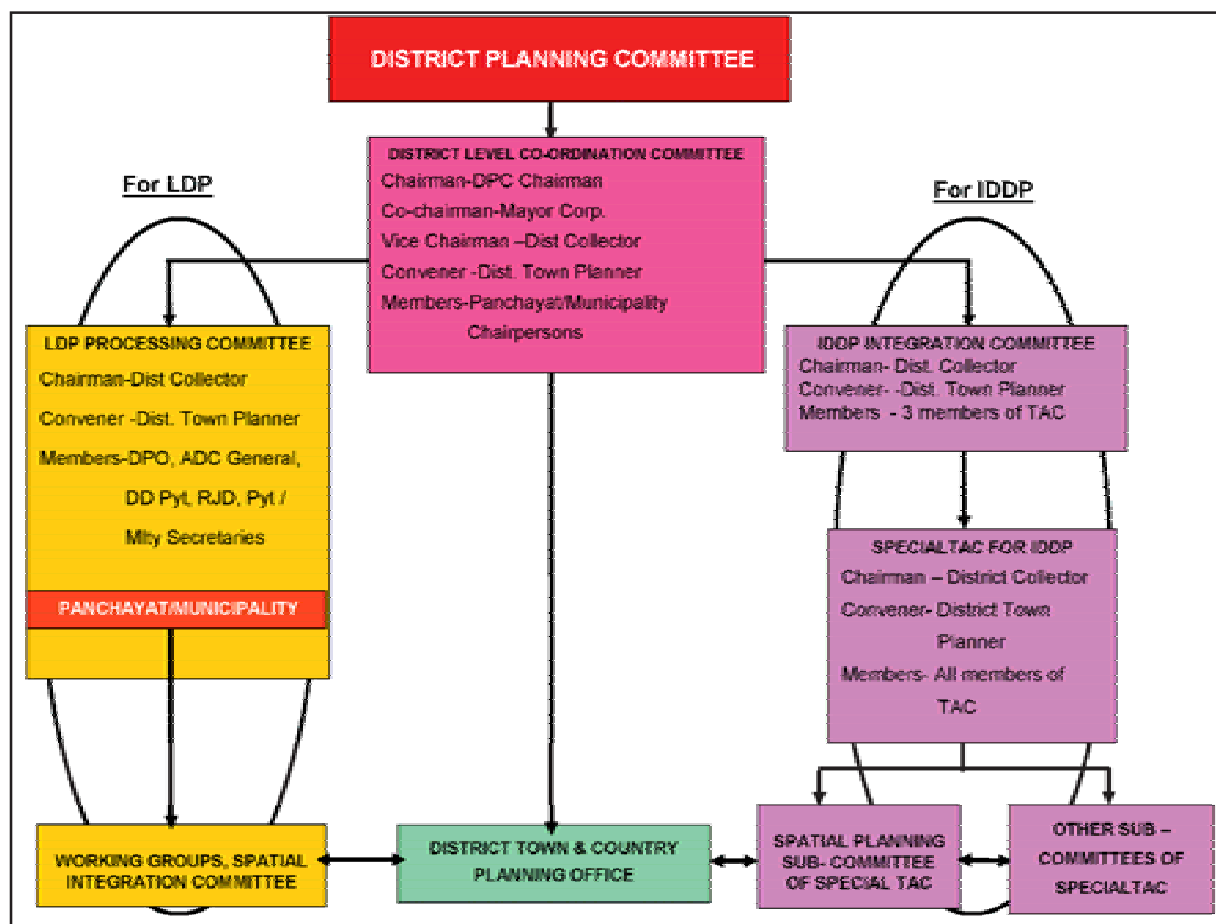


Fig II : Organisational Setup for preparation of IDDP and LDP

from data collection to report writing. Therefore a graduate engineer is appointed by the respective LSGI to assist the SIC who is designated as Engineering Trainee. In addition to that a Resource Person for each LSGI has to be identified to act as a spokesman of spatial planning. In order to coordinate the process of preparation of LDP at District level, an LDP Processing Committee is functioning with the official heads of LSGIs as members (Secretaries) under the chairmanship of the District Collector.

For the preparation of IDDP, the District Level Technical Advisory Committee (DLTAC) is specially constituted. This Special TAC has 19 Sub committees with a DPC member as Chairman, District Level head of line department as Convener and other officials, retired officials, NGO's, representatives of research and educational institutions etc. as members. The Sub Committees of Special TAC are 1. Agriculture 2. Irrigation 3. Watershed Development and Land Use 4. Forest, Environment, Mining and Geology 5. Animal Husbandry and Dairy

Development 6. Fisheries 7. Industries, Co-operation, Trade and Commerce 8. Infrastructure (Roads, Bridges, Housing) 9. Health 10. Drinking Water and Sanitation 11. Education 12. Finance 13. Social Welfare, Women and child development 14. Poverty Alleviation and Rural Development 15. Power and Tele Communications 16. Scheduled Caste and Schedule Tribe Development 17. Tourism, Culture, Sports and Youth Affairs 18. Human Resources Development and 19. Spatial Planning.

Spatial Planning Sub Committee of Special TAC is the key committee of the whole project of preparation of LDP and IDDP and act as the implementation committee of the project. A core committee (IDDP integration Committee) is also constituted from Special TAC for validation of suggestions of the Special TAC.

A Spatial Analysis Team (SAT) is constituted with planners from the Town and Country Planning Department as members. The technical support of the Department for the preparation of LDP and IDDP is given through the SAT. SAT

members are associated with the spatial analysis of each LSGI and they are also members of the Special TAC constituted for the sectoral studies. SAT is also entrusted with task of preparing manuals, hand outs, methodology of analysis etc. needed to smoothen the process of spatial analysis of both LDP and IDDP.

At the State Level, a Steering Committee headed by the Chief Town Planner, functions in Town and Country Planning Department for the monitoring of both the LDP and IDDP. State Level Expert Committee chaired by Government Secretary of LSGD (Urban) with the Chief Town Planner as Convener monitors the



State Level Expert Committee meeting on 17.10.2005



Land use map handing over function

project at the State level and gives directions for the preparation of LDP and IDDP. Other members of this Committee are Member Secretary of State Planning Board, Government Secretary LSGD (Rural), and Four expert members nominated by the Government.

6. Preparation of the Plans

A. Preparation of Draft LDP

1. Data collection is done by each Grama Panchayat/ Municipality. Physical Survey and Socio-economic Survey are the two primary surveys and are conducted through local surveyor trainees selected by respective LSGI under the supervision of the engineering head of LSGI and engineering trainee after receiving technical training from Town and Country Planning Department. Secondary data collection is entrusted with the Working Group of the respective LSGI. Discussions of working groups with the stakeholders are a special activity for data collection. In order to ensure grass-root level participation, a Grama/Ward Sabhas are conducted at LSGI level and the suggestions are compiled.

2. Physical Survey is done in cadastral maps (scale 1:5000) and fed into Arc Geographical Information System (GIS) format. The Socio-Economic survey is carried out by systematic sampling technique with 10% sample. Both primary and secondary data are systematically compiled in formats and entered in Microsoft Access and finally linked to the GIS. Further, all existing planning documents like development reports, five year plan documents, Grama/ Ward Sabha suggestions, summary of discussions with stakeholders etc., are compiled in systematic formats.

3. Two analyses are done using the above data. Analysis done by the

Spatial Integration Committee is named as Local Level Analysis mainly for finding local development requirements with emphasis on people's aspirations. The analysis done by the Town and Country Planning Department is named as Spatial Analysis mainly for finding the development issues with emphasis on synergic spatial linkages.

4. An integrated finding of both the analysis will result in identification of development issues, followed by planning concept, policies and strategies and finally Draft LDP, which are formulated jointly by Town and Country Planning Department and Spatial Integration Committee. The findings from the IDDP analysis is another input for the identification of development issues of the LDP. Simultaneously analysis and findings of Draft LDP will be an input for the preparation of IDDP.

B. Preparation of IDDP

There are basically four main stages involved in the preparation of an Integrated District Development Plan. They are:

1. Preparatory Works
 - Preparation of the base map of the district
 - Preparation of checklist for secondary data collection and collections of other relevant materials, etc.
2. Data Collection and Compilation
 - District level secondary data collection through Special TAC and various departments.
 - Data Compilation and feeding the data into the computer and linking with the Spatial data in GIS format

3. Analysis

In the preparation of IDDP also, two types of analyses are done: (a) Sectoral analysis done by various Sub Committees of Special TAC and (b) Spatial Analysis



Spl. TAC General body meeting on 24.01.05 at Jilla Panchayat



Discussion of Agricultural Sub committee of Special TAC, IDDP-LDP Project Office

done by the Department of Town and Country Planning. Analyzing the past trend of development of the sector, study of present scenario, identification and prioritization of problems and potentials, identifications of solutions of problems and enhancement of potentials, evaluation of ongoing/ committed projects and programmes, formulation of sectoral



Inaguration of Workshop on sectoral analysis by Hon. Labour Minister Sri. P.K. Gurudasan, 27.07.2006

policies and suggestions, etc. are some of the assignments in the Sectoral analysis. Whereas the study of the settlements with respect to population, population distribution, hierarchy of settlements, land use analysis, occupational structure are included in the spatial analysis. The spatial analysis is done by the Spatial Analysis Team using GIS.

4. Plan Formulation

The analysis is followed by identification of development issues, setting up of goals and objectives, developing planning concept and formulating policies and strategies. A report incorporating the analysis, findings, concept, development policies and sectoral programmes and projects is prepared namely Draft Preliminary IDDP. At the stage of identification of development issues and formulation of planning concept, general direction of growth of the district will be arrived. Based on this general direction of growth, the development policy of each



Presentation of Development Concept before District Collector, DPC and Special TAC 30.09.06, Guest House, Kollam

sector is formulated and the strategies carved from sectoral policy will act as a guideline for identification of the sectoral proposals.

Draft Preliminary IDDP will be presented before an Expert Committee whose members shall be persons invited by the DPC and the general body of the Special TAC and IDDP Integration Committee, who shall finalize the plan. Further Special TAC will detail proposals based on the validations of the IDDP Integration Committee and thus Preliminary IDDP will be formulated. The Preliminary IDDP will again be discussed among the public through a Development Seminar conducted at the district level and modified if required and the modified plan will be placed before the DPC for approval. The plan approved in the DPC will be the draft IDDP. Finally the Draft IDDP will be forwarded to the Government for sanctioning.

C. Preparation of Final LDP

Processes involved for the final LDP are given below:

- Modification of draft LDP based on sanctioned IDDP.
- Modification of the Draft LDP based on the development seminar.
- Sanctioning of LDP by the DPC

7. Uniqueness

The preparation of LDP and IDDP is having the following uniqueness.

- Both LDP and IDDP are prepared based on spatial planning approach. This ensures integration of various development sectors over a space (An LSGI in the case of LDP and District as a whole in the case of IDDP). The integration of various sectors is performed taking into account the specialties in social, physical and economic aspects of the space, over which the sectors are integrated. This

ensures the best and optimum utilization of land, the most valuable resource in the planning area.

- Both IDDP and LDP are prepared based on top down grass root up approach. The data collection, analysis and local level proposals are carved at the grass root level which is later modified, if necessary, based on the policies deriving at a higher level i.e. at the district level while preparing the IDDP. At the same time the policies at the higher level are formulated taking in to account the proposal at the lower level (LSGI level).
- All the development partners like technocrats, politicians, NGO's, Government Departments, common man and other decision makers are involved in the process of preparation of LDP and IDDP.
- State of the art technology – GIS, GPS, satellite imagery to name a few – are utilized in the preparation of LDP and IDDP.
- The beauty of the decentralized planning system is also seen in the funding pattern adopted for the project of preparation of LDP and IDDP. The project was initiated by DPC, Kollam conceiving as a joint project of all the LSGIs of the district. All LSGIs of Kollam district allocated fund for the project from their Tenth and Eleventh Five Year Plan allocation.



Workshop on LDP on 23.01.2008, YMCA, Kollam

8. Kollam Experience

The process of preparation of IDDP and LDP started in Kollam District in August, 2003. The first one and half years of the project was spent for conducting training programmes for the various stakeholders of the project and primary data collection at the Grama Panchayat and Municipality level. Training programme was conducted for about 12000 stakeholders ranging from DPC members to NGO's at the Grama



Inaugural training programme for SIC members on 20.10.2003, Chittumala, Kollam

Panchayat level. This created awareness about the process of preparation of LDP and IDDP among the stakeholders which is inevitable for the success of the project. As a part of the primary data collection, land use survey on survey number basis (cadastral level) was conducted in the 69 Grama Panchayats and 3 Municipal councils of the District. Socio-Economic survey was conducted in about 70000 units comprising households and other occupancies of the district. GPS survey



Training programme to resource persons of LSGIs, 29.12.03 and 30.12.03, TMV Hall, Kollam

was conducted in all the LSGIs of the District (presently there are 71 Grama Panchayats). Both land use data and socio-economic data were entered in to the computer format for analysis in GIS.

As a part of the preparation of LDPs, two model LDPs that of Paravoor Municipality (urban) and Pooyappally (rural) Grama Panchayat prepared and reports on Local Level Analysis of majority of (68 out of 72) the LSGIs have been prepared. A Guideline (Govt. Circular No. 71810/2008/LSGD dated 29.11.2008) for the preparation of remaining LDPs has also been prepared.

Regarding the preparation of IDDP, both the Perspective Plan and the Execution Plan and an Executive Summary have been completed and District Planning Committee has approved the Integrated District Development Plan (Draft) report on the meeting held on 06.06.2009■



Part 1

Analysis

This part consists of introduction to the district, settlement analysis, sectoral analysis and spatial analysis.

1. Introduction to the District

Kollam was well-known in the annals of history for its trade relationship with foreign countries, variety of agricultural produces and as an administrative capital. Chinese, Phoenicians, Greeks and Romans and in later years Arabs had traded with Kollam from times even Before Christ. Most of the historians believe that the name Kollam is derived from word 'Kolam' which means in Sanskrit, the pole in which traditional ferries were tied and hence it can be presumed that the word Kollam stands for a port town.

Kollam-Shencottah Railway line opened in 1904, gave big boost to the commercial and industrial development of Kollam. In the year 1921, Kollam town became a Municipality. With the opening of

Kollam -Ernakulam Line in 1958, the town was raised to the status of a junction. The construction of a new Civil Station was also completed in this year. In the year 2000 Kollam Municipality attained the status of a Corporation incorporating 4 Grama Panchayats in the surroundings.

Kollam district is situated on the south west coast of Kerala between 9°28' and 8°45' latitude and 76°28' to 77° 17' north longitude. It is bounded on the north by Alappuzha and Pathanamthitta districts, east by Western Ghats bordering Tamil Nadu, south by Thiruvananthapuram District and west by Lakshadweep Sea (Figure 1.1). It is located 71 Km North of Thiruvananthapuram, the capital of Kerala and 155 Km south of Ernakulam, the commercial capital of the State.

The district has comparatively good regional connectivity due to the two

National Highways (NH-47, NH-208) having a length of about 135-km within the district, and the railway route network with Kollam as the railway junction. Kollam is connected to Ernakulam and Thiruvananthapuram by both road and rail. Another new National Highway (NH – 220) is proposed from Kollam to Theni in Tamilnadu. Earlier, water way was the major transport mode due to presence of T.S canal, backwaters and rivers such as Kallada, Ithikkara and Achankovil rivers. Due to encroachment and silting, the T.S canal is presently not in use. But with the declaration of section of West Coast canal between Kottapuram and Kollam as National Waterway No.-3, it is expected that water way also will get importance in due course of time.

The physiography of the district deserve special mention as it have all the

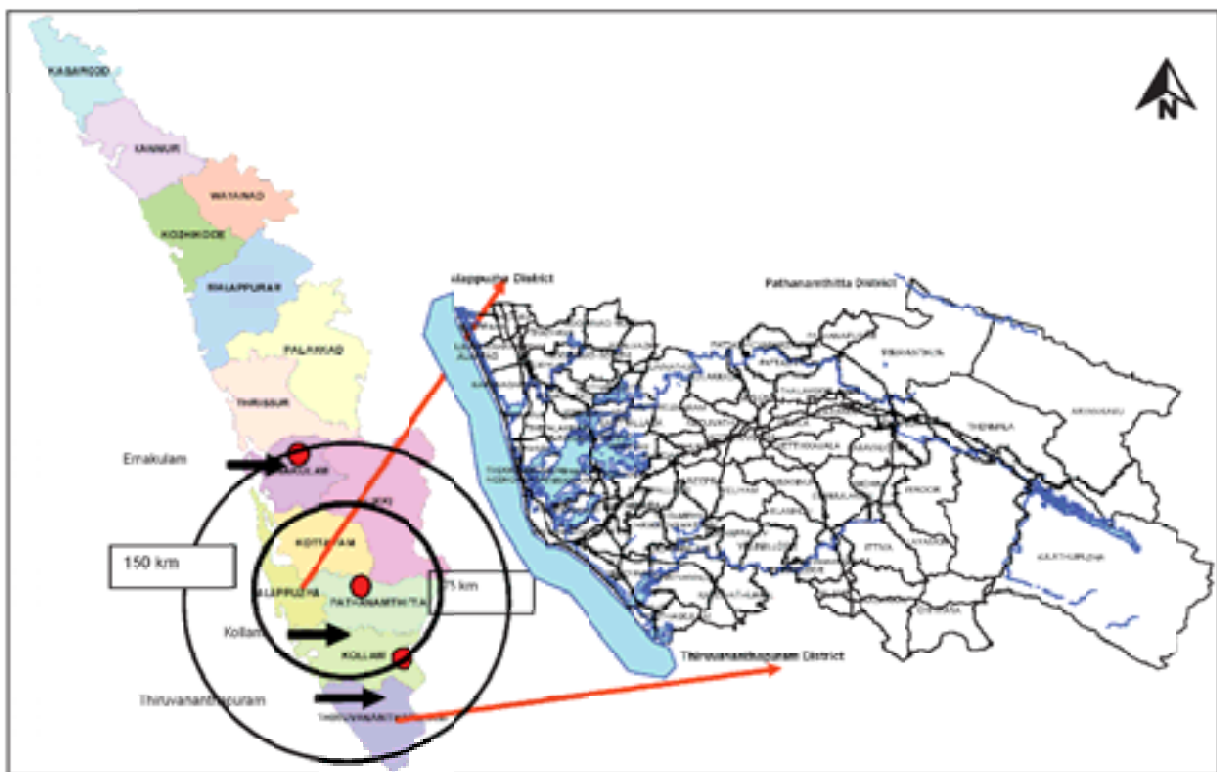


Fig. 1.1 : Regional setting of Kollam District

three divisions, namely high land in the eastern part of the district, mid land in the central area and low land on the western side adjacent to the Lakshadweep sea. The district has about 30% of its geographical area as forest mainly seen in the eastern part of the district.

2. Analysis

2.1. Settlement Analysis

2.1.1. Population

Total population of Kollam district as per 2001 census is 2585064, which is 8.11% of the total population of the State. Decadal growth rate of population is 7.38% as per 2001 census which is less than the average growth rate of 9.42% of the State. The analysis shows that population growth rate of both the district and State is declining. The Spatial distribution of the growth rate of population of the district during 2001 shows a definite spatial pattern.

The gross population density of Kollam district [1038 persons per sq. km. (pp sq.km)] is higher than the state average value of 819 pp sq km. But when compared to the surrounding three districts, population density of Kollam is less than that of Alapuzha and Thiruvananthapuram. The gross population density (Figure 1.2) of Kollam district shows a clear distinction between the coastal region, central region and the eastern high land regions. The

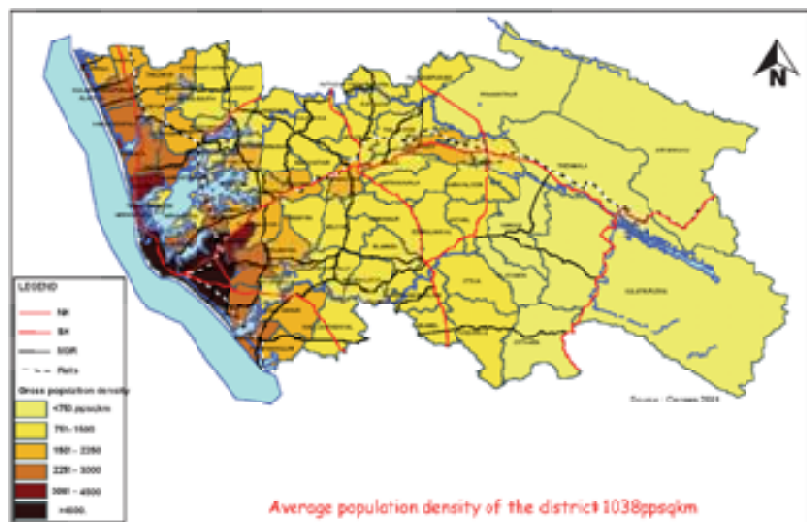


Fig. 1.2 : Distribution of Gross population density (2001 census) – Local Body wise

gross population density of the LSGIs in the coastal belt Panchayats are the highest (in the range of 3000- 6000 pp.sq.km), whereas the gross population density of the central region is in the range of 1500-3000 pp. sq.km and that of the eastern hill region is less than 750 pp. sq. km.

The population concentration pattern of the district (Figure 1.3) shows 2/3rd of the total population is concentrated in the coastal local bodies and local bodies adjacent to it comprising 31.57% of area of the district (2524 sq.km.)

Analysis on migration shows that at

least one member out of the 2.04% of the total families of the district has out migrated (maximum towards the Middle East).

As per the trend based population in projection, the population of the District will be increased by 1.21 lakhs and 0.78 lakhs in the succeeding decades, 2001-11 and 2011-2021 respectively.

2.1.2. Occupational Structure

As per census 2001, the work force participation rate of Kollam District is 32%. The share of cultivators and agricultural laborers taken together are 3% and 21% in urban area and rural area respectively.

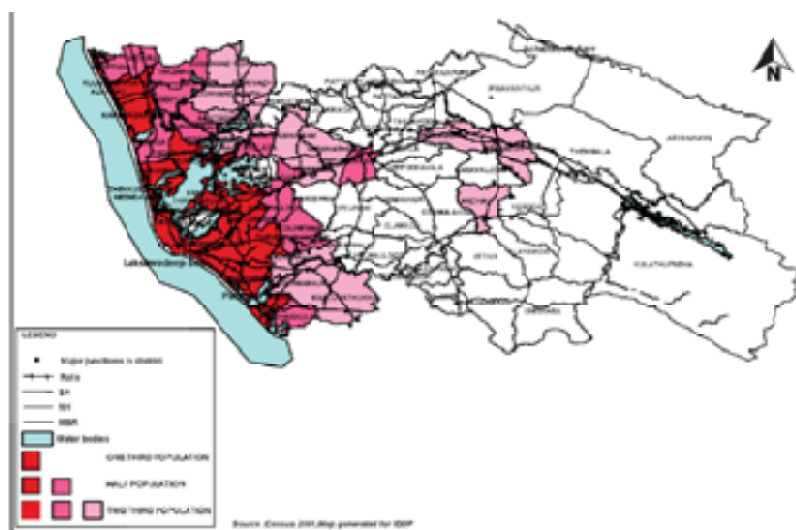


Fig. 1.3 : Population concentration pattern

Also the share of household industrial workers is the same (2%) in both the urban and rural areas. This indicates that, almost all the workers (95%) in urban area depend on the tertiary sector for their livelihood. In the case of rural area, more than 50% (Assuming the primary workers in the other workers category is about 20%) of the total workers engage in tertiary activities. This implies that even in rural area, the primary sector is on the decline.

Number of cultivators and agricultural laborers show drastic decrease (approximately 50%) during the period from 1981 to 2001, whereas the other workers show an increase of 81%. This indicates the weakening of the primary sector, mainly the agricultural one, in the District. Also as the back bone of any economy of a region is the production sector, the decline of which will have effects in multiple faces like self sufficiency, economic stability etc. of a region.



Workers in cashew industry

As the industrial activity in the urban area is on the decrease, and workers in other workers category is increasing in both urban and rural areas, narrowing down of the boundary, distinguishing the character of rural and urban areas is

resulted in the dilution of the rural nature of the rural area of the district as far as the occupational structure is considered.

2.1.3. Land use

The major land uses in the district are agriculture, residential and the 'natural' land use forest (40%, 29% and 24% respectively) (Table 1.1).

Table 1.1 : Land use break up - Kollam District

Type of land use	Total area (sqkm)	%
Agriculture	992.75	39.33
Residential	712.76	28.24
Commercial	8.66	0.34
Industrial	8.35	0.33
Public and semi public	29.83	1.18
Park and open space	8.84	0.35
Transportation	24.34	0.96
Railway	1.76	0.07
Vacant	33.86	1.34
Water bodies	105.88	4.19
Forest	596.48	23.63
Total	2524	100.00

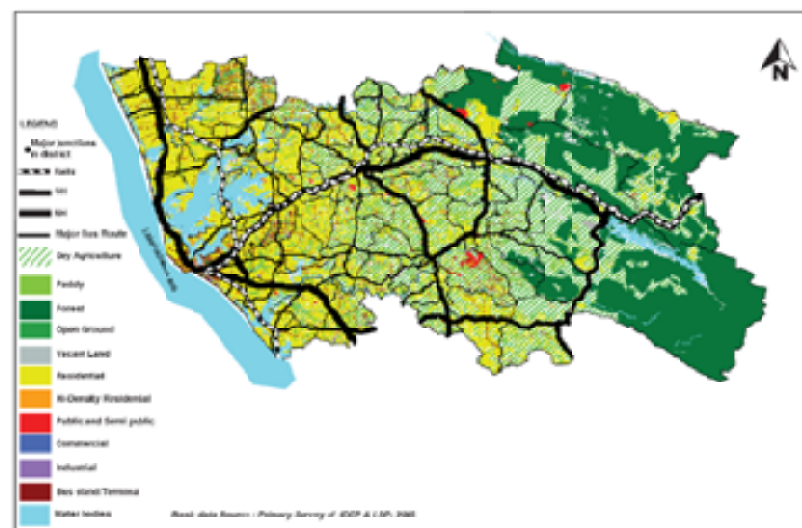


Fig. 1.4: Land use – Kollam district

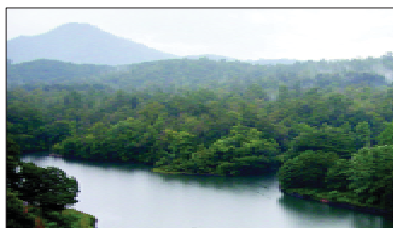
The other 'natural' land use viz: water body also has a significant share (4%). The glaring aspect of the land use analysis is that the district is blessed with potential resources such as agricultural land and forest. The land use map of the district is shown in Figure 4.

Four major land uses which are relevant to the production sectors viz. Commercial, Industrial, Agricultural and Forest are analyzed.

Concentration index of the commercial land use in urban LSGIs and in those LSGIs along the major transport corridors are higher than that in other LSGIs. The Concentration of Industries (as per the land use) is in and around Kollam Corporation. Concentration pattern of agricultural land use shows that agricultural area of the District is mainly concentrated in the central region of the District. The concentration pattern of forest shows that forest area of the district is mainly concentrated in the eastern parts.

The spatial distribution of the agricultural land use pertaining to main crops viz, paddy, rubber, tapioca and coconut shows that paddy and coconut are concentrated in the low land coastal region, rubber and tapioca are concentrated in the mid and mid up land, and the up land region mainly consists of the rubber and other crops like oil palm, pepper, pineapple etc.

By combining the concentration pattern of the major uses spatially and by analyzing the resulting pattern, area of specialization (based on the existing land use) activity can be delineated.



Reserve forest - Thenmala



Fig. 1.5: Functional classification of settlements

Thus the district can be divided into three distinct zones based on the land use analysis- urban activity area, agricultural area and forest resource area, which makes it possible to assign definite development characters to each region. Urban activity area of the district is seen concentrated in the low land and a portion of the mid land region, whereas the forest area has a concentration in the eastern part of the district. Also most of the agricultural area is concentrated in the mid land and high land region of the district.

2.1.4. Functional Character of Settlements

With the unique settlement pattern existing in Kerala, the function of a settlement cannot be limited to the usual classification of urban or rural area. There exists a character exhibiting a combination of the two which needs to be explored. Analysis based on land use and plot size shows that there exists semi urban and semi rural character in settlements in addition to the urban and rural character. An area can be classified as Semi Urban, if there exists (or likely to introduce) both urban and rural activities but the predominant activity is urban. If the predominant activity is rural, it is classified as a semi rural area.

The spatial distribution of the settlements based on its character shows (Figure 1.5) a clear demarcation in the

pattern of the settlements in four categories. Kollam Corporation and its adjacent LSGs show urban character. The Semi urban character is shown by other LSGs in the coastal belt. LSGs in the mid land and high land region of the District exhibit mainly rural character. Semi rural character is

is shown in Figure 1.6.

As per the concept of Crystallor's Central Place theory in identifying the proposed hierarchy of the settlements, settlements of various hierarchies should be centrally located (as far as possible) with respect to the service area or service population. Theoretically speaking, there will be one first order settlement serving the entire region (District). The service area of a settlement is hexagonal in shape as per the Crystallor's theory. But practically in the case of Kollam the service area of the first order settlement (Kollam Corporation being the only one) cannot be taken as hexagonal but it is actually the entire district which may even extent outside. This limits the identification of the second order settlement by Crystallor's Central Place theory. But here the service area of the first order settlement is the entire district and hence it is assumed that there are at least four second order settlements one from each of the sub regions (North-East division, North-West division, South-West division and South-East division) of the district. The service area of the second order settlements is delineated by drawing the perpendicular bisectors to the straight line connecting the second order settlements. This area may form a hexagon or part of hexagon in shape. The vertices of the hexagon determine the location of the next lower order settlements i.e. the third order settlement. The service area of the third order settlement can be delineated as hexagonal in shape. The remaining settlements of the District are assumed to be having the lowest order, i.e. the fourth order.

The existing heirarchy of settlements



Fig. 1.6: Hierarchy of settlements - Existing

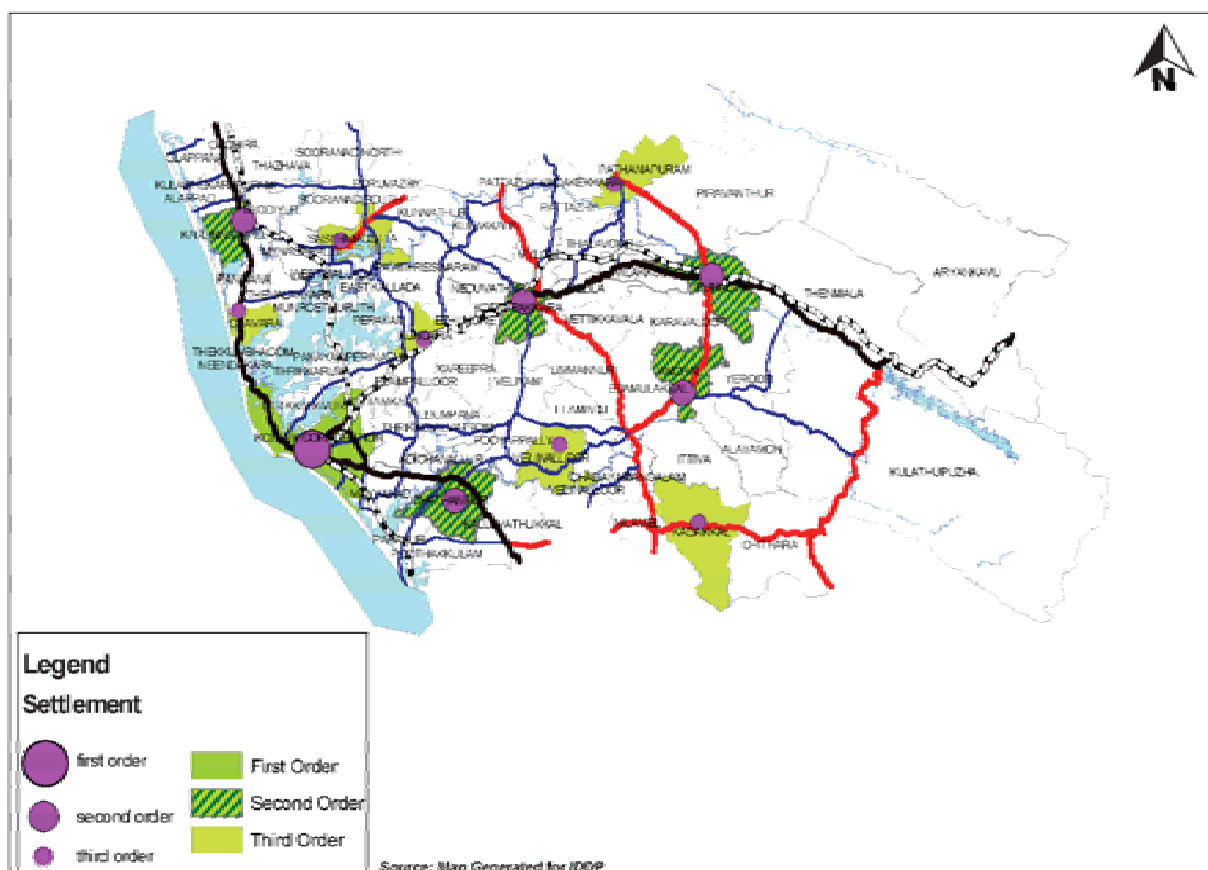


Fig. 1.7: Hierarchy of settlements - Suggested

The suggested hierarchy of settlements is given in Figure 1.7.

The character of the higher order settlements is summarized in Table 1.2.

The study of the hierarchy of settlement of the district reveals that Kollam Corporation is the highest order settlement in the District and Punalur Municipality is a second order settlement as expected. Grama Panchayats of Kottarakkara and Karunagappally are identified to be the existing second order settlements contrary to the present order of administrative set up wherein Paravoor a Municipality in the

District falls only in the 3rd order. Anchal and Chathanoor are the other suggested 2nd order settlements.

2.1.6. Hierarchy of Nodes

The hierarchy of a node is indicated by the extent of activity taking place at the node. The extent of activity is measured by a proxy indicator denoted by the hierarchy of roads meeting at that node.

The spatial distribution of the nodes is shown in Figure 1.8.

The suggested hierarchy of nodes is derived taking in to account

- The population distribution

- Centrality with respect to the service area
- Existing hierarchy of the nodes

The suggested hierarchy of nodes is shown in Figure 1.9.

Obviously Chinnakkada and surrounding area is the 1st order node of the District acting as a commercial centre serving the entire District. Anchal and Chathanur are the suggested 2nd order nodes, Karunagappally, Kottarakkara and Punalur serving the surrounding population and potential growth centers of the District. The next order growth centers are Kadakkal, Chathanur, Kottiyam, Sasthamcotta, Chavara, Thevalakkara, Kundara, Thenmala, Pathanapuram, Velinalloor, Paravur and Ayur.

Table 1.2 : General character of the higher order settlements

Order of settlement	Name	Character of settlement
1	KOLLAM CORPORATION	Urban
2	KARUNAGAPPALLY	Semi Urban
2	KOTTARAKKARA	Urban
2	ANCHAL	Rural
2	CHATHANOOR	Semi urban
2	PUNALUR	Rural
3	CHAVARA	Semi Urban
3	KADAKKAL	Semi Rural
3	VELINALLOOR	Rural
3	PATHANAPURAM	Rural
3	SASTHAMCOTTAH	Semi urban
3	KUNDARA	Semi Urban



Existing II order node - Punalur



Fig. 1.8: Spatial Distribution of Rural Nodes (Existing)

2.1.7. Urban Profile

Future Urbanization profile of the District is derived based on the following criteria.

Criteria-1: Census urban area

Criteria-2: Grade of Local Self Government Institutions

Criteria: 3: Projects enhancing urbanization

Criteria: 4: Hierarchy of settlement

The likely future urban profile of the district evolved is shown in Figure 1.10.

The pattern of growth rate of

population among the local bodies of the District as per Census 2001, shows that the growth rate is the highest among those local bodies adjacent to the Kollam Corporation. Hence it can be presumed that those local bodies adjacent to the Kollam Corporation and those along the National High Way can be assumed to attain the urban status in the next 10 years and the remaining local bodies to become so within the next 20 years. In the study of the hierarchy of settlements, Kottarakkara, and Karunagapally are positioned next to



Existing II order node - Kottarakkara

Kollam Corporation. So these two local bodies are expected to attain urban nature in the first phase itself. This eventually that, means Karunagapally, Kottarakkara, Kottamkara, Neendakara, Thrikkadavur, Mayyanad and Chathannur will attain the status of urban local bodies in the next 10 years where as the remaining 9 local bodies will attain the urban status within the next 20 years.

The phasing of urban profile of the District is shown in Table 1.3.



Transport Bus Stand - Kollam

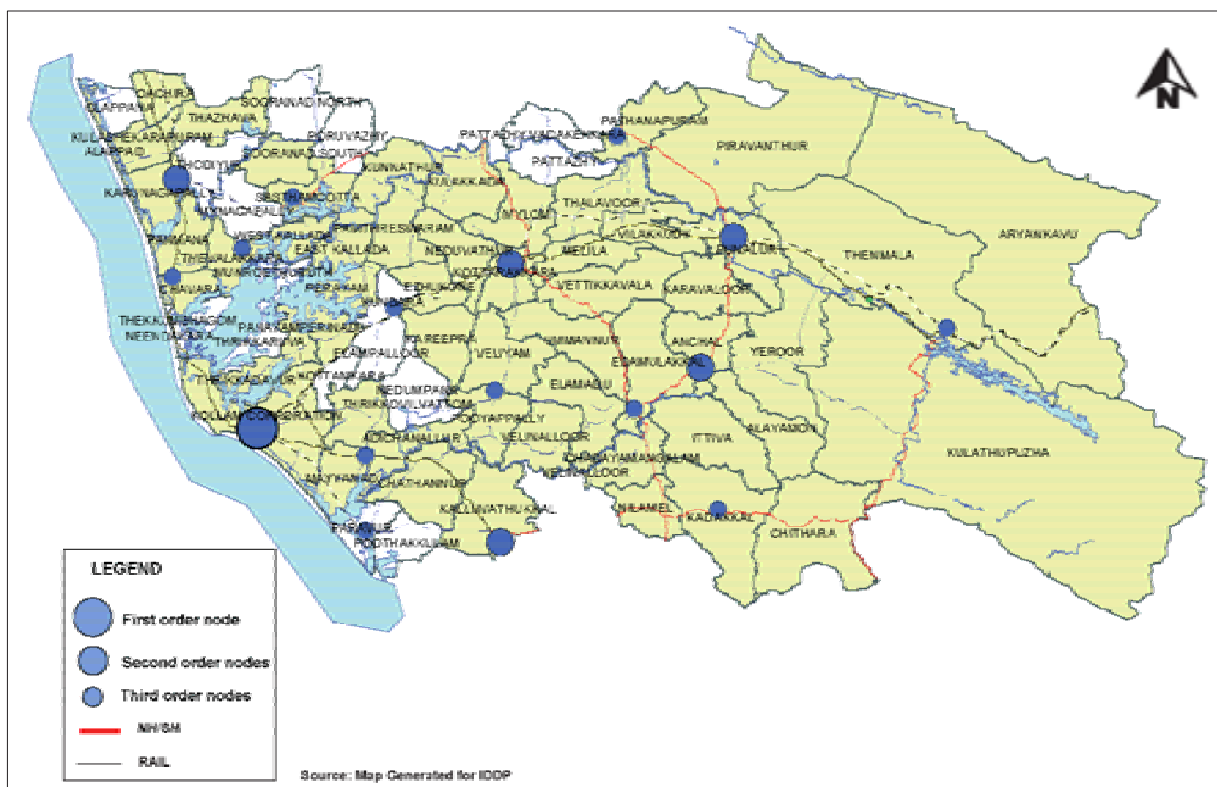


Fig. 1.9: Hierarchy of nodes (Suggested)

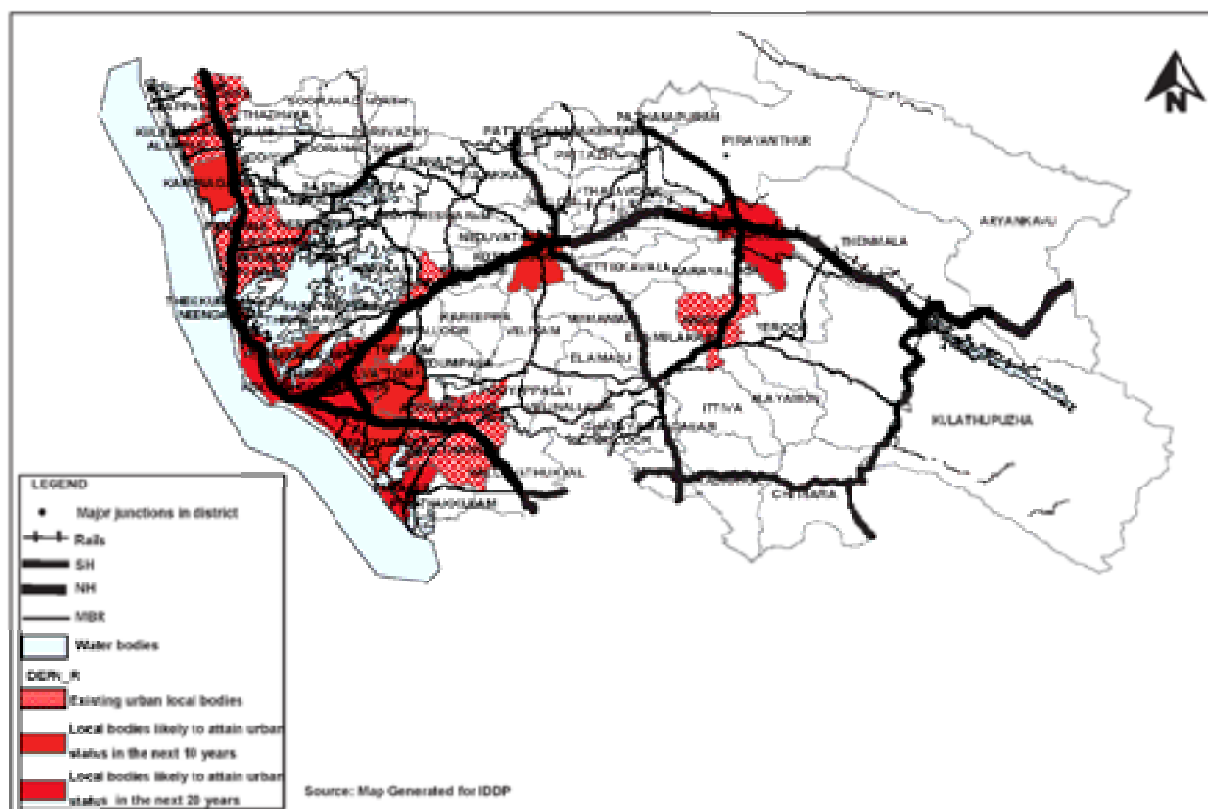
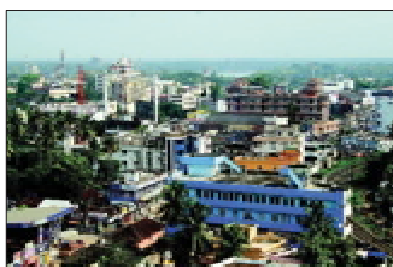


Fig. 1.10: Future urbanization profile – Kollam District

Table 1.3 : Urban profile – phasing

Sl. No.	In the next 10 years	In the next 20 years
1	Karunagapally	Kulasekharapuram
2	Kottarakkara	Thevalakkara
3	Neendakara	Chavara
4	Thirukadavur	Kundara
5	Mayyanad	Adichenkulur
6	Kottarakkara	Ochira
7	Chathannur	Pannassa
8		Thiruvilavettom
9		Anchal



Kollam urban area

The functions to be performed by various higher order settlements are derived based on their order, administrative status, character of the settlements and the service area which is summarized in the Table 1.4.

Table 1.4 : Facilities in general to be provided

Order	Name of the settlement	Projected Administrative status	Facilities
1	KOLLAM CORPORATION	Urban Local body	Higher order urban and rural facilities
2	KARUNAGAPALLY	Urban Local body	Higher order urban and rural facilities
2	KOTTARAKKARA	Urban Local body	Higher order urban and rural facilities
2	ANCHAL	Urban local body	Higher order rural facilities and lower order urban facilities
2	CHATHANOOR	Urban Local body	Higher order urban and Lower order rural facilities
2	PUNALLOOR	Urban Local body	Higher order urban and Lower order rural facilities
3	THEVALAKKARA	Urban Local body	Lower order urban facilities
3	KADAKKAL	Rural local body	Lower order rural facilities
3	VELINALLOOR	Rural local body	Lower order rural facilities
3	VETTIKAVALA	Rural local body	Lower order rural facilities
3	PATHANAPURAM	Rural local body	Lower order rural facilities
3	SASTHAMCOTTAH	Rural local body	Lower order rural functions
3	KUNDARA	Urban Local body	Lower order urban facilities

<< previous

<< VOL-I pers

next >>

2.2. Sectoral Analysis

2.2.1. Agriculture

The total extent of land under cultivation in the district is 2,18,267 hectares during 2004-2005. Based on Area, Production and Productivity of the various crops cultivated in Kollam, 25 crops have been identified as the principal crops. The area of cultivation under coconut is maximum (32% of total cultivated area) in the district, followed by rubber (31%) whereas the area of cultivation of paddy is very less (6 %) compared to coconut and rubber. Area under food crops cultivation is only 18% whereas the commercial crops accounts for 82%. Among food crops Rice (36%) and Tapioca (28%) are the main crops and in the case of Commercial Crops, Coconut (40%) and Rubber (38%) are the main crops.

The 25 crops, found as principal crops in the district are classified as major, sub major and minor crops based on area of cultivation and revenue generated. The crops classified as major crops are Coconut, Rubber and Pepper. Banana, Rice, Tapioca and Arecanut are the sub-major crops and the remaining crops are classified as the minor crops. It is noticeable that all the three major crops identified are commercial crops. In addition to the above crops, other significant crops like cashew, sesamum, vegetables, etc are also taken for analysis.

Even though the revenue from agricultural sector is showing an increasing trend, the crop wise trend reveals that commercial crops are devouring the food crops and thus there is not much increase in production and productivity of food crops. Over the years, there is a tendency to shift from food based to commercial based crops (Figure 1.11), complying with the change in economy, in particular the change in money value in the global economic conditions.

The major development issues are as follows.

Paddy: In Kollam district the area of paddy has declined from 14510 ha in 1995 to 10087 ha in 2003-04 and the productivity has declined from 2488 kg per ha to 2223 kg/ha in the same period. The main reason for this decline is conversion of wetland to garden land due to the high land value for garden land. The reasons for reduction in productivity are low organic matter content

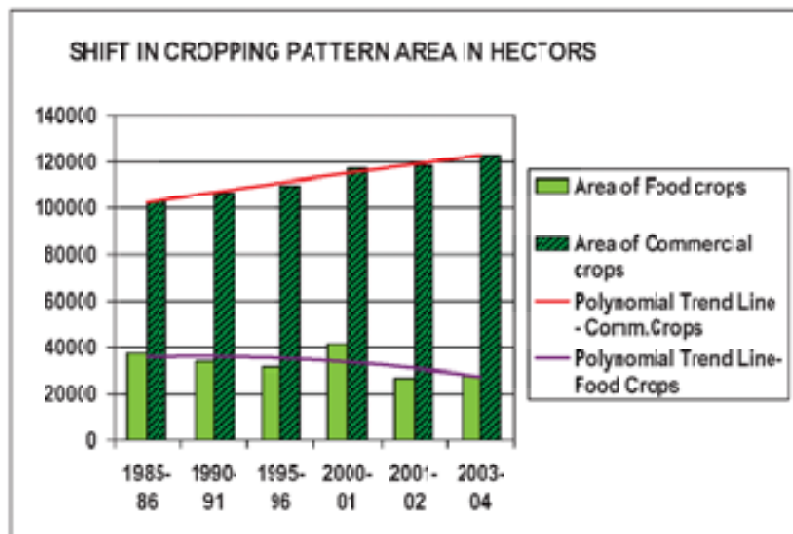


Fig. 1.11: Shift in cropping Pattern

in the paddy fields, non adoption of scientific practices, pest and disease infestation, lack of farming practices on group basis and climatic adversities such as frequent drought and floods. Many paddy fields are subjected to salt water intrusion and poor water management infrastructure which also make the cultivation risky.

Puncha cultivation in kayal lands was not undertaken in the last 7 to 10 years due to various problems connected with the management of stagnation water, flooding, salt-water intrusion etc. Water stagnation in many padasekharams resulting due to seepage from KIP canals also makes the paddy cultivation difficult.

However there is scope for increasing the production by cultivation of High Yield Varieties (HYV) in more areas. In addition to paddy lands, lands which are kept fallow, can be brought under cultivation by maintenance of existing irrigation and drainage canals and operation of shutters. There is ample scope for increasing substantially the area and production of paddy in the district by introduction of large-scale mechanization as a solution to scarcity of labour, since paddy is a labour intensive crop.

Other opportunities include organic farming in paddy, cultivation of medicinal varieties of paddy like Njavara, cultivation of scented rice like Basmati, Jeerakasala etc. Similarly value addition of the produce must also be done so as to ensure better income generation.

Coconut: Lack of sufficient quantity of good quality coconut seedlings for new and under planting is a major problem. The

crop is having severe pest and disease infestations like root wilt and yellowing. Adverse climatic conditions like drought also contribute to the decline in productivity. This is corroborated in the Local Level Analysis Reports of the Grama Panchayats of Thazhava, Mynagapally and Nedumpna which pose wide spread disease infestations as problem in coconut cultivation.

There is no well-developed procurement and marketing system for coconut. Incidences of root wilt disease and pests like Eriophid mite, Red palm weevil etc. pose serious threats to coconut cultivation.

There is immense scope for export of coconut products by adopting proper value addition, product diversification and marketing strategy since all part of the coconut plant can be put to use. Significant quantity is consumed domestically also. As the crop is raised mainly on homestead basis, there is opportunity for integrating activities of Kera Samrakshana Samithies and Co-operative agencies.

Rubber: High fluctuation in the price of natural rubber is a major weakness. Frequent fluctuation in price of natural rubber in the international market is a major threat.

Possibility of generation of additional revenue from rubber plantations through apiculture, pineapple border planting, inter cropping banana during initial years of planting etc. can be explored.

Banana: The most remunerative types like Red banana, Njali poovan, Nendran etc. are not extensively cultivated due to

insufficient availability of quality planting materials. Export potential and value addition measures are not exploited. Low price for bunches at the peak times of harvest due to the lack of proper collection, storage, packing and marketing facilities are experienced.

Attack of pseudo stem weevil is the major threat in banana cultivation. High cost of bamboo for staking the plants increases the cost of cultivation.

Mean while banana is the crop having high export potential. Organically cultivated banana and its bi-products have good demand in export market.

Pepper: Most of the existing plantations are not scientifically managed. High yielding variety and shade loving variety coverages are less in the district. High fluctuation in the market price leads to non-adoption of agronomic practices by the farmers. Presence of pesticide residues and microbial contaminations in processed pepper due to unhygienic processing and handling at farmer level are obstacles in the export of pepper.

Severe incidence of pest and disease in the pepper growing tracts are the major threats in production and productivity of the crop. Product is fetching low price in the international market.

There is ample scope for area expansion by intercropping and rehabilitation of old pepper plantations. Adoption of scientific practices in increasing the productivity of the crop will enhance production.

Cashew: Over the past twenty years, there has been a sharp decline in the area, production and productivity of cashew both at State and district levels, leading to a stagnation of the cashew industry. The cultivation of cashew is mostly on homestead basis and there is no commercial cultivation. The existing trees are mostly local varieties, old and senile with low production capacity. Scientific management practices are rarely followed and the crop is mostly neglected. Pest and disease attack, low market price, etc are the main threats in this sector.

There are chances for increasing productivity through adoption of scientific practices, high density planting etc. Area expansion can be done by planting high yielding varieties in waste lands, fallow lands, public places, lake sides, Grama

Panchayat lands etc.

Tapioca: Cultivation of tapioca in the district is not industry oriented. Absence of organized procurement and marketing systems has resulted in the closure of starch producing industries in the district. Reduction in area due to switching over to more profitable crops like rubber is a threat. Rodent attack is another major threat.

A wide range of value added products such as cassava flour, chips, sago, glucose etc. can be made from tapioca tubers. There is also scope for production of methyl alcohol, bio diesel etc. from tapioca.

Vegetables: The present production in the district is around 11,000 MT only. There is no organized infrastructure for collection, marketing and storage of vegetables. This severely affects the quality of the produce available to the consumers and also inflict heavy loss due to lack of storage facilities, pests and rodents resulting in uneconomic returns to the producers.



Vegetable cultivation

There is potential to cultivate traditional vegetables in rice fallows during third crop season and to undertake cultivation of the other items such as cabbage, carrots, capsicum, potato etc. in climate controlled polyhouses using suitable artificial substratum. This ultra tech cultivation should be employed in the production of traditional items also in course of time so as to overcome the problem of land availability. Similarly, organic cultivation must be followed as pesticide residues in vegetables are one of the major health hazards prevailing. Moreover, organically raised vegetables will also fetch foreign revenue.

Medicinal Plants: Only 7% of raw materials are obtained from cultivated sources. Almost 70% collection of medicinal plants involves destructive harvesting, since out of the annual consumption, 50%

is from roots, 15% from fruit/seed, 12% from wood, 9% from the whole plant, 7% from the bark or stem, 4% from leaves and 3% from flowers. Many of the plants used in traditional medical treatment are becoming extinct in their natural habitat. Deforestation plays a major role in this.

Though the medicinal and aromatic industry is in need of large quantity of raw materials, large-scale commercial cultivation is yet to catch up. Herbal health tourism offers extensive possibilities for earning foreign exchange.

Native and Location Specific Crops : Apart from the commercial crops and food crops, the District is the habitat of many minor crops and flora which are being used by the people. Crop trees like Jack, Tamarind, Garcinia, etc are essential part of native diet. Minor tubers and millets and pulses also contribute to the food security. Also Sesamum plays an important role in the healthy living of human being. It is specifically grown in Onattukara region during 3rd crop paddy fallows. So these crops also have good potential in the district.

Marketing System : Issues in the Marketing system include the following.

1. Financial constraints
2. Supply driven market rather than demand driven
3. Narrow focus on agricultural marketing extension system
4. Weak research extension linkage
5. Inability to access market demand
6. Weak mechanism for private sector involvement
7. Inadequate communication network

In the analysis of Agriculture sector, the existing cropping patterns, crop status including floriculture, infrastructure and labour issues were analysed with the support of GIS generated spatial distribution maps. From the SWOT analysis it is found that there is ample scope for the productivity improvement and value addition in agricultural sector. However while analyzing the development trend, certain critical issues in the production and productivity of a number of food crops are observed. Therefore strategies have to be evolved to resolve the key issues in this sector. Future strategies for attaining self sufficiency in certain crops and economic development in agriculture sector can be evolved in thrust areas based on spatial

analysis and district development concept.

2.2.2. Irrigation

In Kollam district, out of the 58% area under agriculture, only 31% is irrigated area. It is seen that out of the total irrigated area of 45271 Ha, 72% is irrigated by the Kallada Irrigation Project (KIP).

In the spatial distribution of irrigated area of various LSGs in the district is compared as a percentage of total irrigated area of the district, it is seen that irrigated area is more or less concentrated in the mid land area. Highest percentage of irrigated area is in Chathannur Grama Panchayat (4.19%) followed by Nedumpana Grama Panchayat (3.42%) and Sassthamcottta Grama Panchayat (2.99%). Grama Panchayats of Alappad, Clappana, Pattazhy North and Oachira are not at all irrigated.

Irrigation potential created in Kollam district upto 2000 March is 15611 Ha. Even though potential created during the period except 2002-2003 is very low, in the year 2005-2006, potential created in Kollam district is only 186 Ha.

Regarding the creation of potential, trend can be considered positive since efforts were made to create potential in the whole ayacut area, even though potential yet to be created is 1845 Ha.

But regarding the utilisation of potential, which is vital for the development of agriculture, the situation is standstill considering the period from 2000-2001 as per the records of KIP. The present situation of the area where potential is said to be utilised earlier is also pitiable. In the Minor Irrigation sector also potential creation and utilisation during the period is meager. Hence the overall trend considering creation and utilisation of potential is extremely negative.

The main problem is that agriculture itself is declining day by day. Agricultural land is being transformed for non-agricultural uses. The wet lands, which



Kallada dam

play a major role against the depletion of water table, are being filled up and are utilized either for non agricultural use or for cultivation of dry land crops. Assuring irrigation water to the fields where there is cultivation today is a positive approach against further conversion of land use.

Kallada Irrigation Project, Minor Irrigation and well irrigation are the main irrigation streams, of which 72% of the share is that of KIP. Hence the non completion of the 9 bottleneck works of KIP and delay in the commissioning of the project are the main problems. The 9 bottleneck works to be completed are

1. Poovathoor Distributory - Rly crossing
2. Poovathoor Distributory - Connecting works of Rly crossing
3. Paravoor Distributory - Balance work- 21417-22980 m and Lifting
4. Kottappuram minor – works of two reaches
5. Balance works of Mavilayil Distributory
6. Balance works of Vazhamuttom Distributory
7. Balance works of Chamavila minor
8. Balance works of Kizhakkekara minor
9. Balance works of West Kallada Distributory -0-3510m

Underground PVC pipes laid for Minor Conveyance System (MCS) are damaged in most of the reaches. Command area works are yet to be completed. Even though water is let out through canals, a practice of utilizing water for agriculture is yet to be developed. A uniform crop period and time is not practiced for paddy in the ayacut area. Hence appropriate distribution of water becomes difficult.

Lack of maintenance and paucity of funds creates problems in the proper functioning of schemes like VCB etc. Ponds are not seen utilized for the development of agriculture. Awareness of the essentiality of irrigation is seen to be very low among agriculturists. Cost of implementing irrigation facility does not tally with the benefits obtained. The motor pumps and accessories are very old. There are 8 L.I stations at Sooranad North which are installed in 1958. Hence they need frequent repairs. Lack of sufficient permanent operating staff creates problem in the proper functioning of L.I. schemes. Canals carrying water to field are not properly maintained.

The storage capacity of dam at

Parappur is 487.92 Mm³ which is a great potential for the district. If this is utilized fully, income from agriculture can be considerably increased. Developing new L.I. Schemes in the Grama Panchayats by the sides of Kallada, Pallickal and Ithikkara rivers will create new potentials. There is good potential for tapping ground water in many parts of the district. There is also scope for rain water harvesting. However the actual utilization of the potential is highly dependent on the degree of accessibility of water to the farmer.

Overall it is seen that the irrigation sector in Kollam District is having good potential which is kept under utilized. So, effective measures have to be taken up to improve the sector in the district through proper utilization of the resources and solving the issues. Minor Conveyance System is to be rectified for optimizing the use of available water. Bottleneck works are to be completed urgently for utilizing the created potential. The reason for the non completion of 9 bottlenecks and delay in commissioning of KIP is paucity of funds, non utilization of available funds specifically for completion of bottlenecks and lack of coordination of various departments. Funds have to be separately provided for the completion of the bottlenecks alone. Also strict time limit has to be enforced. High level co-ordination of other departments for expediting such works will have to be conducted. Most of the PVC pipes laid underground for MCS are damaged. As per the norms of the World Bank, command area works were done before commissioning of canals. If these works were done after the completion of the canals as usual, MCS works would not have been this much damaged. Formation and functioning of the Water Users Association was not effective since water was not let out through the canals when the associations were formed. Newly formed CADA division should take up rectification of MCS also. Where agriculturists are badly in need of water for irrigation, pilot project for rectification of MCS of one distributory should be initiated. Possibility of tapping of ground water potential may be looked into in the district except in Kottarakkara block. Rain water harvesting may be popularized by which water availability can be increased locally. Judicious selection of different types of irrigation is also important.

There is sufficient storage in the reservoir. But it is not utilized for agriculture. Water is available in the canals, but not in the right place, right time and right quantity. Damaged MCS, non uniform pattern of cultivation and lack of maintenance of canals are main reasons for this. Effective command area works is to be done. Agriculturists should be educated to follow uniform pattern regarding crop period, seeds etc. to ensure uniform water distribution pattern. Canals are to be properly maintained with people's participation.

Effective distribution of water is not at all possible due to lack of maintenance of L.I schemes, VCB, Check dams, leading channels etc. Paucity of funds leads to lack of maintenance. Non availability of water and less profitable crops lead to conversion of agricultural land to non agricultural use. Assuring availability of water by proper maintenance with beneficiary participation, can to an extent, help in non- conversion of agricultural land. Beneficiaries shall be entrusted with the maintenance, only when the cost is affordable to them. Sufficient funds should be provided for maintenance by the department when cost is high.

2.2.3. Watershed Development

The existing status is studied based on the status of watersheds in Kollam and the physical status of soil. The major watersheds in Kollam district includes Ithikkara, Kallada, Pallickalthodu, Achenkoil, Ayirur (part) and Vamanapuram (part) watersheds.

Kallada watershed is the largest watershed in the district covering an area of 1426.95 sq. km contributing 57% of the total watershed area of the district.

The major soil series of the district are Channapetta, Kallada, Mannar, Mylom, Mynagappally, Nedumangadu, Nedumpara, Palode, Ummannur and Varkala. The different types of soils found in the district are Coastal alluvium, foot hill soils, gneissic soils, laterite soils, alluvio colluvium and forest soils. The major soil type found in the district is laterite soil and the minor type is coastal alluvium found along the coastal areas. Soils in the district are classified based on depth into moderately deep (75-100 cm), deep (100-150 cm) and very deep (>150 cm). Deep soils occupy major portion of the district.

Coastal areas are having very deep soils. Portions of Chithara, Ittiva, Kadakkal, Yeroor, Piravanthoor, Alayamon, Aryankavu, Kulathoopuzha and Thenmala have moderately deep soils. Slope ranges of the district are 1-3%, 3-10%, 5-25%, 10-33%, 25-33% and >50%. Coastal areas of the district are having the lowest slope range. Slope increases towards the eastern part of the district and the maximum slope is in the upland areas of the district i.e., Kulathoopuzha and Aryankavu.

Accordingly, crop suitability for the different soil series in the district is as follows:

- Mynagappally- coconut and intercrops
- Mannar- coconut, banana, vegetables and pepper
- Kallada- coconut, paddy and sugarcane
- Varkala- coconut, tapioca, cashew and banana
- Nedumangadu-rubber, coconut, tapioca, cashew, arecanut and banana
- Mylom- paddy and pulses
- Palode- rubber, coconut, pepper, tapioca
- Ummannur- rubber, coconut, tapioca, cashew, arecanut and banana
- Nedumpara and Channapetta-rubber and forest trees
- All major soil series except Mylom, Nedumpara and Channapetta are suitable for coconut cultivation. Towards the eastern part of the district mostly rubber is recommended.

Regarding watershed development the general issues identified are as follows.

- Agricultural drought in crop lands
- Lack of awareness in soil and water conservation
- Stream bank erosion along the prominent drainage courses
- Drainage problems of Paravoor lake
- Silting up of rivers
- Fallowing of cultivable land
- Land conversion
- Degradation of forests

The location specific development problems are as follows.

- Achenkoil and Kottavasal in Pathanapuram taluk, Kulathoopuzha and Channapetta in Anchal block have shown indications of land slips and land slides.
- Severe scarcity of drinking water in the district during summer.
- Alarmingly increasing soil erosion in the district. Rates of soil erosion in the district are <15 tonnes/ha/year (108290 ha),

15-30 tonnes/ha/year (42812 ha), 30-40 tonnes/ha/year (62960 ha) and >40 tonnes/ha/year (37776 ha).

- Stream bank erosion along the river courses.
- Depletion of water level in Sasthamcotta lake.
- Pollution of Ashtamudi lake.
- Indiscriminate sand extraction in West Kallada.

The major potentials identified are as follows.

- In situ moisture conservation.
- Increased infiltration rates.
- Augmentation of ground water table.
- Protection of fertile top soil.
- Increased yield of agricultural crops.
- Watershed management.
- Generation of rural and urban employment.
- Increase in homestead income.
- More area brought under cultivation.
- Ensure proper drainage.
- Prevention of flooding in lower areas.
- Reclamation of water logged areas.

As per the analysis it can be concluded that through planned intervention almost all the development issues identified can be solved.

During the course of soil survey, details regarding erosion, intensity of the soils in the area etc., are collected and priority classes are assigned to select the lands for carrying out soil conservation works on priority basis depending on the severity of the problem.

Intensity of soil erosion affects the productivity of the soils, which can be restored by timely adoption of proper conservation measures. Apart from soil erosion intensity, other factors like slope of the area, present state of cultivation, management practices adopted etc. are taken into consideration for arriving at soil conservation priority.

Based on soil conservation priority, district can be classified into four priority areas, P1, P2, P3 and P4 as shown in Figure 1.12.

Priority 1 Areas (P1) are the areas which require urgent soil conservation measures and are characterized by steep to very steep slopes, sparse vegetation and faulty cultivation practices. Complete 'A' horizon and up to 75% of 'B' horizon is lost in these soils. These are the areas with > 50% slope i.e. portions of

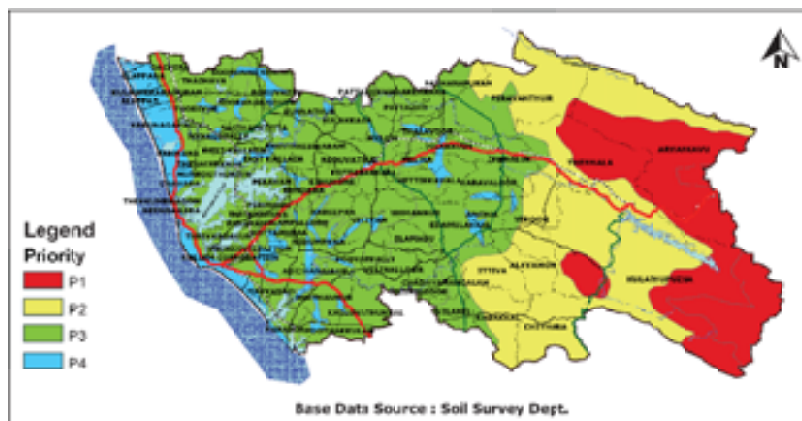


Fig. 1.12 : District soil conservation priority map

Kulathupuzha, Aryankavu and Thenmala Grama Panchayats. For land slide prone areas, graded bunding, Afforestation, wattling and works for safe disposal of drainage are recommended. Also stone pitched contour bunding, bench terracing, gully plugging, stream bank protection, check dams, construction and conservation of ponds, protection of side walls and vegetative measures are recommended.

Priority 2 Areas (P2): P2 areas where susceptibility to erosion is relatively high which need immediate soil conservation measures. This area is generally characterized by steep slopes, thin vegetation and unscientific agricultural practices. Fertile 'A' horizon and 25% of 'B' horizon are lost in these soils, covers portions of 25-33% slope in the district i.e., portion of Grama Panchayaths of Kulathupuzha, Chithara, Kadakkal, Ittiva, Piravanthur, Aryankavu and Pathanapuram. Works recommended are stone pitched contour bunding, contour farming, strip cropping, cover cropping, stream bank protection, trenching, check dams and fodder planting.

Priority 3 Areas (P3) : Partially protected lands need low cost technology to protect the entire land from further deterioration. These lands are located on gently to moderately sloping lands having good vegetative cover. 75% of the 'A' horizon is lost. Here erosion has not reached an alarming stage. Covers mid land areas of the district having slope ranges of 3-10, 5-25 and 10-33%. Works recommended are earthen bunds with vegetative cover, stone pitched contour bunding, mulching, cover cropping, stream bank protection, check dams and fodder planting.

Priority 4 Areas (P4) : The valleys and low lying areas including paddy lands are grouped under this; Opening of proper drainage channels is the main soil conservation measures practiced before commencing any cultivation in these lands. Covers low land areas with 1-3% slope. For water logged areas, construction measures for effective drainage are recommended. Cover cropping, intercropping, rain water harvesting, trenching, mixed cropping and fodder planting are also recommended. The resources analysis, in particular, that for Agriculture can be done considering the Soil priority mapping. The specific recommendations for the district are protection of Sasthamcotta Lake which is the main drinking water source in the district, protection of Ashtamudi kayal, protection of landslide prone areas, projects for waterlogged areas and watershed development projects for overall development integrating various sectors in the district.

2.2.4. Animal Husbandry

The total live stock population in Kollam district as per 17th quinquennial census 2003 is 2,67,977. Cattle and Buffaloes are coming under 'Bovines'. In Kollam district the total number of Bovines is 1,57,898 which is 59% of total live stock population in the District. Cattle constitute 98% (155077) of Bovines in Kollam District. The Eastern region is having more percentage of cattle compared to the western region.

In Kollam district, the number of total live stock is showing declining trend (Figure 1.13). During 1996, the total live stock population in the district was 45,7669 and which reduced to 26,7977 during the year 2003. One of the reasons for such a drastic change may be due to the attitude of people to keep less number of highly productive crossbreed animals rather than maintaining less productive indigenous animals. The declining rate of population in the state during the period from 1996-2000 was about 30% as against 23% in the case of District which reduced to 17% at the end of 2003. The declining rate for the state during 2000-2003 periods is about 20%, slightly above the district average. While the temporal variation is analyzed it is found that the rate of decrease of indigenous cattle population is high comparing to that of crossbreed cattle's recording 70% decline during 2000-2003. The total milk produced in the District during 2004-05 was 256.71 MT, whereas during 2003-04, the total production was 266.63 MT showing a declining trend. The milk production is maximum during the rainy and winter Seasons.

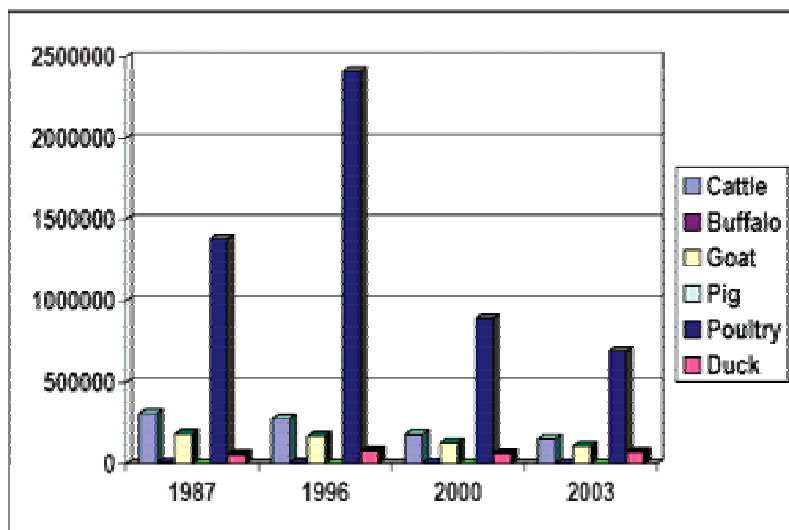


Fig. 1.13 : Temporal variation of livestock population

Percentage of milk production is high towards the western parts of the district. This may be due to the improved breeding facilities and availability of crossbred animals with high productivity.

Total meat production in the district during 2004-05 is 35428 MT which constitutes 41% meat production in the state (86893MT).

Out of the total meat produced, meat from poultry, cattle and buffaloes contribute the major shares with 35%, 33% and 27% respectively. In the case of State also, poultry, cattle and buffaloes contribute maximum to the meat production.

Egg production in the district is 156.6 million/year. Total production of broiler meat from the private farms is around 9.50 lakhs kg/year.

The annual per capita consumption of egg and broiler in the district is 80 eggs and 2.5 Kg respectively. But the demand for eggs in the district is 750 million per year. To meet the demand, eggs are being imported from the neighboring states such as Tamilnadu, Karnataka and Andhra Pradesh. The inflow of eggs from other states is estimated to be 600 million eggs per year.

Sporadic incidence of Anthrax is recorded in the district. Haemorrhagic septicaemia is the other major bacterial disease incurring loss to the cattle population. Foot and Mouth disease is the most dreaded viral disease with sporadic incidence all over the district. PPR is the major emerging disease among the goat population. Contagious pleuropneumonia and tetanus are the other diseases prevalent among goats.

Diseases like milk fever (hypocalcaemia), hypomagnesaemia, downer cow syndrome etc are common in the district. Anthrax, Bovine Spongiform Encephalopathy, Tuberculosis, Leptospirosis and Brucellosis are the main diseases acquired from cattle. Rabies and Leptospirosis are spread from dogs. Psittacosis and Avian Flu are the diseases acquired from poultry.

The total area under fodder cultivation in the district is only 823 Hect, out of which 776 Hect. is at rural areas and 47 Hect. is at urban areas (Panchayat Level Statistics-2006).

The meat and egg produced in Kollam district is sold through local markets in the

district. Unauthorized slaughter houses cum markets sell low quality and disease bearing livestock of which majority of animals are from neighboring State. Out of the 10 important live stock markets, Paruthiyara, Anchal, Mulavana, and Kannanalloor deals with cattle, buffaloes and Goats.

There is a MILMA dairy in Kollam district with pasteurization and chilling facilities. In addition, two private dairy plants namely A-One milk products, Patharam and KCA Milk Products, Umayanalloor are functioning in Kollam district. There are 5 chilling plants in the district, having 1000 litres capacity each viz. Kundara, Thalavoor, Kizhakketheruv-Kottamkara, Chavara South and Ayoor.



MILMA Dairy -Thevally, Kollam

The Buffalo Breeding Farm, Kuriottumala is the highest income generating farm in the district.

There are 7 major input centres of animal husbandry and dairy sector.

When we go through constraints that the sector faces, against the backdrop of an increasing incapability to meet the demand of meat, milk and egg internally, three major issues may be raised on a wider background. First one is the declining trend of animal population in the district. Others are the increasing cost of inputs of production and the flooding of cheaper products from the neighboring states. On a detailed investigation, it can be seen that all these three have formed a vicious cycle one promoting the other thus intensifying the crisis of internal food security of the state. Decreasing trend of the population increase in cost of production and narrow margin of profits, the labour oriented nature of business in the sector, low productivity and emerging zoonotic diseases are the main contributing factors for the recession in the animal husbandry sector.

The sector is also facing problem of non-availability of enough land for fodder

production. The present production of fodder is estimated to be sufficient to meet only half the requirement of the district. A close perusal of the facts and figures shows that cattle population and milk production is high from the areas with a better coverage of fodder. The agricultural crisis has also badly affected the animal husbandry sector in the district. Animal rearing activities, which were developed as subsidiary to agricultural activities from day old time, faced a heavy blockade once the agricultural outputs were not provided in plenty as a consequent to the decreasing agricultural activities. We are facing a heavy shortage of roughages including straw and hay. Bringing straw from other districts or from outside the state roots a heavy financial burden to the farmers. Above all there is the ever increasing cost of cattle feed. Cattle feed is not compounded in the district. Kerala Feeds and MILMA are the major suppliers of cattle feed from the public sector. But a major share is handled by private players, which possess major concerns regarding quality of the feed.

A pricing system, entirely independent of the cost of production, has put the whole burden of these crises on the shoulders of farmer and the profit, already a scanty one, has at times approached nearly null making dairying a non-lucrative occupation for the farmer. Adding to all these, is the heavy influx of milk and milk products, cheaper in price and most of the times cheaper in quality also, from outside the state. As we have not developed a quality based pricing system, the milk produced internally could not compete with the cheaper milk brought in from the neighbouring States.

All these have alienated the dairy farmers from the sector.

Coming to the marketability of milk one society is functioning per 477 cattle in the district. But the societies in the eastern parts of the district cater to the demand of a larger area. The Grama Panchayat of Perayam doesn't have a milk society at all. Lack of adequate number of milk societies in the eastern parts of the district and lack of sufficient number of chilling plants are the major hurdles regarding marketability of milk.

The relatively lesser number of breeding centres in the eastern part of the district and the subsequent reduction in the

productivity of the animals in the region is a problem to be addressed immediately. Another matter worth mention here is the lack of proper awareness among the farmers on the scientific management practices of crossbreed animals. The subsequent mismanagement causes under production among the otherwise highly potent germplasm of cattle available in the region.

Coming to goats, the district has 42 goats per 1000 human population. That means around 43 goats are present per square kilo meter area in the district. Lack of enough grazing land is the major problem here also. Slaughtering goats at an early age, irrespective of whether male or female, is the major cause of the decreasing number of goats in the district. Buffalo Breeding Farm, Kuriyottumala is the major centre for supply of kids in the district. Non-availability of quality kids is the major problem regarding goat production. An organized marketing system with a standardized pricing pattern does not exist in the district.

Apart from these, the district has got excellent infrastructural facilities to support further development of the sector. It has got veterinary health care and breeding facilities in all the nuke and corners of the district. Also it has got an excellent marketing network of milk societies throughout the district. Regional Poultry Farm, Kureeppuzha is the one and only turkey farm in the state. Buffalo Breeding Farm, Kuriyottumala is the most profitable farm of the department in the state. The Kudumbasree training centre, BBF, Kuriyottumala and LMTC, Kottiyam are offering excellent training programmes for the interested farmers in the district. All the infrastructural facilities to promote animal husbandry activities is presently available up to a certain extent in the district. The need of the hour is to make use of the idle land and idle man power available in some of the panchayats to promote animal husbandry activities.

Another point worth mention is the increasing quality consciousness among the public regarding the food materials they consume. The demand for organic food products is very high. It is clear that quality of milk, meat and egg and their processed products will count much in the coming years and the demand of quality products

will be very high. This will promote a condition highly conducive for animal husbandry activities in the region. Same is the case of eggs. People have got affinity towards the brown shelled eggs produced in the farmer's premises, a system which is semi-organic by default. This will definitely improve the prospects of backyard system of rearing poultry. Quality consciousness among the public about meat and meat products is also on the rise. Health consciousness among the public will promote scientific slaughter houses thus promoting the industry of meat and meat products. Apart from all these there exists a sector of pet animals and pet birds growing with high pace. Demand for fancy birds, dogs, cats etc are on a hike and this offers ample employment opportunities for the interested people.

Animal husbandry sector offers plenty of employment opportunities which is expected to witness a boom in the recent future. With regard to the food security of the state also, it is high time to pay more attention on enhancement of animal products in the region.

Intervention in the farming systems of the state is highly necessitated in the present agricultural scenario of the state where both food security and food safety are at peril. A detailed examination makes it clear that there is enough space for developmental activities so as to make the region self reliant in terms of livestock and livestock products. Strengthening of the existing livestock in quality and quantity is the need of the hour. The supporting infrastructure facilities including health care and marketing network have to be strengthened in par with that. Ensuring steady supply of quality inputs at reasonable rates and development of a pricing system based on cost and quality is highly essential for the subsistence of the sector. Advanced disease surveillance programmes, better insurance coverage schemes, modern plants manufacturing and marketing milk and meat products etc. have to be established in the district so as to convert it into a hub of animal husbandry activities.

The suggestions regarding strengthening of the sector can be divided into infrastructural projects, livestock strengthening projects, production augmentation projects and health projects.

In the dairy sector, betterment of the germplasm and enhancement of the number and productivity of animals is the key point. Breeding policy of the state has to be revised at periodic intervals so as to make available better germplasm to the farmers. Fodder production has to be promoted and quality control of cattle feed has to be ensured. Larger commercial dairy units may be promoted in the region so as to get hold of a leap in the field of milk production. Better credit facilities at low interest rate have to be made available to the farmers. Local inputs and local marketing have to be promoted at government level and networks in this regard may be established at the local level.

In the poultry sector efforts are to be made for the strengthening of the backyard system of poultry rearing by ensuring steady supply of quality chicks and feed at affordable rates. Efforts may be made to establish commercial layer units in the district. Rearing of other birds like duck, quail, turkey, fancy birds etc. have to be promoted.

Quality consciousness among the public regarding meat and meat products has to be improved. Modern abattoirs, meat processing plants etc have to be established and beef cattle production and broiler production have to be promoted in the existing scenario so as to ensure self sufficiency in meat production. Allied activities like dog breeding, fancy bird rearing, rabbit rearing, elephant keeping etc have to be promoted for the development of the animal husbandry sector.

2.2.5. Fisheries

Fisheries sector in the district consists of both Marine and Inland fisherie. When we analyze the human resources, the fishing population in Kollam is estimated to be about 1.37 lakh, of which 1 lakh is from the marine sector. The maximum concentration of fisher folk is in Kollam



Fishermen at sea - Kollam

Corporation (36923 nos.) followed by Alappad (29938 nos.). However the number of active fishermen in the marine sector is only about 20000. Almost an equal number of people are presently engaged in fishery related activities such as vending, processing and marketing.

In inland fishing sector, water resources for inland fishing include both brackish and fresh water systems. A unique feature of Kollam is the occurrence of four interconnected backwaters (kayals), viz. Kayamkulam kayal, Ashtamudi Kayal, Paravur Kayal and Edava – Nadayara kayal. These backwaters are interconnected by the T.S. canal. Besides this the District is abundant with salt waterlogged areas in the Grama Panchayats of Alappadu, Clappana, Kulasekharapuram, Karunagappally, Panmana, Chavara, Thevalakkara, Thekkumbhagam, west Kallada, East Kallada, Munruthuruthu, Perayam, Mayyanad, Adichanalloor, Chathanloor, Poothakkulam and in Paravur Municipality which have vast potential for aquaculture.

In case of Fresh water resources, the district is endowed with 3 rivers (Pallickal, Kallada and Ithikkara), innumerable irrigation tanks, reservoir, streams and waterfalls, private and public ponds, quarry ponds and water-logged paddy fields. Besides these, fresh water lakes like Sasthamkottah and Cheloor kayal are there, from which the drinking water supply of the District is met with. The Highland area of the District had the specialty of cold-water resource.

The brackish water fishery resources consist of 75 species of which 57 are fish, 6 shrimp, 1 prawn, 5 crabs and 6 bivalves. 20 species were identified as commercially important. Altogether 210 primary fishes (excluding the marine migrants) are found in the inland waters, of which 53 species are endemic.

In case of inland human resources the total fisher folk population, who are making their livelihood from the inland waters of the District comes around 0.37 lakh. The active fishermen of the inland sector are estimated as 0.09 lakh.

13 fishing harbours were commenced so far by the fisheries department throughout the state. Kollam district harbour has 3 landing centers 4 mechanized boats and 7 landing centre for motorized and

trade signed sector. In inland sector no such facility is available with public sector.

Kollam has a very dominant position among the marine district of the State in the export of marine products.

Total fishermen population of the district is steadily increasing (from 94401 numbers in 1998-99 to 99890 numbers in 2003-04). However the overall active fishermen population of the district decreased from 20531 numbers in 1998-99 to 18428 numbers in 2003-04. Marine fish landings had increased from 62222 tonnes to 1,45,911 during the period from 2001-02 to 2003-04. In Kollam the export of marine fish had reduced from 16328 tonnes to 15323 tonnes during the period from 2002-03 to 2003-04. As in the case of state export of frozen shrimp (maximum exported species) is increasing in the district. However, the value of export in Kollam is increasing from 189.72 crores to 219.826 crores from the period from 2001-02 to 2003-04.

In a nutshell, over the years Marine Fisheries Sector shows the following trend, specifically,

- Sardine is increasing, Prawn shows steady trend, Mackerel is decreasing
- Export quantity is decreasing and Export Value is increasing

Species wise Labeo Rohita and Tilapia shows increasing trend where as Prawn and Etroplus (Karimeen) are declining.

Over the years, Inland Fisheries Sector shows declining trend. Specifically

- Prawn and Karimeen are decreasing
- Aquaculture species like Labeo Rohita is increasing
- Tilapia, a natural species shows increasing trend

The main problems associated with marine fisheries sector are as follows.

- Over exploitation of fisheries wealth from inshore (upto 50 – 70 m depth) and in Growth over Fishing Stage.
- Foreign vessels sweeps out the entire fishery stock of the deep seas and inshore waters without facing any restrictions which will exhaust the present stock
- No control over construction of new crafts and mesh size of the gears.
- Ineffective KMFR Act implementation
- Lack of marine patrolling
- Stationary gears makes hindrance to the entry of marine fishes towards back

waters reducing production

- Under exploitation of deep sea resources
- Absence of Coral Reefs

Lack of quality fish seed is the major hurdle in the development of inland aquaculture in the district. Other problems include,

- Depletion of fishery resources in inland waters
- Over exploitation
- Lack of a comprehensive inland fisheries act
- No control over construction of new crafts and mesh size of the gears.
- Stationary gears makes hindrance to the entry of marine fishes towards back waters which affect the productivity of back waters
- Due to continuous tidal effect the depth of the back water is being lost due to silting and sedimentation, which results in poor productivity and dredging is the only solution
- Spread of fish/shrimp diseases.
- Depth of water bodies getting reduced
- Under utilisation of Back waters for edible Oyster culture
- Construction of dams, Barriers and other hindrances

Problems on infrastructure facilities include:

- As the number of crafts is not regulated, unit craft production is not on the safe side.
- At present, there is no fuel bunk inside of the harbour for the easy accessibility for the fishermen.
- No welfare measures for the workers engaged with the craft construction industry.
- Absence of cold storage facilities in landing centres. At present there is no sufficient cold storage facility for their catching provided.
- Lack of Fish marketing strategies both in inland and marine.
- No training programme conducted for the workers of the peeling shed for hygienic handling of the product.
- Lack of usage of Grama Panchayat s in fishing crafts.
- Annual maintenance of the fishery roads is not regularly conducted.
- No wage pattern for the workers and technicians engaged in the processing industry.
- No sufficient diseases monitoring system

in the field of brackish water prawn farming suggesting need for PCR Lab.

- Scarcity of kerosene to satisfy the demand.
- Shortage of guide lights.
- Lack of testing facilities for quality shrimp seed.
- Lack of Coastal Aquaculture Training Programmes.
- Lack of Coral reefs construction.
- Training for Fishermen in Scuba diving.
- Lack of devises for preserving catches using Marine ice.
- Lack of a Fisheries Research Institute

Socio economic problems of fishermen include:

- Strengthening of Fishermen Co-operative Societies
- Lack of employment opportunities for fisher women
- Lack of insurance – shrimp- fish culture
- Problems in getting possession certificate for the inhabitants in puramboke area
- Practising and propagating of forbidden methods of fishing (Thopum – Padal)
- Shortage of loan facilities and micro credit
- Problems in fishermen housing
- Lack of sea rescue facilities
- Lack of nurturing of SHGs registered in Fisheries sector- Ornamental fish culture
- Lack of Orientation Programmes for Fishermen in the field of deep sea fishing, Organized back water and Fresh water aqua culture programmes

Environmental pollution problems include:

- The fishermen has no responsibility for hygienic management of the landing centres and hence the present unhygienic condition
- All the landing centres especially in the back waters are in dilapidated condition and requires hygienic standards are to be renovated
- All the Fish Markets in the District are unhygienically maintained through out the year
- Shrinking of back water due to sedimentation and human interference
- Accident prone areas in estuaries– lack of dredging
- Environmental and Ecological problems arising due to destruction of mangroves
- Pollution hazards in fresh and back water bodies
- Potentials in marine fisheries include;
- Very high potential for Deep Sea Fishing

ie, beyond 200m depth.

- Construction of artificial reef along coastal waters
- Scope for the establishment of micro enterprises for value added products and employment of fisher women
- Development of Ornamental Fisheries – SHGs
- Propagation of Farming of non conventional varieties clams, mussels, crabs, corals, edible oysters and Perl oyster – marine water
- Potential for Mangrove forestation
- Potentials in inland fisheries include:
- The back waters are not really exploited for its potential for species like Crab, Mussel and Oyster and Brackish Water Farming.
- In the field of fresh waters major water bodies are not utilized for pen culture by fishermen group – productivity under utilized.
- Ornamental fish culture is negligible at present – requirements met from Chennai – immense potential value at rupees more than 750 crores / year – F.F.D.A taken the initiation
- Development of Tourism Fisheries
- Development of integrated farming practice
- Development of Reservoir Fisheries

In general the fishing sector is one of the potential development sectors in the district which can be further enhanced by certain location specific corrective measures. The identified problems also have to be tackled. Issues like over exploitation can be taken care of by strict implementation of existing Act which is now insufficient, imparting total fishing holiday for a particular period, encouraging Deep sea fishing, construction of artificial reefs, control over construction of new craft and mesh size of the gears, mandatory registration of craft and gears, cancellation of registration of old crafts (15yrs). All boat building yards to be registered with fisheries dept. And get prior permission for constructing a new craft. To solve the issue of stationary gears making hindrance to the entry of marine fishes towards backwaters can be tackled through people's participation, providing alternate employment to the stakeholders and dredging of backwater for smooth entry of tidal waters. Altogether the fisheries sector with such a high potential in the district has

to concentrate on exports with due consideration to resource conservation and fisher folk welfare.

2.2.6. Industries

About 26913 number of industries consisting of small scale, large and medium industries have registered in the District. Out of the total industries registered, maximum number of industries are located in Kollam Corporation (3933 numbers) and concentration of industries are in the coastal belt of the district.

The large and medium industries registered in the district consist of industries in public and cooperative sector (17 nos) and private industries (14 nos).

Out of the total units registered, 22% are closed units. Among the working, 3% have registered as sick units and among the sick units only 31% is revived.

Out of 26,882 SSI units registered in the district, maximum is in Kollam Corporation (3631 nos.) followed by Punalur (970 nos.). Category wise share of SSI units are shown in Figure 1.14.

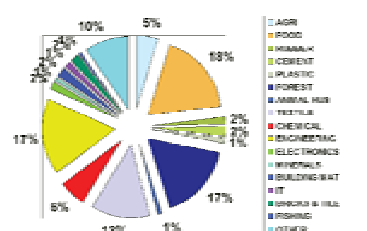
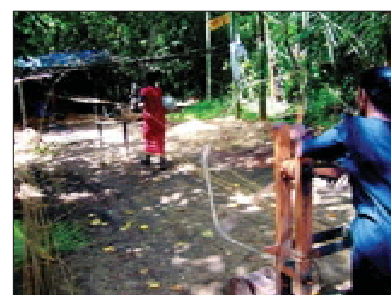


Fig. 1.14: Percentage of SSI units by type

Handloom industry is mainly under Co-operative Sector. Most of the societies are in Chathannoor, Kottarakkara, Mayyanadu and Veliyam Grama Panchayats and in Kollam Corporation.

Coir industry is mostly concentrated in the Grama Panchayats attached to coastal areas under both Co-operative and private sectors. The Grama Panchayats under this industry are Thrikkaruva, Thrikkadavoor, Manroe Island, Chavara, Panmana, Karunagappally and Paravoor



Women engaged in coir works - Anchalumoodu

Municipality.

The Cashew processing Industry of Kerala are almost centralized in Kollam District. About 2.5 lakh workers are employed in about 500 cashew factories in Kollam District. There are two major Government undertaking under cashew sector viz. The Kerala State Cashew Development Corporation (KSCDC) established in 1968 and Cashew workers Apex Co-operative Societies (CAPEX) established in 1984. There are 70 cashew factories under KSCDC and 10 under CAPEX. 50% of raw cashew nuts are produced in Kerala and 50% is imported from various African Countries such as Ivory cost, Ganiabasavo, Khana and Nigeria. Although export of cashew Kernels is increasing fast we are pushed back in raw cashew production. Maximum number of cashew based industries are concentrated in Kollam Corporation (59 nos.). Generally cashew industries are concentrated in the mid land region especially in those Grama Panchayats along the side of NH 208.

There are 1672 Khadi units in the district. Maximum number of Khadi units, irrespective of types of industries, are concentrated in Kollam Corporation (154 nos.) followed by Chavara (102 nos). Generally Khadi units are concentrated in mid land region.

In co-operative sector of the district, 261 industries including 231 units in the general category and 30 handicraft units are registered.

In Kollam, I.T sector is not flourished so far. About 40 number of IT units are registered in the district. Besides, Government has started an IT park at Kundara. However the district is selected for propagating Akhsaya projects in the state.

Analyzing the trend of number of SSI units it is seen that there is steady decline in Agriculture, Food, Fisheries and Animal Husbandry based Industries. In the case of Fisheries and Animal Husbandry based industries, the number of new registrations has declined to nil by 2004.

So far the only industry which has shown increase over the last four years is Information Technology based. However it is only 1% among the Overall category of SSI in Kollam. It is also showing a declining trend as of lately. Hence it can be

generally assessed that there is a declining trend as far as the Industrial sector of the district is concerned.

The general functioning of the existing SSI units in this district is not satisfactory. Statistics shows that 22% of the SSI units in the district are either closed or not working. Out of the closed units only 50 % can be revived either by the effort of the entrepreneur or by the assistance of government. The balance 50 % are closed for ever resulting in the wastage of huge investments made in land, building and machineries. A number of units are struggling hard for existence. 3 % of such units are registered as sick. Among those sick units only 31% can be revived. The reasons for the closure and sickness are mainly marketing problems, change of technology, high cost of production and high interest rate of bank loans. It is a general phenomenon that the SSI units are generally concentrated in urban centers and along major traffic corridors. The reasons are spatial disparity of the rural areas, lack of awareness of the schemes and incentives and lack of entrepreneurs who can invest in industries. In addition to the above problems unhealthy marketing competition also resulted for the declining trend. The concentration of different types of industries is different according to the geographical structure of the area. In general the critical LSGIs as far as SSI units are considered are Aryankavu, Edamulakkal, Anchal and Yerror.

The major problems identified in Large and Medium Industries are lack of working capital, management issues, labour issue, improper resource utilization, improper marketing, lack of involvement of financial institutions, changing technology, unhealthy market competitions and power shortage problems.

The Handloom sector in this District is facing crisis for the last several years. The major problems identified are low volume of sales of handloom cloths, huge stock of finished goods in the societies resulting in the blockage of working capital, non adoption of modern designs, production of conventional type of fabrics only such as kaily, mundu, thorth, etc., lack of working capital, workers not getting regular employment, huge cash credit arrears by the societies with district co-operative bank, delay in getting rebate from government,

scarcity of expert weavers, huge ESI/PF arrears due by the societies, managerial inefficiency of the Board of Directors, dropout of weavers from handloom sector due to low wages, lack of production of export oriented items and unhealthy market competitions (from Power Loom Sector).

The major problems faced by coir industry are stiff competition from neighboring states, import of artificial yarn from Sri Lanka, import of coir fibre from Pollachi, non utilization of the husks, retting of husk by scientific method not proved to be successful, high cost of production of yarn, huge stock of yarn held by Marketing Federation, failure of de-fibering mills at Nedungolam and Kuzhiyam, mis-utilization of fund, inefficient management of the societies (committee members of the societies are generally sympathizers instead of workers), scarcity of raw material (coconut husk), non-availability of fine quality fiber, lack of working capital, scarcity of expert workers in spinning, low wages and lack of training to workers.

The major problems faced by cashew industry are shortage of raw materials, labour issue, lack of involvement of financial institutions, changing technology, market competitions (from foreign countries), low out turn and lack of training to workers.

The major problems faced by khadi industry are improper resource utilization, improper marketing and lack of involvement of financial institutions, changing technology and unhealthy market competitions.

The major problems facing industrial cooperatives industry are management issues, low volume of production, lack of working capital, improper resource utilization, lack of effective supervision, improper marketing, and lack of involvement of financial institutions and changing technology.

On the other hand, there is ample scope for starting new Industries where Infrastructure facilities are provided by Jilla Panchayat. 30 new units with a Project cost not below 5 Lakhs each can be started in the following Mini Industrial Estates already constructed and ready for allocation.

- | | |
|-----------------|-----------|
| a. Thalavoor. | 10 Units. |
| b. Piravanthoor | 10 units |
| c. Pooyappally | 10 units. |

The newly inaugurated Marketing Complex near Karbala Junction, Kollam by District Panchayat can be utilized for the sales of products manufactured by SSI units in this District. The black sand available in plenty in the costal areas of Chavara, Panmana and Karunagappally can be scientifically utilized for starting new ventures in SSI sector. Kollam District has some deposit of clay which can be utilized for manufacturing glazed tiles and sanitary equipments. As per analysis of Mining and Geology sector the existing quantum of China clay in the district is sufficient for the smooth functioning of the existing Clay industries at least for another decade with the present status of extraction. At present there is a tendency to avoid the use of artificial and chemical products to keep environment pollution free. These opportunities can be utilized by us by manufacturing products of Coir, Handloom, Screw pine Mat, Bamboo, reed etc; these eco friendly products can attract foreign market. The Eastern parts of Kollam are abundant in the production of Rubber. The possibility of starting Rubber based industries in these areas shall be explored. The District is blessed with the presence of small islands in the Ashtamudy Lake which have ample potential for Tourism Industry. By the development of Tourism, a proportional progress in Handicrafts sector also can be expected. At present the coconut shells are being utilized as fuel. This can be utilized for Industrial purpose. Government agencies like SISI, DIC, KINFRA etc; shall give technical advice to interested entrepreneurs. The scope for starting new SSI units for the manufacture of milk based products is very high in this district. Cluster Development Programme in Food processing, Wood based Industries, Clay based Industries, Dairy, Bamboo based products can be developed.

In general, from a detailed analysis of the industrial sector it can be seen that there are so many problems faced by the sector. But these problems vary from place to place. For example there are plenty of lands available in the Eastern part of the District for starting new industries. But other infrastructural facilities such as building, power, and transportation facilities are not available in such places. But in urban areas where power, transportation etc are

available, there is scarcity of land. The financial institution shall have to play a very important role in the development of Industry. Another problem is, lack of awareness among the entrepreneur about the government departmental schemes. Motivation among the youths to develop entrepreneurship, especially among college students, is absolutely necessary.

2.2.7. Health

Comparing the health indicators such as Birth rate, Death rate, Infant Mortality Rate (IMR), Maternal Mortality Rate (MMR), Life Expectancy Rate-Male and Life Expectancy Rate- Female of the district with National and State figures it is seen that health status of the district is well above the National and State averages.

Major diseases occurring in the district are

- Respiratory infection
- Diarrhoeal diseases
- Pneumonia
- Hepatitis
- Typhoid
- Hyper tension
- Heart disease
- Mental disease
- TB
- Cancer
- Leptospirosis
- Dengue
- Malaria

The comparative study shows that the prevalence rate of the seven diseases in the district shows more or less the same pattern as that of the state. The prevalence rate of the respiratory infection is the highest (87%) and that of TB is the lowest among the seven major diseases (Figure 1.15).

Among the deadly six major life threatening diseases reported from the district in 2004, Hepatitis A is reported maximum (442 cases). Occurrence of the Dengue cases is concentrated in the

coastal (Kollam Corporation, Chavara and Karunagapally blocks) and eastern (Anchal block) areas of the district.

The health status of the district shows progress in all the indices for the period from 2002 to 2004. This indicates that Dengue fever and hepatitis A are the major life threatening disease in Kollam.

The pattern of diseases has changed to life style diseases and pollution causative diseases. Also there is emergence of new diseases like Dengue fever, Leptospirosis Chikungunia and AIDS. It can be concluded that diseases occurring due to environmental degradation / pollution / lack of waste disposal facilities are emerging as a major threat. This factor should be taken into account while forging new development proposals in the health sector. The environmental pollution is mainly related with urban areas and those areas with high population density.

In the Allopathy sector, trend of Outflow of Patients (OP) shows an increasing trend in the case of female and children, while a decrease is shown in the number of males. The total OP increased considerably from 2004-2005 but became stagnant in 2006-2007. The total no. of Inflow of Patient (IP) shows an increasing trend over the years. However, the no. of children admitted in hospitals shows a decreasing trend. This could be due to effective preventive health care systems made available to the children.

In the case of Ayurveda, as it is globally accepted as an Indian system of medicine, number of patients is seen to be increasing. While there is increase in the no. of male and female patients there is decrease in the case of Children. The total no. of patients is increasing drastically in the sector. Number of foreigners seeking Ayurvedic treatment also increases year by year. Due to the growing popularity of Ayurveda and increased awareness of public about this system, middle and upper class people are increasingly opting Ayurvedic treatment. The inflow of patients to Government Ayurvedic Institutions proves this.

The trend in the Homeo sector is also showing an increase in the no. of patient's inflow over the years. The inflow of patients is more in geriatrics, gynaecology, pediatric ailments, skin diseases, allergic complaints, arthritis and preventive medicines.

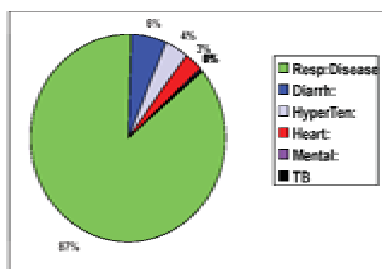


Fig. 1.15 : Major diseases in the order of prevalence

In the district, there is an obvious increase in the inflow of patients over the years in all the three sectors of Health, showing a need for attention to the development issues in the sector.

In the case of diseases, respiratory disease is having high prevalence rate and Hepatitis A is the most life threatening disease. As per the analysis, there are certain location specific diseases such as cancer cases in Chavara, Panmana, Neendakara and Alappad Grama Panchayats. There is concentration of dengue fever in Chavara, Karunagapally, Anchal Blocks and Kollam Corporation. Malaria concentration is in Chadayamangalam Block and Kollam Corporation. Another occupational disease in bronchial asthma found to be high among cashew workers.

Regarding infrastructure, Govt. sector health care infrastructure is poor in Kollam. The rank of Kollam district among other districts in the state based on beds /lakh of population in Govt. sector is only 11th and spatial distribution of Hospitals is not uniform. There is absence of IP facilities in Govt. Hospitals in Aryankavu, Thenmala, Melila, Vettikkavala, Vilakkudy, Kulathupuzha, Pattazhy, Pattazhy Vadakkekara, Kulakkada, Thalavoor, Mylom and Alayamon Grama Panchayats. There is absence of super specialty hospital in Punalur area. Absence of periodic regional detection camps for the life style diseases and difficulty in reaching the tribal areas including Piravanthur, Aryankavu, Kulathupuzha and Thenmala are some of the problems as far as health care infrastructure is concerned.

The following specific problems are identified in the allopathy sector.

- Low bed strength in District Level Hospital, Taluk level hospitals and Block level hospitals.
- Inadequate number of doctors and other staff.



District hospital - Kollam

- Absence of advanced lab facilities like cytopathology, microbiology and pathology in District hospital
- Unplanned and unnecessary civil works.
- Transfer and postings – Concerned specialist to be posted according to requirement in specialty hospitals avoiding gross anomalies.
- Absence of periodic maintenance of hospitals and equipments.
- Absence of modern investigative and diagnostic facilities.
- Shortage of funds.

Identified gaps in infrastructure in homeopathy sector include

- Lack of dispensaries and hospitals in all Grama Panchayats/Taluku/Blocks HQs, /Municipalities.
 - Lack of own land and building for hospitals and dispensaries.
 - Lack of sufficient staff- Medical / Paramedical / ministerial
 - Lack of clinical laboratories and technicians in hospitals.
 - Lack of enough medicines.
 - Lack of periodic capacity building programme for medical, paramedical and ministerial personals.
 - Lack of transportation facilities
 - to conduct timely epidemic preventive activities
 - to inspect and monitor the institutions under the jurisdiction
 - Lack of programme exploring IT
 - Lack of collection of data/ information on epidemic diseases from local areas
- The following specific problems are identified in the ayurveda sector.

- Even if there are so many post graduate degree holders in Government Sector, the specialities of Ayurveda are not effectively implemented.
- Out of 63 Government institutions 22 institutions doesn't have own building and are functioning in rented buildings with limited infrastructure.
- Shortage of skilled and trained staff. Four institutions do not have even Pharmacist post.
- Institutions working in own building does not have proper drainage, toilet and waste disposal facilities.
- Lack of emergency and first aid facilities
- Shortage of Medicine - During past 5 years total allotment for medicines in the District remains constant at the rate of Rs.4,43,000 per year. Numbers of

patients are increasing regularly. In 2006 -2007 total number of patients were 19,79,288 and the per capita allocation of funds for Medicine is a meager of Rs 0.22 only.

- Out of nine hospitals, Panchakarma Unit is effectively functioning in District Ayurveda Hospital only. All other hospitals are functioning in minimum level due to shortage of staff and facilities.

In the Homoeopathy sector there is good potential for the following fields.

1. Geriatrics
2. Gynecology
3. Curing Pediatric ailments
4. Skin diseases
5. Allergic complaints
6. Arthritis
7. Preventive medicines

In the Allopathy sector there is good potential for the following fields.

1. Geriatrics
2. Control of Blindness
3. Leprosy eradication
4. Control of Cancer
5. Immunization
6. Psychiatric patients care
7. Neuro-Surgery
8. Nephrology

In the Ayurveda sector there is good potential for the following fields.

1. Geriatrics
2. Ayurvedic Hospital for Women and Children
3. Epidemic control cell.
4. Emergency Management Facilities.
5. Panchakarma Therapy
6. Medicinal Plant Cultivation
7. Health Tourism
8. Speciality Ayurveda Hospital
9. Drug manufacturing unit

Due to the global acceptance of Ayurveda, natives and foreigners are attracted towards the Ayurvedic form of treatments. In order to exploit this and to avoid hawkers of this field, the Govt. sector should take much more interest. The Kollam District has very good opportunity in health tourism along with Eco tourism and back water tourism in Thenmala and Ashtamudi.

In the Allopathy sector, special attention has to be given to tribal areas and coastal areas for bettering health parameters in view of the outbreaks of vector borne diseases. NRHM scheme has been implemented, through which 10 CHC's in

the district will be raised to public health standards with adequate manpower. Essentially the staff pattern should be rearranged according to patient strength in all Government Hospitals. All latest advanced and sophisticated investigating facilities should be made available under Government sector on an emergency basis. The spatial distribution of Government Hospitals with IP facilities should be redistributed so that the services are made available to remote areas and particularly among tribal areas.

In the Ayurveda sector, due to the global acceptance and its safety, people are more attracted to Ayurveda for prevention as well as for curing the diseases. It is well exploited by the private sector. For effective performance of Govt. sector various measures should be taken for infrastructural development, proper supply of medicines, proper staff strength, up gradation of Taluk Hospitals, starting new specialities in hospitals etc.

As evident from the analysis, the development in Homeo sector has to concentrate on public health and preventive aspects of communicable diseases. Research and development in the field and provision of infrastructure facilities which are mostly lacking in the district should be encouraged.

2.2.8. Drinking water and sanitation

The major surface sources, which are being utilized for water supply in Kollam district, are Sasthamcotta Lake, and rivers such as Kallada, Ithikkara, Achancovil, Pallickal and Kulathupuzha. Minor surface sources like lakes and ponds are also being utilized in the district. The principal sources of water for domestic use in rural areas are Open wells.

On analysing the population benefited from 2001 to 2005 it is seen that there is a steady increasing trend and during 2001 to 2005, there was a steady increase in number street taps upto 2004 which drastically increased during 2004 to 2005. Also the house connections provided during 2001-2005 shows steady increase (Figure 1.16). This means that public gets more accessibility to piped drinking water.

The number of tube wells and bore wells constructed during 2001 to 2005 also show increasing trend.

Overall it is seen that the services rendered to the population in terms of all

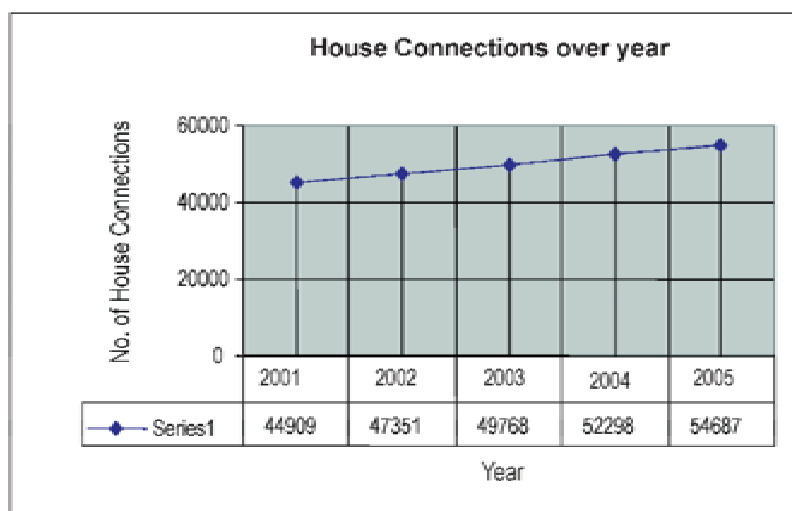


Fig. 1.16 : Trend in no. of house connections

the above criteria in the Drinking Water Sector shows increasing trend.

Regarding the perennial surface sources, the increased future drinking water demand may impose the prevention of other use of river water. On analyzing the river flow data it is seen that almost all the rivers in Kerala are recording an almost nil flow during the summer season. This demands construction of storage structures across the rivers for providing sufficient storage for the lean flow season. Otherwise almost all the water requirements which include drinking, irrigation, industrial and entertainment etc. will be affected. The over exploitation of river water also cause salinity intrusions in rivers during high tide. At present the saline water intrusion is reported up to Katapuzha in Kallada River which may go further and affect the present fresh water source also. Hence the rivers require urgent attention so as to maintain quality and quantity of river water.

Another major problem with the surface sources is the lack of proper conservation measures, which results in the runoff water directly going to sea. So is the case with minor sources such as lakes and ponds.

The adequacy of Sasthamcotta Lake, the major source of drinking water to the Kollam town, is to be ascertained. The extensive use of water from this lake added with insufficient conservation methodologies adopted raises utmost concern in the sustainability of this lake as pointed out by several agencies and environmental activists.

In the case of ground water, potential sources in the coastal areas are over exploited. This causes saline water

intrusion, quantity reduction and frequent damages to tube wells. However the major health hazards like fluoride etc. are not encountered in Kollam as in the nearby coastal areas like Alappuzha etc.

The increased extraction of ground water is not advisable due to various reasons. Therefore protected good quality water supply based on perennial surface water sources should be our priority. Schemes shall be sustainable and form a permanent solution to the drinking water shortage in the district.

The average domestic consumption under normal condition comes to 135 lpcd. But the Govt. of India norms for water supply are for 40 lpcd in rural areas and 70 to 100 lpcd in urban areas. This is quite inadequate considering the way of life of Keralites, and also due to the development pattern of urban-rural continuum that exists here. The average density of population of the district is 1038 persons per sq.km as per 2001 Census. So the rural areas also have to be provided with 70 to 100 lpcd water as in urban areas for ensuring the envisaged hygienic conditions in rural areas as well.

In case of water quality, all the areas without proper treatment facilities suffers water quality problems, in particular the coastal areas.

As for water distribution facilities, many of the existing pipes laid are damaged and not replaced due to lack of funds. The problem aggravates due to intermittent supply. When the supply is intermittent, the chances of pipes getting damaged will be more, resulting in supply of poor quality water. The analysis of data collected from



Public water supply - Kollam Corporation

field offices of Kerala Water Authority and other related offices reflected the shortage/deficit of piped water supply schemes in various Grama Panchayats and the Kollam Corporation areas.

As mentioned above, LSGIs of Thazhava, Panmana, Chavara, Thekkumbhagam, Thevalakkara, Adichanallur, Poothakkulam, Paravur, Kalluvathukkal, Kulakkaada, Pavithreswaram and Chathannur Grama Panchayats have areas severely affected due to the old age of distribution system. These are all basically coastal LSGIs.

Generally the average rainfall received in Kollam District is far above the State average. But due to the topography and Soil Characteristics, most of the rain water drains to the sea as surface run off. This causes water scarcity in almost all areas which in turn causes problems in sanitation sector.

The reasons for drinking water shortage can be either qualitative or quantitative. They are

1. Depletion in ground water table.
2. Undue extraction and use of water.
3. Sand mining in Rivers, Lakes etc.
4. Damaging existing water sources.
5. Geological and Geographical characteristics of land.
6. Pollution of Water Bodies.

Water quality problems in certain areas are caused due to contamination of physical, chemical or bacteriological in nature.

From the analysis of severity index it is seen that, there are certain areas which are severely affected due to backlogs in source, treatment, storage and distribution and quality of water. These include LSGIs such as Paravur Municipality, Alayamon, Anchal, Edamulakkal, Yeroor, Panayam, Poothakkulam, Kottamkara and Mayyanad Grama Panchayats.

Similarly according to people's

perception, areas such as Aryankavu, Alayamon, Karavaloor, Pattazhy, Elamadu, Velinaloor, West Kallada, Poothakkulam and Thrikkadavur suffer from water scarcity. Areas such as Aryancavu, Clappana, Perinadu, Pavithreswaram and Thalavoor suffer from the problem of greater distance to drinking water source (>0.5 km)

Based on severity index as calculated from the status of water supply facilities, distance to drinking water facilities (>0.5 Km) and scarcity of water from people's perception (Socio-economic data, 2005) it can be seen that Aryankavu Grama Panchayat is in the most severe category in the drinking water sector. Alayamon, Thrikkadavoor and Poothakkulam are in the second severe category. Edamulakkal, Yeroor, Anchal, Mylom, Kulakkada, Panayam, Perinadu, Thrikkaruva, Paravoor Municipality, Kottamkara, Thrikkovilvattom, Mayyanad, Oachira, Kulasekharapuram, Clappana, Manroelsland, Chathanoor, Adichanallur, Nedumpana, Thekkumbhagam, Thevalakkara, Panmana, Chavara, Karunagappally, Alappad, Thazhava, Kalluvathukkal, Kulathupuzha, Thalavoor, Thodiyoor, Karavaloor, Pattazhy South, Ezukone, Elampallur, Velinalloor, and Pavithreswaram come in the severe category.

There is also an issue of change in attitude of the people. The drinking water now supplied is used for all other regular use of the human which include even bathing of animals. Hence the water demand will always be very high than the expected drinking water demand in abstract sense. The use of drinking water has to be minimized to the specified purpose only by which we can reduce the demand for drinking water.

Ownership of the water resources is also now in question. Now some issues have developed in Kollam district regarding the ownership of the water sources and the use of water from the sources. Hence this also has to be defined to avoid disputes between local bodies/other agencies regarding the ownership of water sources. In Kollam District there are some local bodies where no safe source for drinking water is available. For example Alappad, a Coastal Grama Panchayat, severely affected by Tsunami, has no reliable source

other than ground water which is now reported as having saline water intrusion at some places. Hence this issue has to be addressed very seriously while preparing development plans.

As mentioned above the major perennial sources of water in Kollam district are Achencovil, Kallada, Ithikkara and Pallickal Rivers.

In the case of water potential in the river basins of the district it is seen that the total percentage utilizable yield is 57.32%. Thus roughly 50% of total yield can be utilized, as source for various water requirements in the district.

If proper conservation and protection measures are taken, other surface sources across the district can also be utilized as drinking water sources such as Vattakayal (Sakthikulangara), Akathu kayal (Paravur Municipality) etc. The measures required include control of runoff, controlled use of drinking water etc.

In Kollam district high density areas like Karunagappally, Kottarakkara, Anchal, Punalur and Chathannur face problems in the disposal of solid waste and sewage.

Sewerage sector remains as unattended issue in Kollam district. The serious issue that the next generation has to face is the disposal of waste, both solid and liquid. Severity of the issue increases as the living standards increases.

In many LSGIs where water table is very high and soil is highly permeable, the possibility of contamination of ground water and top soil is very high. Here community sanitation system may be adopted. In the present and future urban centres there is potential for providing sewerage system. Usage of alternative technology is also possible in the district.

Only 22 LSGIs will satisfy the criteria of 100% water supply coverage by area with 70 – 100 lpcd supply level of potable water by 2021.

Though the Total Sanitation Campaign provides conventional latrine facilities, there are certain grave areas in some LSGIs where such latrines cannot be constructed due to geographical and soil conditions. Water logging and unavailability of water are the main reasons for the same. The water logged areas in Thekkumbhagam, Chavara, Neendakara, Thevalakkara, Panamana, Thrikkadavoor, Thrikkaruva, Mynagapally, Karunagapally,

West Kallada, East Kallada, Perayam, Munroe Thuruth and Hilly areas of Thenmala, Piravanthur and Aryankavu are such destinations where alternate technology for construction of latrines has to be adopted.

So, long term planning for protection and usage of existing water sources is very urgent in order to tide over the present/anticipated drinking water shortage in the district. Source protection works, improvement works, rainwater harvesting and conversion of backwater source in to freshwater source, desalination and ground water recharging works etc are required.

One major source of drinking water in Kollam District is the Ground water. The number of existing tube wells itself is an indicator for this. However the over exploitation of ground water has created an imbalance between the withdrawal and recharging of ground water resulting in exhausting of ground water potential. It is the time to think about measures for replenishing of ground water. Coastal areas of Kollam district mainly depends on ground water sources. Once the water supply schemes based on river water is implemented in these Grama Panchayats, we will be in a position to isolate some areas where we can reduce the number of tube wells to a minimum and the existing tube wells can be used for recharging of ground water. Similarly policy decisions are required in providing ground water recharging activities along with buildings as envisaged for the rain water harvesting. Areas for the recharging of ground water shall be identified based on the present water table, soil characteristics and topography. By recharging the ground water we can avoid the threat of salt water intrusion in to the ground water which is already reported in some tube wells in Alappad Grama Panchayat.

The major portion of rain water reaches the rivers and sea within a few hours after rain as surface run off. Activities shall be initiated to minimize the quantity of run off there by increasing the ground water table, minimizing salt water intrusion and maintaining a high flow in streams and rivers even after rain. The present attention on rain water is limited to rainwater harvesting for drinking water purpose. This may be expanded to a broader sense

where river based actions are required rather than person specific actions as at present.

Use of drinking water has to be minimized to the specified purpose only by which we can reduce the demand for drinking water. This requires effective development of civic sense and a sense of ownership among the society. Awareness creation in effective use of drinking water is essential.

Kollam district is gifted with sufficient storage of water as backwaters which are slightly saline in nature due to its connection with ocean. But this backwater storage provides sufficient opportunity to extract this water for domestic or any other specified use as required. The possibility for this also has to be studied in detail to conserve water for the future.

Majority of the villagers in Kollam District are still depending on open wells for their drinking water requirements. To maintain the hygiene of open wells, especially among weaker sections, some sort of intervention from the Government is required.

Since the water table is high up to nine months period in a year in costal areas of the district, the possibility of contamination of ground water and top soil is very high. This calls for better waste disposal system or a planned sewage treatment system. For the coastal Villages and the emerging urban centers, the disposal of solid and liquid waste requires urgent attention.

Community sanitation system may be adopted for the weaker sections of the society, where a small decentralized sanitation facility or sewage treatment system can be developed for a cluster of houses

Further, specifications are required to be emerged from the community itself to reduce the quantity of solid waste generation. Creation of awareness among public is essential to meet the challenges in future by reducing the quantity of waste generated.

2.2.9. Infrastructure

The existing road network in the district consists of National Highways, State Highways, Major District Roads under the Kerala Public Works Department and other roads under the Local Self Government Department.

Water Transport in the district is catered

to by the State Water Transport Department by providing ferry service. There are 20 numbers of Jetties along the navigation routes. The existing Harbours in Kollam district are the Fishing Harbour at Neendakara, the Fishing-cum-Cargo Harbour at Tangassery.

The railway passing through Kollam district consists of 55 kilometres of double line Broad Gauge Permanent Way of Ernakulam– Thiruvananthapuram line. Till recently there also existed 88 Kilometres of Metre Gauge Permanent Way of the Kollam– Shenkotta line. Service through this Metre Gauge line is stopped now due to gauge conversion (to Broad Gauge) works.

From the analysis of housing sector, it is found that there are about 5,92,851 households in Kollam district of which about 78,182 households are in Kollam Corporation. As per 2001 census the average household size in the district is 4.3 against the state average of 4.9. The average household size in Kollam Corporation is about 4.62. Munroethuruthu has the least number of households. There are only about 2513 (0.42%) households in Munroethuruthu. The maximum average household size among LSGIs is 4.8 in Paravoor Municipality. The household size along the coastal area is also high. It is about 4.65.

In Kollam district about 50% of the houses are of pucca type, 33% are of semi-pucca and the rest 17% are in katcha condition (Figure 1.17).

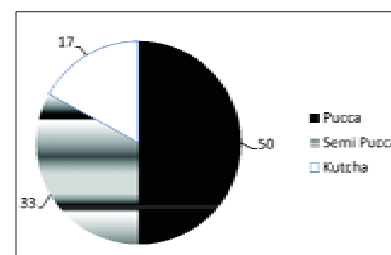


Fig. 1.17 : Condition of Houses

The basic problems faced by road infrastructure in Kollam are that the condition of existing State Highways, Major District Roads and other roads are not as per standards prescribed by Indian Roads Congress. Roads are upgraded to higher classes without adhering to standards governing width and geometrics. There is lack of proper planning with regard to long term development of the district. Encroachment of the land width of roads

leads to legal and political issues. Blocking of drains meant to clear storm water from the pavement surface leads to damage and destruction of roads. Limited resources are allocated for maintenance works resulting delay in carrying out timely repairs. Missing links in the road network hampers development of certain areas of the district.

Generally, the problems can be classified into three: Socio-economic, Administrative and Technical other than certain specific issues related to roads and housing.

Lack of awareness about the Highway Protection Act, Encroachment, Violation of Traffic Rules and Regulations and Traffic Signs due to ignorance are some of the Socio-economic problems in the Road Infrastructure Sector.

In order to overcome these problems it is suggested that public awareness programmes should be initiated to create awareness about the Highway Protection Act, laws pertaining to encroachment and eviction of encroachments, traffic rules, regulations and signs etc. from school level to end user level. Allocation of sufficient funds and establishment of an exclusive 'Highway Protection Force' to carry out evictions under the control of the concerned department is necessary. All Projects should be scientifically planned and the details regarding its social implications should be published for the knowledge of the public. Acquisition of land should be completed before initiating new development projects.

In certain cases there is lack of coordination between departments in respect of development projects leading to undue delays. Utilisation of Funds generated at district level is not possible under the current setup. This causes delay for even small works for which financial sanction has to be obtained from a higher level. If the Funds generated at district level can be utilised by the district level officer, such delays can be avoided.

To solve these issues, it is suggested that the District Level Coordination Committee should actively participate in the implementation of major projects. Income generated by various departments at district level may be made available to the district level officer by means of PD accounts. Cumbersome administrative procedures can be streamlined by making

use of Technology like Computer Networks.

Non-maintenance of inventory of Assets of departments at various levels creates problems like identifying exact road boundary, ownership of buildings, trees, etc. Investigation works are not given due importance thereby causing cost overruns. Time consuming tender procedures even for small works, lack of proper planning leading to traffic congestion causing waste of time and fuel, inadequate parking space in commercial areas etc. are the other technical problems.

These problems can be overcome by conducting proper surveys to identify assets and maintaining digitized inventory and maps. Sufficient funds shall be allocated and due importance given to Project Investigation works. Highest priority for completion of bye-passes and ring-roads to ease traffic congestion in cities and towns, Multi-tiered parking facilities to be made mandatory for all new commercial buildings within Corporation limits etc. are to be provided.

Master Plans are being prepared at regular intervals of time but development projects do not seem to be Master Plan oriented. Iron Bridge is causing a severe bottleneck in the main arterial road of the city and the situation is becoming worse day by day. National Highways and State Highways have very high Volume – Capacity ratios leading to accidents, loss of lives and property. Non-completion of the partially constructed NH bye-pass is severely affecting the traffic flow within the city. Link roads are needed to join important towns in adjacent State Highways.

From the analyses of housing sector, it is seen that there is very less absolute housing shortage in the district. The major affected LSGIs include Vilakkudy, Oachira, Kulakkada, Thalavur and Kottarakkara. However the improper maintenance and kutcha houses create problems in the district. Poothakkulam, Kunnathur, Kottamkara, Elamadu, Ummannur, Sooranadu South, Veliyam, Ezhukone and Thevalakkara are the LSGIs with more Kutcha houses. Another issue is the plight of the downtrodden masses in the district. Houseless SC concentration is more in Kollam Corporation, Chithara and Elampallur Grama Panchayats. Houseless ST concentration is more in Kulathupuzha,

Chithara, Piravanthur and Aryancavu. The houseless BPL are more in Oachira, Thazhava, Thevalakkara, Alayamon and Aryancavu.

Apart from the suggestions, various avenues are available to solve most of the problems brought out above. Regarding improvement of the Road Network in Kollam, completion of an Outer ring Road for the Kollam Urban Area consisting of a Coastal Road on the Western side and the NH 47 Bypass on the Eastern side can go a long way in solving most of the Traffic ills affecting Kollam city. Missing links in this Ring Road need to be connected to complete it and make it effective. This Outer Ring Road should be capable of handling long distance traffic which does not need to enter Kollam City as also traffic within the district which needs to bypass the city. In addition to this, there can be an Inner ring Road for the Kollam Urban Area consisting mainly of the Railway Flyover near the SP Office on the Southern side and the Asramom lake side Link Road on the Northern side. The missing links in this Inner Ring Road are the Flyover and the lake side Link Road. Once these missing links are connected, the Inner Ring Road can effectively keep by-passable urban traffic out of the City centre. Considering the importance of the Thangassery Fishing Harbour and its possibility of being developed into a Fishing-cum-Cargo Harbour, a Coastal Road from Kollam to Kappil assumes importance as a link to Thiruvananthapuram away from the National Highway. This particular Coastal Road will also have immense Tourism potential.

Upgradations of the Road Network in the following sectors are also proposed as potentials for solving the Road Network problems of the district.

- Paravoor – Kollam (via Mayyanad)
- Alappad – Sooranad North
- Chittumala – Pattakadavu
- Kundara – Pooyappally
- Anchal – Melila
- Kadakkal – Pangode
- Ayoor – Alayamon
- Ayoor – Elamadu – Pooyappally – Kulappadom.

With a number of potential agencies in the housing sector such as The Kerala State Housing Board, Kerala Police Housing and Construction Corporation

Ltd., Rural Development Department, Fisheries Dept., SC/ST Dept., Sainik Welfare Dept, Kudumbasree, Kerala State Co-operative Housing Federation, Kerala State Development Corporation for SC and ST, HUDCO, Nirmithi Kendra, Local Self Government Institutions, Kerala State Co-operative Agriculture and Rural Development Bank, Agricultural Bank, and Nationalised Banks etc. the issued identified can be solved to a great extend in the housing sector.

2.2.10. Forest

As per the Forest Department data, 29% of the total area in Kollam District is forest (Figure 1.18). As per the land use analysis, the forest area is 24% which is comparable with the actual Natural forest area.

Effective Forest area in Kollam district is 998.58 Sq.Km. As per records the leased area is a part of effective forest area, however functionally it is not. Punalur, Konni, Thenmala, Achancoil, Shenduruni and Thiruvananthapuram are the forest divisions in Kollam District. The major types of forests based on the legal status are Natural Forest, Vested Forest and Plantations.

Kollam has a very vast biodiversity. Shenduruni Wildlife Sanctuary got its name from Chenkuninji which is *Gluta travencorica*, locally known as Chenkurinji and endemic to this place in the earth. We have 84% Angiosperms in the district. However these are in Shenduruni Division and are in the protected area. Numerous medicinal plants are also present in various divisions of Kollam District.

There are three Eco-Tourism spots in the district viz. Manalar in Achankovil Division, Thenmala Eco-tourism in Shenthuruni division and Palaruvi in Thenmala division.

The ecological status is analysed based on grading the following criteria.

- Achievement of overall effective forest area compared to the required 1/3rd

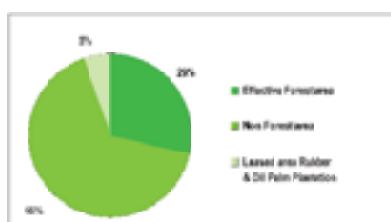


Fig. 1.18 : Percentage coverage of forest area in Kollam district

coverage.

- Availability of natural forest area out of total forest area.
- Availability of environmentally sensitive evergreen forest within natural forest.
- Encroached area.
- Area affected by forest fire compared to maximum during last 5 yrs.
- Overall forest offences compared to maximum during last 5 yrs.

With 4 out of 6 getting Grade I, the Ecological status is showing a positive trend (Table 1.5).

The economical status is analysed based on grading the following criteria.

- Commercial production of timber compared to previous year.
- Industrial production of Eucalyptus compared to previous year.

industrial forestry sector. The reason could be lack of prescribed working plan especially in Thenmala and Achankovil division.

As per analysis, revenue from forest is decreasing in Kollam District over the years even in Timber Sales Division, Punalur. The reason could be the direct impact of low commercial and industrial production. Revenue from Social Forestry Wing (from Strip and Canal bank plantations) came to nil by 2002-03 and non availability of timely fund for silvicultural operations. Also there is lack of new technology adoption in this field.

In the case of forest fire, Punalur with 39 nos. of incidences and Konni with 613Ha affected are most susceptible forest division to fire. Forest offences are more in

Table 1.5 : Overall trend in ecological conservation

Sl No:	Criteria	Percentage	Grading
1	Achievement of overall effective forest area compared to the required 1/3 Coverage	87%	I
2	Availability of Natural Forest Area out of Total Forest Area	77%	I
3	Availability of Environmentally Sensitive Evergreen Forest within Natural Forest	17%	II
4	Encroached area	0.02%	I
5	Area affected by Forest Fire compared to maximum during last 5 yrs.	-85.77%	I
6	Over all Forest Offences compared to maximum during last 5 yrs.	-39.91%	II

- Revenue generated compared to previous year.
- Plan fund expenditure.

With 2 out of 4, getting Grade III, the Economic status has rather negative trend (Table 1.6).

The major problems identified are discussed below.

Commercial production of timber, fire wood and poles increased up to 2003-04 but decreased in 2004-05. So is the case of industrial production. This indicates unsustainable and low yield in plantation/

Punalur compared to other Divisions. The reason could be easy accessibility to human interference. Also there is only one forest station in this District (Konni). Lack of forest stations and inadequate cadre strength affect the forestry activities including forest protection.

Even though the existing forest area equals the national average, it is yet to be seen whether the required 33% is achieved.

Presently Shenduruni sanctuary is not able to support the pressure of tourists.

Table 1.6 : Overall trend in economic development

Sl no:	Criteria	Percentage	Grading
1	Commercial Production of timber compared to previous year	-49%	III
2	Industrial production of Eucalyptus compared to previous year	8%	II
3	Revenue generated compared to previous year	-45%	III
4	Plan Fund Expenditure	33%	II

There is only a very small extent of mangroves directly in the ownership of Government. The district is having a variety of mangroves over a large extent of area. This needs protection from clear felling by the owners.

Even though the encroachment and other forest offences are comparatively less in the district, the boundary needs consolidation and new forest stations for the control of forest offences.

Further there is absence of a Forest Research Institute in the district.

The major potentials identified are discussed below.

Existing forest area in Kollam district equals National Average of 29%. This controls and maintains locality factors, in particular pollution control and water conservation. Existing forest area is highest in Punalur division. Maximum natural forests area is also in this region. These are chief Carbohydrate and Oxygen producer.

Shenduruni has maximum Evergreen and Semi-evergreen, the ecologically sensitive forests with major portion of endangered, rare and vulnerable species of flora. There is a potential to develop Achenkovil as a new Wild life sanctuary. Also there are potential areas for new Bird Sanctuaries at Karali, Kandachira and Polachira etc.

There is potential for revenue from Plantation / Industrial sectors of forestry. Konni has maximum teak production. Punalur is a hub of Eucalyptus and Acacia and has good potential for commercial production of forest produce of all kinds. Punalur has well controlled encroachments over the years.

Overall, Kollam is a gene pool of the State having a large number of endangered, rare and endemic species of flora and fauna.

From the analysis it is seen that the District is endowed with a rich resource of biodiversity. Still the forest cover is short of national standards. The existing infrastructure has managed to protect the forest area of the district to a great extent particularly in the ecology side. In the economy side however there are certain areas which can be improved without affecting the principles of forest conservation. Further, there are certain problems to be resolved and potentials in

the district still remain untapped. Thus conscious efforts have to be taken up to develop the forest economy within the strict parameters of ecological conservation. Therefore the efforts in development of forestry sector need to be directed towards sustaining and enriching the rich biodiversity of Kollam and to make Kollam a greener district.

2.2.11. Environment

Industries are categorized as Red, Orange and Green according to the pollution potential, Red being units having the highest pollution potential

It is seen that there is steady increase in Red category Industries and in Orange Category Industries without Effluent Treatment Plant (ETP) (Figure 1.19). There is steady increase in total units (industries and hospitals) creating air pollution and in the no. of total units (industries and hospitals) creating noise pollution. But there is drastic increase in the no. of total units (industries and hospitals) creating land/water pollution from 2004 to 2005. For hospitals also the number of polluting units is increasing steadily.

The increase in number of pollution potentials, industries without ETP shows the tendency to skip rules and regulation from the part of the industrialists, hospital establishment and inadequate implementation due to lack of staff strength and coordination among agencies.

It is estimated that 645760 Kg/day of Municipal Solid Wastes is generated in the district. Of this very little is properly disposed. Kollam Corporation is also not having proper disposal system.

In most of the Residential, Commercial and Sensitive areas, the noise pollution is well above the tolerance limits. This could be due to increase in the no. of vehicles on road and improper road geometry.

In the river points where the water

quality aspects were checked, the values for the different parameters were within the DBU limits. The picture is a different one in the backwater area close to the urban centres.

The other major sensitive problems in the district are

1. Pollution of Sasthamcotta lake
2. Pollution of Ashtamudi lake
3. Air pollution from motor vehicles
4. Air pollution from cashew industries
5. Air pollution from brick manufacturing industries

Shasthamcotta Lake, the biggest fresh water lake of Kerala, is getting polluted due to anthropological activities in and around the lake. Discharges from areas like Bharanicavu and Sasthamcotta, open defecation on the banks of the lake, discharges from poor quality latrines, retting of palm leaves in the lake, laundry activities at certain kadavu, use of fertilizers for plantation crops etc. are detrimental to the quality of lake only in the above discharges reach the lake only in the form of surface run off during rain. A study conducted by the Pollution Control Board reveals that the water quality of the lake has not deteriorated at any alarming level. Remedial measures are to be adopted for preventing it from further deterioration. Another issue is the water level depletion of the lake. Sand mining in the nearby areas, Kallada River and the over exhaustive withdrawal of water from the lake to cater to the needs of Kollam town is the reasons for it.

The Ashtamudi lake is getting polluted due to the discharge of untreated sewage and effluents from hospitals and hotels, residential areas, slaughter houses, municipal solid waste dumping yard, sea food export units and peeling sheds, coconut husk retting and coir retting, shrimp farms, acid mine, clay mines into Kanjirott

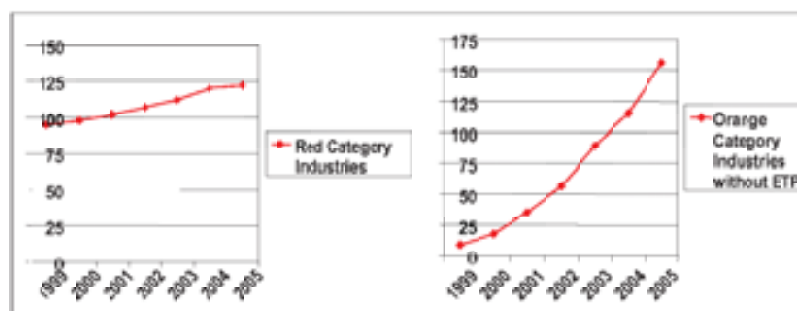


Fig. 1.19 : Trend of pollution – Number of Red category industries and number of Orange category industries without effluent treatment plant

Kayal and spreading of oil from fishing boats.

Most of the roads in Kollam town are congested. Similar situation is faced in other major centres like Punalur, Kottarakkara, Kottiyam, Karunagapally etc. i.e. in the Multi Functional Zone. Traffic produces a lot of noise and air pollution.

Majority of cashew processing factories of Kerala are located in Kollam district, numbering about 700. Most of the units are located in populated areas basically in the Multi Functional Zone. It is a labour oriented industry. The Pollution Control Board prescribes no control measures other than to provide specific heights for the stacks. But the thick emission coming out from the roasting plants and borma units has now become intolerable to the public. Presence of phenolic compounds in the emission was identified by the Board earlier. A lot of complaints are received on air pollution.

There are more than 150 wire cut brick manufacturing units in Kollam district. In Agro allied development zone, in particular in West Kallada Grama Panchayat itself, the number of units is about 50. During the burning time thick and white smoke emanates from the top portion of kilns. The emission may contain toxic gases like carbon monoxide, fluoride etc. It will spread to the nearby area providing the inhabitants with bronchial problems. Considering the rising number of air pollution complaints, it is necessary to insist more stringent measures. It is observed that there is fugitive emission even when chimneys are provided.

Even though there are areas of concern in the district, the public are very much aware of the issues. So there is potential in pollution control by enactment of legislations and enforcement through Pollution Control Board and District administration with people's participation. There is always scope for a better environment in the district which has Forest, Ramser sites, mangroves, hillocks, free flowing rivers and rich tree cover through out the district.

The sectoral analysis reveals that there are critical areas of concern in the district, including air pollution. The pollution is more or less concentrated in urban areas, in particular Kollam Corporation area. The Ramser sites are also subjected to environmental degradation. Though a number of research works are being

conducted by various agencies, they need be brought to the field. So the suggestions for providing a better environment in the district shall be location and design specific and shall be implemented through the LSGIs.

Overall the development proposals are to be identified in a long term perspective and implemented based on the above findings.

2.2.12. Mining and Geology

The important mineral resources of the district can be classified into major and minor mineral deposits. The major mineral deposits used for industrial purpose include china clay, bauxite, graphite, heavy mineral sand, chrysoberyl, mica, limeshell, limestone and the minor minerals used as building materials include granite building stone, brick clay, ordinary sand and laterite.

There is a decreasing trend from the previous year in the extraction of heavy minerals and Bauxite. This could be due to the agitations against mining activities. However there is an increasing trend from the previous year for Brick clay, laterite and granite.

Mining and Geology Dept. could increase revenue from ordinary sand whereas revenue from LSGIs shows drastically declining trend.

The total revenue generated is showing an increasing trend. However, this is due to the increase in revenue generated from compounding of offenses, while the revenue generated from mineral extraction is showing a declining trend (Figure 1.20).

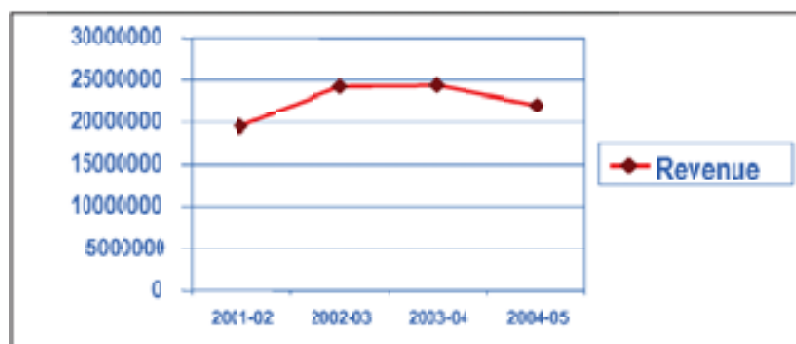


Fig. 1.20 : Trend of revenue generated from mineral extraction

The major mineral deposits of Kollam district are briefly described here under.

China Clay deposits are found in Chathanoor, Perayam, Nedumpana Grama Panchayats. The China clay in Kollam District is inferior to that in the

neighboring district of Thiruvananthapuram. Due to the presence of iron content and thus it requires bleaching. Among the deposits, the chances, of further extraction from Chathannur is remote as approximately 70% of the mineral has already been extracted and the remaining falls in the settlement areas. Presently there are only two major industries extracting China clay (Kerala Ceramics Ltd., Kundara extracting from the deposits in Perayam Grama Panchayat and Wolkem Clays Pvt. Ltd., Velichikkala extracting from the deposits in Nedumpana). Both these companies are facing extraction problems due to human settlements.

China clay has ample scope for reserves i.e. the existing quantum of China clay in the district is sufficient for the smooth functioning of the existing Clay industries at least for another decade with the present status of extraction. The China clay has potential for value addition to products like ceramic plates, tiles, filler in medicines, paper industries, Rubber industry etc.

Bauxite deposits of Kollam at Poruvazhy and Sooranad area are of very low grade compared to the deposits of Kannur and Kasargode. This bauxite deposit is of aluminous laterite type. Major part of the deposits is in the settlement areas.

Bauxite deposit of Kollam can be used for cement manufacturing. As the mineral is enriched in the top layers, the extraction limits to a depth of 5 m. with less environmental concerns.

The heavy mineral deposits of Kollam,

one of the richest deposits of its kind in the world, is found occurring in a highly populated coastal area creating constraints in extraction. Here the land holdings are private and the building construction activities are continuing unabated. Thus

the world class deposits are getting submerged under the dwelling places. Presently only two public sector enterprises, IRE and KMML are functioning here, of which KMML is making value addition by producing TiO₂ pigment where as IRE is carrying out mineral separation and exporting.

Chrysoberyl usually associated with pegmatite veins in rocks and is present in Kollam District in Tertiary gravels along the river course in Kulathupuzha area. As the concentration of the deposit is feeble, the extraction of this is economically less viable.

Mica deposits of Kollam at Punalur mica mine was extracted intermittently from 1910 onwards. The mining operations were suspended due to slump in mica market and increased cost of pumping to keep the mine dewatered. Presently extraction is not feasible.

Graphite in Kollam occurs as dissemination and coarse flakes in the weathered rocks in Piravanthur area. Graphite content is very less (<15%) and not economically viable.

Shell limestone of Tertiary age is exposed at Padappakkara and Paravur area in the vicinity of lakes as detached and isolated deposits. Recovery of shell is very low and hence economically not viable (1-1.5 m thick)

Lime shell in Kollam occurs in Ashtamudi kayal. The extraction of this deposit will badly affect the natural fauna and flora

Ordinary sand deposits seen usually associated with flood plains of rivers, channels and palaeo (old) river courses are seen only in some pockets of the district. Demand for the mineral is high due to peak construction rate, which leads to greater gravity of extraction inviting environmental problems. Similarly, the deposition rate of sand in the rivers is less compared to the extraction rate, leading to deepening of river basin.

The shortage of sand from the rivers, to a certain extent, is met with the palaeo channel ordinary sand deposits in the district. The potential areas in the district are at Puthur, Kulakkada, Kunnathur and Chathannur.

Heavy Mineral sand deposit from Neendakara to Kayamkulam bar (22 km length, width nearly 225 m) is one of the best reserves of heavy minerals in the world, because of its high TiO₂ content

(60%) in the mineral ilmenite.

Granite stone presently used as building stone in constructions can be given value addition by producing flooring tiles.

Laterite extraction needs no blasting and hence less environmental impacts are recorded and hence can be promoted as building material.

In the Mining sector, there is immense potential for extraction of strategic minerals which can be the major thrust for the economic development of the district. Value addition for various heavy minerals and up gradation of existing technologies is also possible. So, top priority has to be given for this. There is also scope for China Clay. The identified potential areas at Perayam (Mulavana), Chathanoor (Bus stand area) and Nedumpana (Velichikala) can be specifically earmarked for extraction of China clay and settlement restrictions are to be imparted. Also the value addition measures in Kerala Ceramics Ltd. has to be revived using modern technology. Further, new SSI units can be developed for value addition. In the case of Bauxite after the extraction of minerals fully, the area can be used for plantations like rubber, cashew etc. The abandoned laterite quarries shall be used as ponds for ground water recharge from surface run off. In case of Granite the present royalty for building stone is Rs.32/m³ and that of dimension stone is Rs.4000/m³. Rocks discarded for the dimension stone units can be used for tile industry, for which lowering of royalty is required. For Ordinary sand, the alternatives like M-sand may be promoted and the dredging of existing sediments in the dams of Kollam may be implemented.

2.2.13. Education

Literacy rate in Kollam District is 90.49%. Kollam district has a well established educational stream from Pre-Primary level to College level.

The literacy rate of Kollam is 0.51% less than that of Kerala. About 10% of the people in the eastern parts of the district are illiterates. Not even 5% of the total educational facilities of the district are available in its eastern parts. Comparatively eastern parts of the district have less number of schools.

The percentage of students enrolled in Standard I who completes higher education in Kollam district is less than 10.

Majority of them drop out either at 10th, HSS or Degree level.

Due to issues in quality of education in Government and Aided schools, there are a number of uneconomic schools in the district. The Government schools and aided schools are not utilizing even 10% of their capacity. Utilisation of funds also has to be done more effectively. There are sufficient infrastructure facilities in Government and aided schools given under various schemes like S.S.A. etc. But these are not utilized, which is basically a management issue. Also often it seen that there is improper management in aided schools under single management. Due to the above reasons, the unaided schools are becoming the major attraction for parents even in rural areas.

H.S.S. Section is still largely in the control of Government. The shifting of HSS education from the Colleges to existing schools have created heavy burden in the Govt. sector. Still many of these institutions are lacking facilities like infrastructure, library, lab etc.

The dropout rate is still high particularly in the Primary section. The number of educational institutions in the higher education sector like Arts and Science colleges and Technical institutions like Poly Technics, ITI and ITC are less. Also there is absence of Law colleges and medical colleges.

The number of Vocational Higher Secondary Schools in areas coming under Punalur and Kottarakkara Educational Districts is less, indicating spatial disparity.

The Primary teachers need adequate training as most training programmes of teachers are in-effective. A permanent institution to train teachers with accommodation facilities is required. There should be proper post evaluation of the training programmes.

The grading system is not vigorously



Higher secondary school - Kottarakkara

implemented. An assessment is required in this scheme to further modify it. Further modern policies of curriculum developments in the Education sector are not being entirely appreciated by a few teachers. There is a need for general awareness in this regard.

Pre-Primary Education in this district is not strong due to certain technical reasons for implementing the Pre-primary Education envisioned by the NPE. 90% of the Pre-primary schools in the district are now attached with LP and UP schools. We rarely see the institutions that work independently.

The only 2 Law Colleges, in the Southern part of the State are in Thiruvananthapuram. In a situation where global culture is discussed, the importance to judicial information is very important. So there is a need for starting a Law College in the district.

The higher education facilities in Engineering are a potential for Kollam district. Further there is great scope for improving skill development through developing Poly technics, VHSC, ITI, ITC etc. Better transportation facilities, economic development and better management are good potentials for development of the sector. Though less in number there are schools in the district even in the Govt. and aided sector which are managed properly. There is no decrease in the number of pupils in the schools of Karunagapally area for the last two years. In short the educational culture available at these areas can be extended to the other parts of the district too.

Analysis reveals that, level of education is high in the District. But availability of higher education facilities are only limited. Aided sector has domination in academic and other aspects of school education. The position of Government sector schools are far behind. This has to be rectified urgently. In Vocational Higher Secondary sector there is an urgent need to start more VHSS in the District, particularly in the eastern part (i.e., Kottarakkara, Punalur Taluks). Post graduate education facilities are very poor. There is only one Government college in Kollam. Though the status of professional education facilities in the engineering side are better and sufficient to the needs of the district, the status is poor in the case of

medical colleges, law colleges etc. As far as the development issues are concerned huge allocation is required to overtake the existing problems, particularly problems of spatial disparity. At present investing huge amounts for technical institutions, medical institutions, arts and science colleges etc. may not be financially viable for the State. So, private participation may be welcomed. The co-operative sector can also be allowed to open more professional institutions in the district. Funds from Central Government also can be utilised for this purpose.

Upgrading the quality of education is a common demand of the society. There are several institutions that stood in the forefront of quality education. T.K.M Engineering College, a pioneer in the field of science and technology, is a leading institution among the engineering institutes in India. At the same time there are institutions at the heart of the town that do not function well. The major attributes to the demand for quality education is the mental desire of the community to accept education as a means to social change.

To conclude, for the development of educational sector in Kollam District, the planners should have a clear vision of the future and they should allow private participation in a bigger way to improve facilities for higher learning.

2.2.14. Social Welfare, Women and Child Development

Development Issues identified under this sector are as follows.

1. Most of the women belonging to lower middle class families are victims of continuous physical and mental torturing by uneducated and alcoholic husbands resulting in the destruction of domestic peace and marital harmony which in turn increases the suicide rates. It is, however surprising to note that this malaise pervades even in the upper class of our society.
2. Dowry system is another formidable evil which often results in heated discussions in the family with the mother-in-law threatening the bride of dire consequences in the event of non compliance with their insatiable desire for money.
3. Violence in marriage life has a degenerating psychological impact on the entire family. An ill treated woman is

a prisoner of circumstances. Desertion is out of the question. There is social stigma attached to it.

Majority of female workers are engaged as maid servants, factory workers (cashew, sea food, brick choolas etc), sales girls etc. The main problem they are facing is low wages. Insecurity and sexual exploitation are other serious problems that women face at work places. Though labour rules are in favour of working women, violation of labour rules makes their life miserable.

Rape and molestations are alarmingly increasing in the society. The recent survey on crime against women conducted by the Bureau of Police Research on Development stated that while the number of criminal cases in general rose by 35% from 2000 to 2006, the number of rape cases in the same period rose by 70%. In the year 2005, about 762 cases of atrocities against women have been registered within the district (Figures 1.21 and 1.22).

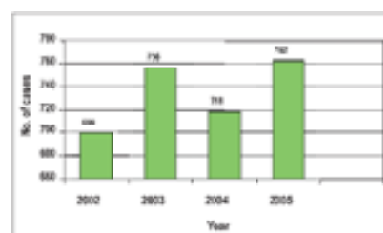


Fig. 1.21 : Trend of Atrocities against women

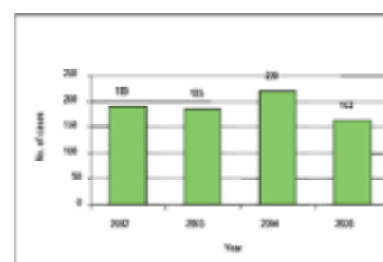


Fig. 1.22 : Trend of Suicides among women

In Kollam, as per the records of Police Dept., highest number of cases of suicide among women is reported in Kundara Circle area (Elampallur, Kottamkara(part), Perinad, Kundara, Panayam (part), Thrikkadavur, Thrikkaruva, Mundrothuruthu and East Kallada Grama Panchayats).

The health status of women in the district is low. About 18% of women are undernourished and 22% have anemia. Also 38% of women have some reproductive health problems like maternal death, abortion etc. During 2005-06 about

3086 anemia cases and 3145 abortions were reported in the district. In addition to this, female workers employed in areas like cashew processing, peeling sheds etc are under the threat of occupational diseases.

It is seen that cases of anemia among women though increased in 2004 – 2005 reduced during 2005-06. The cases of suicides among women show a decreasing trend while the cases of atrocities against women show an increasing trend.

Following are some of the general problems that adolescent girls are facing;

1. Identity crisis
2. Emotional instability
3. Sexual or physical abuse
4. Anxiety about future (job, marriage etc)
5. Growing number of suicides
6. Exploitation at work place
7. White slavery

In Kollam district 44 cases of atrocities and 21 suicide cases had been registered against children in the year 2005. In the case of children both the aspects are showing an increasing trend.

Low birth weight is another problem among children. In Kollam district 2123 children were born with low birth weight during 2005-06. However, the number of births with low weight is decreasing from 2003-04 to 2005-06 (from 2199 to 2123). The number of children with low birth weight is highest in Kollam Corporation.

In the case of suicide among old age, there is an increasing trend in 2005 in Kollam. In general, analyses show that the social status of the weaker sections of the society shows a lowering trend in the district.

As per law no child below the age of 15 yrs should be engaged in any job. But usually they are employed in hotels, as house servants and in poultry and cattle farms etc.

Children wandering in street are facing additional problems like lack of education, health problems, rehabilitation issues and



Anganwadi - Kollam Corporation

security issues.

Problems of mentally handicapped persons are much more severe than that of other physically disabled persons. A mentally handicapped child is a problem to a family. The mental agony of the parents is beyond our imagination. Some sort of social isolation is experienced by the hapless mother who gives birth to such child. Mentally retarded persons are ill treated and kept inside the house. They are malnourished and are prone to diseases. They have little or no opportunity to mingle with normal children, to express their emotions, feelings, desires etc.

The main problems associated with old age people are:-

1. Loneliness
2. Negligence
3. Age related health problems.
4. Other social challenges include antisocial activities, suicides, dowry, accidents, drug addiction, female feticide, HIV positive children and white slavery.

Other than atrocities against women and children, antisocial activities like theft, violence, murder and other crimes destroy the social peace and security of the society. Proper law and order system to be maintained in the district for ensuring social harmony and security in the district.

As per police records, during the period from 2002 to 2004 the number of suicide cases reported in the district had reduced from 1136 to 1085. However in the year 2005, the number of suicide cases increased to 1128 of which 711 are men. From this data it is presumed that financial crisis may be the main reason behind. Once we achieve a sustainable development in all sectors, suicides could be reduced to some extent.

In Kollam, more cases of suicide by women is reported in Punalur Circle area comprising of, Punalur Municipality and Pathanapuram, Piravanthur(part), Pattazhy, Pattazhy Vadakkekara, Karavalur, Thalavur, Vilakkudy Grama Panchayats. Influence of illicit liquor, broken families, debt, backwardness etc. in these areas lead to emotional instability and personality disorder ultimately leading to suicide tendency.

Dowry for the new nuptial knot is another formidable evil. Incompatible couples, the result of commercial arranged marriages, later become parties to mutual

recrimination, endless bickering and physical violence.

The number of accidents in the district during the period 2002 to 2005 is alarmingly increasing from 6592 to 8061. This is mainly due to the lack of well designed / maintained roads in the district. Hence the road net work in the district has to be properly planned to avoid future accidents.

The increasing number of road accidents and their subsequent disasters cause irreparable loss to our society. Accidents leave innumerable innocent men and women hapless and create number of living martyrs. Every segment of our society has fallen prey to this menace. In spite of all the efforts taken by the government and NGOs, the safety of our roads remains still a dream. So effective schemes are required to take measures to check road accidents and to help victims of accidents.

Drug addiction has become one of the biggest unsolved problems after poverty and unemployment. This is a major social problem which needs to be tackled on a war footing manner. Today our college and school campuses are becoming fertile lands of drug peddlers.

The practice of female feticide should be curbed in our society by strict laws and educating women to know their right through persuasive propaganda over radio and television. Cases of abortion are found to be highest in Kollam corporation area (The cases reported here could be from other parts of the district).

The no. of children with HIV is not known. Recently innocent children of parents, who died of AIDS, have been mercilessly ousted from schools and anganwadies in our district. In our society HIV infected children are marginalized and they don't have a childhood. Institutional care should be given for HIV +ve children where they get love, security and value based education so that they can blossom and live long enough to give back to society.

A new (old?) scourge, white slavery is reported to be in existence in many parts of the state since last decade. Many are the reasons for this evil. Unemployment, poverty, desire to be part of the colorful world of film industry, the prevailing dowry system in our society etc., are some of them.

These can be prevented through sex education and counseling to adolescent girls and their parents, in addition to strict enforcement of law and community support.

With the evolution of Cybernetics, a new system of crime originated in the cyber world. The impact of cyber crime is to play havoc to the society. The origin of cyber crimes are very difficult to detect. The following are some of the cyber crimes.

1. Cyber crime against individual
 - Email spoofing, spamming
 - Cyber deformation
 - Cyber stalking etc.
2. Cyber crime against property
 - Credit card fraud
 - Intellectual property crime
 - Internet time theft etc.
3. Cyber crime against organisation
 - Unauthorized access of cyber space.
 - Changing or deleting data.
 - Virus attack.
 - Email bombing.
 - Salami attack etc.
4. Cyber crime against Society
 - Forgery
 - Cyber terrorism
 - Web jacking etc.
 - Pornography

For checking cyber crimes, there is a High Tech Crime Enquiry Cell in the State Police HQ. All District HQ are also having District Crime Enquiry Cells under the supervision of a Crime Detachment DySP (started during 2008) for assisting local police on enquiring cyber related petitions. The existing law in this regard is I.T Act 2000.

In the case of Fire and rescue services, in order to improve the efficiency of the force, the department needs full support and co-operation of several other government departments and other government bodies. Since the availability of water is not adequate at all stations, the service needs the co-operation of water authority in providing sufficient water. Unfortunately very often the fire hydrants installed at strategic points to meet emergency water demands, are inactive. Similarly our rural and urban areas also lack planned water sources to meet any emergency needs. Another problem is the under development of the road facility. Many times, the water tender cannot reach the spot because of the narrow roads,

unplanned electrification etc. Other important problems the service experiences are the shortage of equipments, absence of modernization of equipments and so on.

Since the district is in the phase of gradual urbanization and development fire accidents and other accidents are increasing every year. But the department faces several problems such as lack of modern equipments, modernization etc. due to lack of fund and over all failure due to disintegrated functioning of the whole government system.

Analysis reveals that the weakest of the weaker sections of the society in the district are still unable to come out of their deprived situation and there exists severe lack of service facilities rendered to them. So the social welfare programmes in the district shall focus on these issues.

In the case of fire and rescue services, few more stations are needed for effective resource operations in the district. Suggestions for new stations at various parts of the district are in consideration. Their service is in the phase of gradual development. But still a lot is to be done which would be possible only with the help of absolutely integrated, well co-operated, futurity envisioned good governance. Modernization of existing fire stations and commissioning of new fire stations would be essential.

2.2.15. Poverty Reduction

In Kollam district, out of the total population of 24,59,528, 39% is below poverty line (BPL). This shows that the district needs a special attention in poverty reduction.

The spatial distribution of the BPL population shows that in the year 1998, the distribution is rather sporadic without much of a clear cut spatial pattern. Lowest BPL population was in Pattazhy Vadakekkara Grama Panchayat (1430) and highest was in Kollam Corporation (15407).

It is seen that BPL content of population in the year 1998 was highest in Nilamel, Velinallur and Elamadu Grama Panchayats. So these LSGIs also need to be given special attention

SC and ST content of BPL population is quite relevant as even today these sections are weaker and their issues are doubled when they fall in the BPL category.

It is seen that SC families in BPL population and the SC Content in the BPL population are highest in Kollam Corporation. Obviously the ST population and ST family's content in BPL population are more in the eastern parts in particular, Ariyankavu, Kulathoopuzha and Chithara Grama Panchayats.

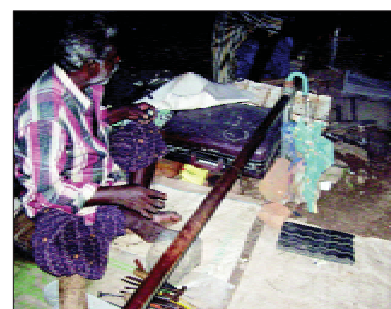
The landless content of BPL population shows that concentration of landless families is more in Chavara, Thekkumbhagam, Thazhava, Pathanapuram, Thrikovilvattom, Neendakara, Panmana, Oachira and Kulashekarapuram Grama Panchayats.

The Houseless content of BPL population in the district shows that concentration of houseless families are more in Alappad (Pre Tsunami), Oachira, Thazhava, Thevalakkara, Alayamon and Ariyankavu Grama Panchayats. Generally the concentration is in the Northern coastal area, mid land and high land areas.

Another aspect is the concentration of BPL population in the urban slums. As per the report of Urban Slums in Kerala (1995-1996), prepared by the Town and Country Planning Department, there are 71 notified slums in Kollam district. Of this 25 are in Kollam Corporation, Punalur has 41 nos. and Paravur has 5 nos.

The economic status of the BPL people is evaluated based on the occupational structure and average annual income. The BPL survey conducted during 1998 reveals that they are mainly occupied as coolie, agriculture labourers, fishermen etc. In Kollam district 58% of workers of the BPL population are coolies and 25% are agricultural labourers.

As per settlement analysis, there is a drastic change in the occupational structure from agriculture labours to other workers in the district from 1991 to 2001. Also during 1980-2004, there is a shift in cropping pattern from food based to commercial



Cobbler at work - Kollam Corporation

crops. This has resulted in the migration of poor labourers from agriculture to other sectors. This could be the reason of high percentage of coolies among BPL population. In the case of traditional industries, as mentioned in the sectoral analysis of industries there is steady decline in the handloom and coir based industries which are facing crisis for several years. Since workers in the traditional industries are financing the BPL population, they are directly and severely affected by the decline in the sector. In the case of fisheries, as mentioned in the sectoral analysis, marine fishing is in the growth over stage and there is depletion of fishery resources in the inland fisheries sector. This also affects the BPL population as 9% of workers are engaged in the fisheries sector. The animal husbandry sector has become under-remunerative due to declining trend of animal population, increasing cost of inputs of production etc.

Average annual income of BPL families is high in Pathanapuram Block area when compared to other parts of the district. It is less in the urban areas, coastal area and in the North-West part of the district.

The economic status of the BPL people is further evaluated based on the savings and entrepreneurship mentality and velocity of Internal lending among the NHGs.

One of the important activities of the NHGs is Micro Financing. Micro financing stage is the beginning stage of community action which brings the members of the groups stand together. The members of each NHG will contribute periodically their savings to the thrift account. The NHG will disburse loan to the members from the thrift account to meet their credit needs. As per the details in rural area, the cumulative amount of thrift collected till 31/12/2007 is Rs.63.67 crores. The total amount of the loan distributed from the thrift comes to Rs. 141.11 crores. In urban areas total amount of thrift as on 31/12/2007 is Rs.5.77 crores and loan distribution from the thrift is Rs.5.97 crores.

In order to satisfy the larger credit needs of the members of the NHGs, the NHGs will be linked to banks through a process of grading. As on 31.12.07 a cumulative amount of Rs.66.77 crores and Rs.1.14 crores have been tapped in Rural NHGs and Urban NHGs respectively. A total

number of 9037 NHGs have already been linked with banks. The average investment amount per NHG is Rs.80,000/-.

It is seen that the savings mentality of people calculated from the deposits in thrift account is found to be more in the Grama Panchayats of Elampallur, Punalur, Elamadu, Clappana, East Kallada, Sooranadu South, Kulathupuzha and Karunagappally and less among urban areas.

High rate of entrepreneurship mentality among SHGs is seen in the mid land and high land area. It is calculated by analysing the willingness to enter into new ventures by utilising more bank loan.

Velocity of Internal Lending (VIL) among BPL population is a criterion to assess how much the NHGs are vibrant in their activities. This directly reflects the group dynamism of NHGs. If an NHG is vibrant in their thrift contribution and availing loans from thrift the VIL will be high. The VIL in rural area is 2.2. But the VIL in urban area is 1.03 only.

VIL among BPL population arrived at from thrift deposits and loans availed, shows that the NHGs are active in the Grama Panchayats of Kadakkal, Anchal, Panmana and Mynagappally.

The Women headed families are yet another deprived section. The number of women headed families are more in Piravanthoor, Karunagappally, Mynagappally, Thodiyoor, Thalavoor, Vialkuady, Pathanapuram and Alappadu Grama Panchayats.

The number of differently abled people out of 1000 population is more in Aryankavu, Ittiva, Chithara, Alayamon, Nilamel, Kulakada, Mylom and Pavithreswaram Grama Panchayats.

Regarding health status, even though the outreach of health institutions is comparatively better in the district, due to lack of infrastructure and human resources in all the three systems of medicine as

mentioned in the analysis of Health sector, the poor are deprived of better health services.

The State Poverty Eradication Mission-Kudumbasree was formulated in the year 1998. The women representatives of poor families are organized under Kudumbasree.

Trend of savings mentality and corresponding credit absorption are analyzed based on thrift and internal loan among NHGs from 2006 March to 2008 March. Both these aspects are found to be increasing over the years. Credit absorption from the thrift is also at an increasing rate and the VIL has gradually grown to more than 2. This is a positive indication of development of social capital among the organization of poor.

Entrepreneurship mentality is observed by analyzing the trend of NHGs linking with banks. It is seen that not only the number of NHGs linked with banks increases every year but also the amount of credit absorbed. While the internal loans are being used for meeting the consumption purposes of poor families, the credit absorbed from banks is being used mainly for livelihood purposes (Figure 1.23).

Analyses reveal that the BPL population is facing issues in both the areas of social and economic development. Still through the incorporation of micro finances there is scope for development of BPL population.

Though the statistics of National Sample Survey points that poverty has been reduced, the issues related to poverty reduction still remains crucial and critical. There arise new problems in the field of food security, shelter, access to safe drinking water, better sanitation, employment, health, education etc. The absolute poor are marginalized even though there are intervention from the part of government departments and LSGIs. This happens to be the after effect of

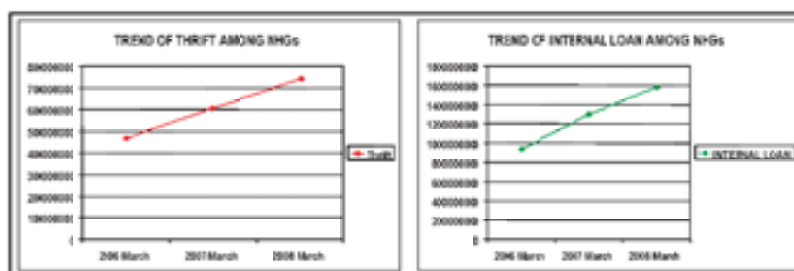


Fig. 1.23 : Trend of thrift and internal loan among NHGs

National level policies of liberalization.

The important developmental issues identified in these areas are:-

- Transformation of cultivation from food crops to cash crops leading to migration of labour. Thus the workers among BPL population are forced to migrate from agriculture to other sectors such as coolies, construction works etc.
 - Still there are houseless rural poor in the District and also a large no. of shelters need immediate up gradation.
 - Coverage of sanitation in BPL families is only 80% and critical in coastal areas and habitats of SCs and STs.
 - Safe drinking water could not be provided to 20% of rural poor. The situation becomes further critical due to the depletion of ground water level.
 - Decline of the traditional industrial sector and consequent unemployment directly affect the BPL population
 - Depletion of sea wealth and consequent unemployment.
 - The animal husbandry sector has become under-remunerative for the BPL population.
 - Services from public health institutions are not sufficient to cater the poor. Cost of treatment alienates the poor from availing treatment.
 - In the perception of the poor, the quality of public education is not at par with private education. Hence, BPL families admit their children in unaided schools and education becomes costly which in turn may increase the gravity of poverty.
 - Social development and security issues are not well taken care of and addressed timely.
 - Poverty reduction strategy through enterprise development does not follow a holistic approach.
- Other problems include
- Problem of landlessness is more in Kareepra, Chavara and Pathanapuram Grama Panchayats.
 - Houseless BPL families are more in Aryankavu, Alayamon, Oachira, Clappana, Alappadu, Thevalakara. The problem is also critical in case of slum dwellers in Urban areas.
 - Drinking Water: Critical in many parts of the district.
 - Sanitation : Mainly Solid waste disposal.
 - Health : Inadequate service from Government hospitals. Private hospitals

are not accessible to BPL.

- Lack of nutrition
- Occupational diseases
- Natural hazards like Tsunami, Flood etc. lead the affected to poverty
- Anti Poverty Programmes are implemented without an integrated approach
- Lack of methodology to identify poverty
- Illogical utilization of funds
- Disparity between intensity of poverty and investment of resources
- Poverty reduction approach through women empowerment activities are not at similar wave length all over the district
- Economic development through Community Based Organisations (CBOs) of women has not gained momentum
- A cluster approach has not been developed
- Inherent limitations for development of micro enterprises in Kudumbasree, State/ Centrally sponsored schemes etc. as part of poverty reduction activities especially in the areas of product development, marketing strategies, technology accessing etc.

The potential areas of development to alleviate poverty in the district are as follows.

- Intervention through promoting cultivation of vegetables, fruits and ornamental plants etc
- Dairy Development
- Backyard Poultry
- Revamping traditional industries through product development, diversification and technology upgradation
- Judicious exploitation of sea wealth, inland water fish culture, fish processing and value addition measures.
- Micro enterprise development through cluster approach
- Intervention of LSGIs in health and education sector
- Effective network of CBOs of poor women under Kudumbasree
- Flexibility of executing poverty reduction activities in Kudumbasree in mission mode

Basic features of the poverty reduction programmes are following:-

- To provide land, job training, pension schemes, to make available the services of public distribution system and to provide houses, latrine etc.

- To provide employment
- To provide primary education, health, drinking water, nutrition etc.
- To ensure community and women empowerment activities

However there are certain critical issues in this report such as:

- Mismatch of guidelines of centrally sponsored schemes with the Socio-Economic situation of Kerala
- Unit cost of centrally sponsored housing schemes is very less compared to the approved unit cost of state sponsored schemes.

From the analysis it is seen that poverty is considerably reducing in the district. However there are certain areas of concern in the development of BPL population. Eradication of slums should be given top priority in urban areas. There are certain areas where the downtrodden are generally occupied including Animal Husbandry, Agriculture and fisheries which have good potential in the district. Therefore the development programmes in these sectors should give priority to include the BPL population especially the SC/ST and other socially weaker sections of the society. Also, infrastructure facilities including safe drinking water, electricity, solid waste disposal system etc. should be provided in the BPL concentration areas. Thus in order to have best results in the area of poverty alleviation and rural development, there has to be an integrated approach for poverty alleviation through concerted efforts of Government departments and LSGIs.

2.2.16. Power

The only hydel project in the district is Kallada Hydro electric project which generates about 60 MU of power annually. The power consumption of Kollam district during 2005-06 was 719 MU. Thus the power generation within the district is only 6% of the total power consumed in the district.



H.T. Powerline - Kundara

Solar energy is utilized for lighting houses in remote areas in the eastern part of the district where the conventional method of distribution of electricity is not feasible. ANERT has already installed solar home lighting system in Piravanthur, Aryankavu, Thenmala, Kulathupuzha and Alayamon for 272, 700, 511, 767 and 446 Systems respectively. Minimum 6 hrs sun light per day is required for the functioning of a solar unit. Generally eastern areas are suitable for tapping solar energy.

The total number of consumers in the district is 6,72,106. On further analysis of consumption pattern it is found that the maximum power consumption is in the domestic category (73%) followed by commercial (13%). Power consumption in the industrial, agricultural and other categories is 8.8%, 0.29%, and 4.84% respectively (Figure 1.24).

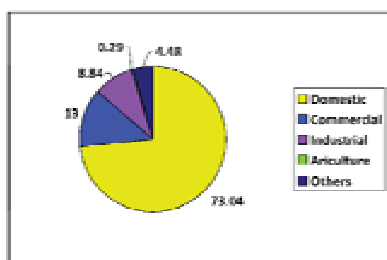


Fig. 1.24 : Category wise power consumption details – Kollam

The analysis of existing status of power sector in the district shows that hydel and thermal power are the major sources of electricity in the State, conventional energy sources are not fully utilized and majority of the power is supplied from outside the District.

Analyzing the overall development trend it is seen that there is an annual growth of 4% in power consumption, major share of power is consumed for domestic purposes, commercial sector shows significant growth with respect to the power consumed, Industrial sector shows the lowest growth rate and coastal stretches of Kollam consumes more power than other area.

From the analysis of the distribution of Un-electrified Houses among LSGIs, classification of LSGIs based on the number of un-electrified areas and low voltage area in the district, it is seen that the Grama Panchayats in the north and north-eastern part of the District viz. Poruvazhy, Kulathupuzha, Edamulakkal,

Ittiva, Chithara, Aryankavu, Yeroor, Pattazhy Vadakkekara, Kunnathur, Pattazhy, Mylom, Melila, Neduvathur, Pavithreswaram, Piravanthur, Thenmala, Alayamon, Anchal, Kadackal, and Karavaloor are identified as the problem areas as far as power sector is concerned. In these areas unelectrified houses and unelectrified areas are comparatively more. Also in these areas low voltage problem exists.

These are also corroborated in the Local level analysis reports and Grama Sabha Reports of these LSGIs. As per Local level analysis report of Poruvazhy, many places are affected by voltage problem and that of Kulathupuzha, most of the places are affected by voltage problem, power has not reached isolated places and there is no separate building for KSEB. As per Local level analysis report of Edamulakkal, there is voltage problem, there are places not reached by power, usage of low quality equipments, excess usage of power by the rich, no separate building for Ayoor Major Section are the major issues. In case of Ittiva, none of the wards in the Grama Panchayat have complete power coverage. Also voltage problem, non availability of continuous power, no. of connections beyond the capacity of transformers, old and inefficient power lines etc are the major issues. In Chithara Grama Panchayat, no power connection is available in Wards 3 and 5. As per the Local Level Analysis Report of Aryankavu, voltage problem, less no. of transformers, lack of power lines etc. are the major issues. In Yeroor Grama Panchayat, there are places not reached by power, lack of street lights etc and in case of Pattazhy Vadakkekara voltage problem, places not reached by power and no office for KSEB etc. are major issues.

The major problem in power sector is found that Non - Conventional Energy sources are not utilized. Majority of the power is supplied from outside the District and major share of power is consumed for domestic purposes not by the production sectors.

The main potential of power sector in Kollam district is that satisfactory power transmission network is available in the district. Also the scope for generating power from non conventional energy sources is another potential.

As far as the power sector in Kollam is considered there is acute shortage of power in the district when generation and consumption are compared. The consumption is by and large for domestic purposes and to some extent for commercial purposes showing lack of growth in the production sectors. So when the existing policies are focusing on economic development, the insurgence in the production sectors in future will effect in a huge power shortage in the district. There is also spatial disparity in the availability of power in the eastern parts of the district. So there has to be effective utilization of energy resources in the district including non conventional energy resources while minimizing losses during transmission.

2.2.17. Scheduled Caste and Scheduled Tribes

In Kollam District, to a great extent, Scheduled Castes have co-equal social status with rest of the members of the society. They have social recognition. Untouchability is not prevalent in the District in its evil form.

People belonging to SC reside in almost all parts of the district. According to the census figures of 1971 to 2001, SC population has been steadily increasing in Kollam District. In 2001 census SC Population was 322805. The corresponding figure in 1991 census was 305717.

SC content of the state population is 9.8% whereas SC content of Kollam District is 12.5%. SC content is relatively high in the eastern high land region and also along Kallada and Ithikkara river basins. These areas are the principal agricultural belt in the district cultivating variety of crops including plantation crops. SC content is low in coastal LSGIs and Perayam, which are devoid of paddy fields and major coconut plantation areas.

As per 2001 census ST population in the district is 5193 which is 0.2% of the total population of the district. Kollam district has the 3rd least ST population in the state, just behind Alleppy (0.15%) and Ernakulam (0.16%) districts. From 1981 onwards ST population shows an increasing trend. ST population is mainly concentrated in the eastern hilly and forest regions especially in Kulathupuzha, Aryankavu and Thenmala Grama Panchayats. However some communities

among STs, have been seen residing in mid land coastal area too.

Though ST population is gradually getting distributed to some areas other than hilly and forest areas, it cannot be attributed to a population shift. 14 LSGIs do not have any ST population. The concentration of ST population in the eastern high land areas is attributed to the existence of forest; as their major source of livelihood is from forest. ST population is maximum in Kulathupuzha Grama Panchayat in the year 2001. By 2001 ST population extended to most of the LSGIs in the District. However the concentration is marginal with the highest concentration in the eastern highland. ST penetration outside the highland is still relatively marginal.

Around 65% of the SC population is settled in colonies. These colonies are located in all parts of the district except in Alappad Grama Panchayat, with concentration in the coastal and mid lands.

Large chunks of workers among SC population are ordinary workers, around 49% agricultural labourers and cultivators and around 22% are workers in traditional industries like cashew and coir etc. (Figure 1.25)

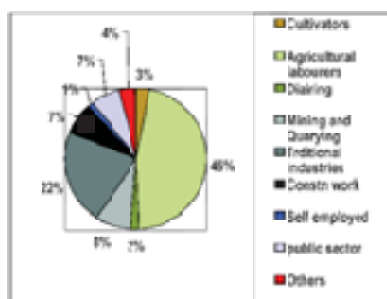


Fig. 1.25 : Occupational pattern among SC

A distressing point is that only 3% of the SC population are cultivators because they do not own and possess land to the required extent. But, SC population is predominantly an agrarian community. Around half of them are agricultural labourers. A quarter of them are engaged in traditional industries, predominantly rooted in agriculture related industries. Around 3/4th of the SC population is dependant on Agriculture and allied industries for their livelihood. Their participation in Government service is much below in proportion to their population.

As far as the occupational pattern of ST population is concerned, 54% are agricultural labourers. But one of the

striking features is that 15.23% of them are cultivators because more land is available with them. 18% are engaged in collection of forest products. Their representation in Government service is very nominal.

An analysis of the status of unemployment among SC and ST reveals that the problem is acute. Unemployment among educated SC, especially those having Degree, P.G.B.Ed., TTC and other technical and professional qualification is very high despite of reservation. In the district a total of 22027 SC/ST people are registered in employment exchanges.

Development trend in the sector is analysed as follows:

Both the percentage literates of SC male and female population are showing an increasing trend after a decrease.

The number of applicants for land is decreasing. This shows the lowering of landless population which is a positive trend. The number of applicants for house is also decreasing. This shows the lowering of houseless population which also is a positive trend. The involvement of LSGIs and other agencies have contributed to this.

The number of persons engaged in unclean occupation is decreasing after a sudden increase in 2004-2005. However in absolute numbers they remain the same. The overall development trend shows that there is considerable improvement in the general status of SC population in the district.

Major development issues are as follows.

- (1) SC population is mainly concentrated in colonies with inadequate amenities, especially those located in rural areas and ST population is concentrated in the hilly forest areas in the eastern part of the district.
- (2) Educational backwardness.
- (3) High dropout from schools and colleges
- (4) Acute unemployment.
- (5) Lack of entrepreneurial ability
- (6) Increasing number of landless people
- (7) Lack of safe drinking water
- (8) Lack of basic amenities in the habitats such as electricity, road etc.
- (9) Caste based problems still persists.
- (10) Lion share of the working population among SC and ST are engaged in low paid, unskilled work.
- (11) Human right violations against SCs and

STs.

(12) Exploitation by intermediaries.

(13) Impact of liberalization and privatization.

Government's financial assistance for education at all levels, reservation in educational institutions as well as for employment in Government sector are major potentials. A minimum of 10% of budget allocation at State level and 22% at National level is mandatory for the development of SC/ST. Compared to State average, the existing educational status and employment level in the district are higher.

From the analysis it is seen that the major issues regarding the SC/ST sector are providing shelter to the houseless families and rehabilitation of landless families. The existing educational assistance also needs additional support for including pre-primary schools, pre-metric studies and post - matric studies. Post-matric hostels and other facilities are also required in this sector. It is seen that still there are SC/ST concentrated areas in the district having insufficient drinking water, power, sanitation facilities etc. Another area of concern is the unemployment prevailing among the SC/ST. These are all the aspects to be considered for carving the future development programmes in this sector.

2.2.18. Tourism

The tourism attraction of Kollam is based on its vibrant landscapes. Kollam provides a miniature of Kerala with representations of all its products.

The LSGI wise spatial distribution shows that the Nature based tourism spots are maximum in Kollam Corporation, Paravur and Thenmala (3 each). Thus as far as nature based tourism is concerned, Ashtamudi and Thenmala are the two major attractions. There are waterfalls also in the district viz. Palaruvi, Kuttalam, Kumbhavurutti, Vattathilthangal, Meenmutti etc. The beaches are mainly Paravur, Kollam, Mundakkal, Thangassery and Thirumullavaram.

The land of Kollam is blessed with many heritage sites. The palaces, forts, cave temple, locations of historical importance, temples with traditional architecture, traditional houses, settlements, century old light house, Punalur hanging bridge etc are examples of heritage precincts of Kollam.

The cultural contributions of Kollam are

very important. It was a great center of learning and culture. It attracted distinguished scholars from all parts of South India. Leelathilakam and Unnineeli sandesam, two outstanding literary works of historical importance, are contributions of 14th century, Kollam. The dance form of Kathakali in its new version of Ramanattam was the creation of Kottarakkara Thampuran, who also improved Krishnanattam by substituting Malayalam for Sanskrit. Paravoor K.C.Kesavapilla a gifted poet, prose writer, dramatist and scholar originated the musical play in Malayalam through his work Sadarama. Many prominent literary persons lived in Kollam.

The temple festivals of Kollam are highly diverse. They reflect the art and cultural creations of the people of Kollam. Kathakali, Koothu, Ottamthullal, Paatakam, Harikatha, Kaikottikali, Kolattam are also practiced here. The traditional folk music and dances are very attractive and unique in Kollam. The Kottamkulangara festivals, Kettukazhcha, Oachirakkali, and Ashramam pooram are very famous and attract tourists.

Kollam district has a number of pilgrim centers. The festivals 'theroottam' and pushpabhishekam of Achencoil temple are famous. The Oachira temple, dedicated to Parabrahma attracts large number of pilgrims particularly during the festival called Oachirakali and Panthrandu vilakku Mahotsavam. The Ashramam pooram and Parippally elephant march are very famous. The Chavara Kottamkulangara festival is very famous because of its peculiar custom that men dress up as women and carry lighted lamps. The Kettukazhcha – exhibition of effigies- are unique in Kollam. There are many traditional music and fascinating rituals associated with temple festivals.

The District has tremendous potential for adventure tourism. The areas include Kollam Corporation and Thenmala, Aryancavu, Kulathupuzha Grama Panchayats. Ashtamudi is one of the major destinations of Backwater tourism in the State.

At present the potential of Ashtamudi backwaters is not fully utilized. There are only two tour trips being conducted in the backwaters; the city to city tour from Kollam to Alappuzha and the village tour as shown in the Figure 1.26. The city to city tour is

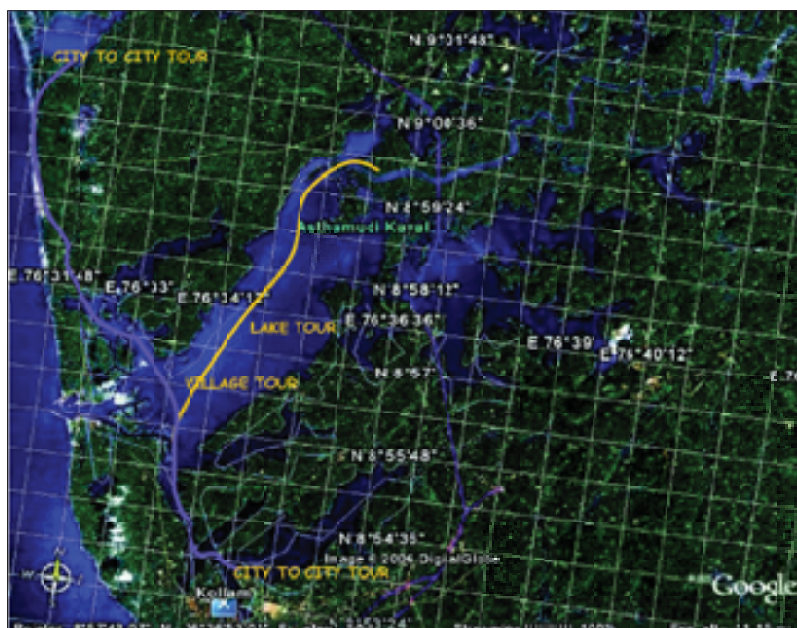


Fig. 1.26 : Backwater tourism network in Kollam

more like a transit to Alappuzha. Majority of the foreign tourists visit Kollam straight away move to Alappuzha without staying. The village tour is more like a walk through the village activities.

Analysing the present pattern of flow of tourists, a major circuit, a transit circuit and a minor circuit have been identified (Figure 1.27). The major circuit is Trivandrum-Pariappally-Kollam. Majority of tourists coming to Kollam are those from different parts of the country and world who arrive at Trivandrum by air or train and the reach Kollam by train or road. This is the major circuit. After attending the village tour, tourists generally move to Alappuzha by city to city backwater tour or by KSWT Dept. facility. Some of them take road route via NH47. Some tourists visit Thenmala eco-

tourism facility and return. Unfortunately they seldom stay in Kollam.

Other circuits include the Trivandrum-Kottarakkara-Thenmala-Palaruvi (from south), Alappuzha-Kayamkulam-Kollam and Kottayam-Kottarakkara-Palaruvi-Thenmala (from north). These circuits are transit in nature. A minor circuit is also there through which tourists from Trivandrum reach Thenmala via Kulathupuzha. The transit nature is because most of the tourists are not interested in staying at Kollam due to various reasons. The major complaint is that there is no activity here other than backwater cruises. Therefore activity based tourism has to be encouraged along with some value addition of existing tourism products.

Tourist traffic to Kerala shows an



Fig. 1.27 : Existing tourist circuits in Kerala

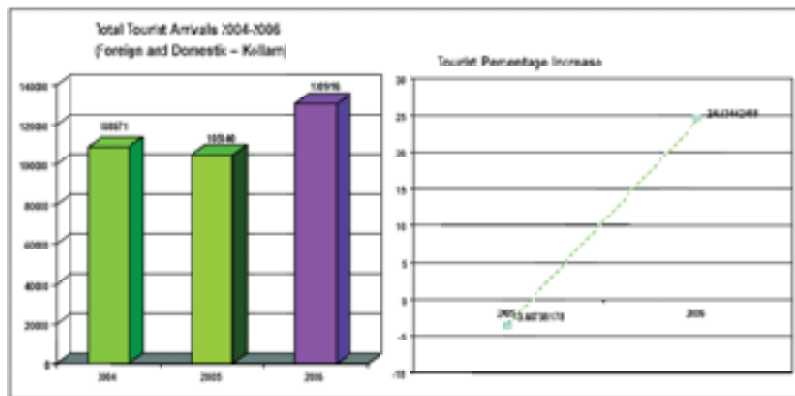


Fig. 1.28 : Trend in total tourist's arrival (foreign and domestic) in Kollam 2004-06

increasing trend over the past few years. It is estimated that the total tourist inflow to Kerala is 6700258 during 2006, showing an increase of 6.47% over the previous year. The drastic fall in the tourist inflow in 2005 is due to Tsunami.

Tourist traffic to Kollam shows an increasing trend over the past few years. It is estimated that the total tourist inflow to Kollam is 130916 during 2006, showing an increase of 14.63% over the previous year (Figure 1.28).

Foreign tourist traffic to Kollam decreased in 2005 due to Tsunami and then increased in the last year. It is estimated that the foreign tourist inflow to Kollam is 7918 during 2006, showing an increase of 16.21% over the previous year.

Domestic tourist traffic to Kollam shows an increasing trend over the past few years. It is estimated that the domestic tourist inflow to Kollam is 122998 during 2006, showing an increase of only 25.21% over the previous year.

At the State level the total revenue generated is showing an increasing trend. In the district for this analysis there is lack of data, so the revenue generated by the DTPC is taken as the criteria.

The revenue generated by DTPC shows that presently there is an increasing trend after a decrease in 2003-04. The number of private players in the tourism sector, especially houseboat service sector has to be taken into account while calculating the overall development trend. Due to non-availability of exact data on private sector turnover, it is very difficult to substantiate the development trend based on revenue generation. However, it is true that the tourism sector in Kollam is showing an increasing trend over the years and that new firms are coming up in investing

in backwater tourism, facilities are increasing and a competitive trend exists among investors. Home stays are also doing well and more people are being encouraged to apply for registration under home stay concept. So, overall there is an increasing trend of tourism in the district showing its tremendous potential here.

The major problems are as follows:

- Lack of proper infrastructure facilities
- Poor quality of roads to tourist destinations
- Lack of boat jetties and other basic amenities at the existing destinations.
- Absence of parking spaces at tourist destinations.
- Lack of tourism signage
- Lack of proper waste management plants /systems in tourist centres
- Pollution of backwaters and declared National Waterway
- Lack of guided tours / trekking options at wild life sanctuary.
- Lack of coordination between line departments and agencies for time bound implementation of tourism projects.
- Lack of tourism study centre

Basically, Kollam has a great advantage of all that Kerala can offer as God's own country. Natural resources occupy a predominant role as far as tourism potential is concerned. Ashtamudi backwaters, Sasthamkotta freshwater lake, Thenmala, Achankoil, Palaruvi, and Paravur, under utilized beaches such as Thirumullavaram, Mundakkal etc. are unique. The location Ambanad offers the characteristics of a hill station. The Vellimon area has untapped tourism potential. Culture occupies the second position because of diverse art and cultural attractions available in Kollam. The temple festivals attract a substantial number of tourists and a calendar of all such events

can act as a strong motivation among the tourists to chart out their journeys in advance. Villages of Kollam, especially backwater island villages offer a novel experience of life of Kerala they give. The handicrafts – traditional art and craft works of Kollam- screw pine, papal leaf art work, lace, coir making, bamboo crafts etc are yet to be tapped for tourism. Home stays are another potential avenue because of the special experience-stay opportunity with the people of Kerala- they give. Heritage attractions are also most important.

The colonial architectural assets viz. Government Guest House, Thevally Palace, Chinese Palace, Tangassery fort, Light house, Kottukal cave temple etc and historically important places viz. Mayyanad, Kundara, Elampalluur, Panmana etc. are worth visiting. Kollam canal can be developed as a tourism corridor than a mere waterway.

The approach "make Kollam a complete destination for all seasons" is the need of the hour. New tourism circuits have to be developed in such a way that the unseen attractions of Kollam has to be linked with our immense variety of forms of tourism which form part of a tourism product. Basic amenities at all prominent and potential tourism spots have to be ensured in a phased manner based on priority and time-bound frame work. More accommodation facilities have to be encouraged to its maximum. Activity based tourism has tremendous scope in Kollam since it has a rich cultural and traditional heritage of its kind. Promotion and marketing campaigns connecting all our features under a proper branding will substantiate our efforts in the desired results on all aspects.

2.2.19. Finance

The district has 191 commercial bank branches, 40 DCCB branches, 121 PACS (Primary Agricultural Co-operative Society) and 4 Primary Co-operative and Agriculture and Rural Development Banks (PCARDB) spread through out the district. Leaving Urban Kollam, Anchal Block and Mukhathala Block are having sufficient bank branches, compared to the density of banks in other blocks. Leaving Trivandrum and Ernakulam having highest number of registered chit funds, Kollam ranks 3rd which shows private chit funds/institutions still plays a vital role in the

District's economy.

Business position is the aggregate of advances and deposits on the district which mainly depend on credit off take by the cashew industry, which in turn depends on international demands. The global demand for cashew depends on stable economy which has a direct bearing on this industry. Though the district has other traditional and progressive industries, the highest quantum is contributed by cashew sector. The district also attracts NRI deposits from gulf countries. The remittances from other countries like USA, UK etc, are less compared to neighbouring districts like Pathanamthitta. Business position as on March 2005 shows that under deposits, the share of Kollam in Kerala is 5.8% and 0.22% in India. Kollam share in Kerala is 6.3% and 0.22% in Kerala and India respectively under advances.

The spatial distribution of deposits shows that it is sporadically distributed within the district. More deposits are seen in Chathanur, Pathanapuram, Karavalur, Kareepra Grama Panchayats. LSGI Wise Variation of Advance shows that it is more in Karavallor, Kareepra and Kottarakkara. Comparative study of credit flow under priority sector lending in Kollam with neighboring Districts during 2002-03, 2003-04, 2004-05 shows that during 2002 – 2003 and 2003 – 2004, overall performance of Kollam is better than other districts under Agriculture and Teritory sector, Trivandrum district being slightly better than us. Comparative study of credit flow under various sectors in Kollam with neighbouring Districts during 2004- 2005 shows that only area where Kollam excels neighbouring districts is in SSI sector and it shows lowest in minor irrigation. The flow of credit in Kollam district is larger compared to neighbouring districts. It constitutes 12.23% share of the State.

Flow of credit under agriculture sector is discussed here. Over the years the LSGI with maximum flow is found to be changing. During 2002 Mayanadu had the highest flow of credit, during 2003 it was Neduvathur and during 2004 it was Kollam Corporation and Edamulakkal. From the Spatial distribution of flow of credit under agriculture sector during 2005, it is seen that Kollam Corporation has the highest flow during 2005.

LSGI wise variation of flow of credit under Non Farm Sector (NFS) shows that over the years Kollam Corporation and Neduvathur constantly have higher NFS compared to other LSGIs. LSGI wise variation of Other Priority Sector (OPS) shows that though during 2002 Neduvathur and Kadakkal had highest values, during 2003 to 2005 Kollam Corporation has maximum values. LSGI wise variation of Total Priority Sector (TPS) shows that, from 2002 to 2005 Kollam Corporation and Neduvathur have maximum values. LSGI Wise Variation of Non Priority Sector (NPS) shows that during 2002 Kadakkal, Neduvathur, Edamulakkal and Chathanur had highest values. By 2005 it was Kollam Corporation. LSGI wise variation of Total Priority Sector Lending shows that during 2002 kadakkal, Neduvathur, Edamulakkal and Chathanur had highest values. By

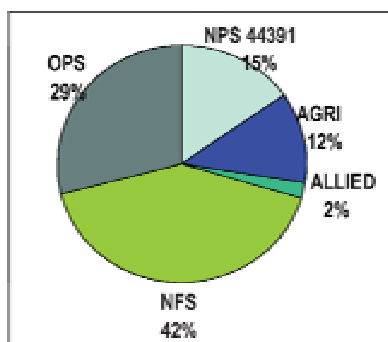


Fig. 1.29 : Pattern of credit plan 2005-06

2005 it was Kollam Corporation and Neduvathur. Flow of credit to important areas in Primary Sector shows that 70% of the flow is for crop loan. It can be seen that maximum is for NSF (42%). Sector wise achievement under District Credit Plan shows that maximum achievement (67%) is in secondary sector. Pattern of credit plan for 2005-06 (Rs. in lakhs) is given in Figure 1.29. It can be seen that maximum is for NSF (42%).

The NFS shows the maximum credit delivery due to high credit off take by cashew exporters.

Non Performing Assets (NPA) is the assets where over dues of principle and interests exists for more than 90 days. Sector wise NPA in Public Sector Banks as on March 2004 at National level shows that, NPAs are more under SSI than Agriculture NPAs of private sector banks under NPS is three times of priority sector NPAs, unlike public sector banks where NPAs are almost equal under priority or

non priority. The NPAs under SSI is comparatively higher than Agriculture/ OPS. The NPA of private sector banks under NPS is huge compared to Priority Sector lending showing their outlay under this sector requires further improvement.

Cumulative CD Ratios of commercial banks in the country (as of June 04) shows that CD ratio of neighboring states of Tamilnadu and Karnadaka stood at 90% and 66% respectively. Our credit absorption capacity is evidently low compared to other States. In Kollam the spatial distribution shows that Anchal has the maximum value of CD Ratio in 2005. Priority Sector Disbursement is the disbursement of funds to primary, secondary and tertiary sector including agriculture, industry, housing and other service sectors. From the comparative study of the priority sector disbursement, it is found that the percentage of achievement has come down in 2004-2005 in Kollam compared to State.

Comapring with growth of population per bank branch in Kerala (1991 to 2001), the average population per branch is almost same for Kollam. Leaving Wayanadu and Idukki, no. of branches of scheduled commercial banks opened is encouraging. Priority sector advance disbursed by commercial banks in Kerala from 1992 to 2004 shows that the percentatge of Priority Sector lending is above the benchmark of 40% and under agriculture lending the benchmark of 18% could not be achieved. Achievements in the Priority Sector Advances in Kollam District show that the achievement is generally above the target. Sector wise achievement under District Credit Plan (DCP) during 2000-01 to 2004-2005 shows (Figure 1.30) that during 2003 to 2005 the DCP targets were achieved.

DCP achievement for Kollam from 2004-05 to 2005-06 shows that under



Costumers in Bank - Kollam

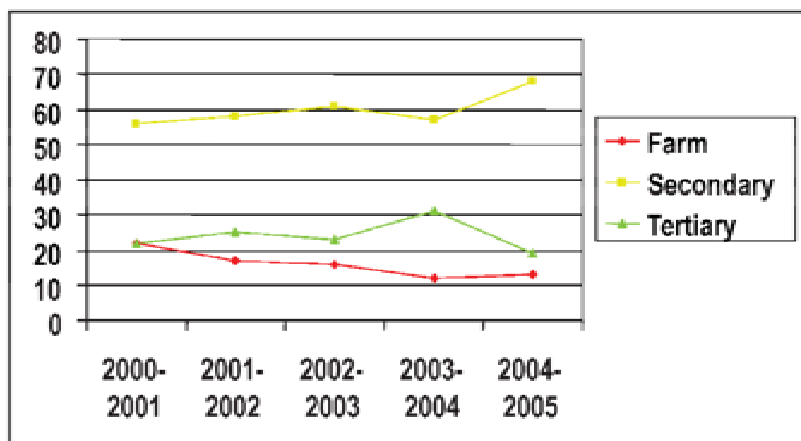


Fig. 1.30 : Trend in percentage advance in development

agriculture credit growth is commendable of commercial banks. Agency-wise annual credit flow to agriculture and TPS in Kerala 2000-01 to 2003-04 shows that in both priority sector and agriculture, the percentage increase to previous year is above 25%. Credit Flow under various sectors in Kollam from 2002 – 03 to 2004-05 shows (Figure 1.31) that the credit flow except in case of tertiary sector is increasing over the years.

Performance of Kollam District during March 1995 to March 2005 shows that remarkably, for more than a decade, the priority sector lending is above 50% well above the bench mark of 40% stipulated by Government of India.

Crop loan plays a vital role in increasing agricultural production. As given in analysis, there is low credit flow in the mid land and high land in general. The credit flow to agriculture sector is affected since agricultural holdings are small and fragmented with average holding of 0.39 hectare. The low credit flow in the area immediately after the coastal belt could be due to the shrinking of paddy cultivation. Credit off take under animal husbandry

sector is not improving and the credit flow is meager in fishing sector. As analysed above, almost the entire district is having low NFS during 2005. This means that there is lack of overall industrial development in the district. The higher value in Kollam Corporation is because the credit delivery is more there. However the credit absorbed here could be utilized elsewhere. The growth under service sector and its distribution in the district is reasonable as evident from the discussion on OPS. Still there is scope for improvement in this sector as it is directly linked to flow of credit in agriculture sector and NFS. The distortions under CD ratio in different areas are due to high credit and equally high deposit in the urban centres with low credit off take commensurate with the deposit mobilized. As analysed above, the flow of credit to primary sector shows that majority of the credit is channelised for crop loan. There is meager flow to fisheries sector due to various reasons. As analysed above, the NFS shows the maximum credit delivery due to high credit off take by cashew exporters. This shows the potential for this sector in the district.

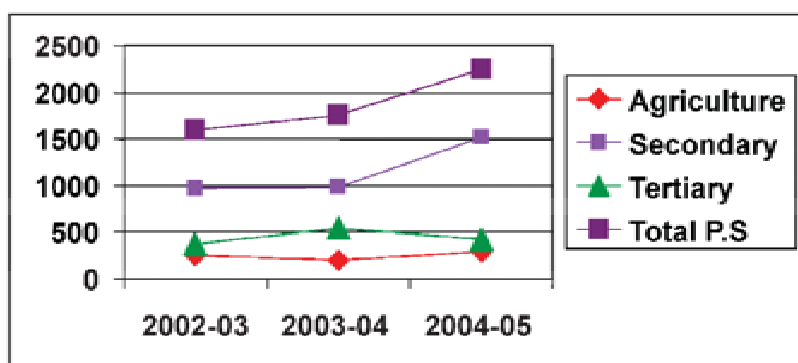


Fig. 1.31 : Trend in credit flow in priority sectors

From the analysis is clear that the maximum credit flow is towards Non farm sector. However through the management of funds from various sources all the three sectors can be developed substantially in the district. To bring a substantial boost for agriculture and allied sector, community structures can be developed with assistance of Government, Grama Panchayat and banks. The unit cost/ scale of finance is to be revised taking into account the escalation in prices of various inputs required. The essence of the issue under agriculture sector is there is a need for creating a price stabilization fund with an objective to ensure that remunerative prices are obtained by farmers. Similarly the service sector in the district also witnessed tremendous growth recently considering the general uptrend in the economy during last five years. As the general saying, any first rate proposal going into the hands of a 2nd rate entrepreneur will go waste or any 2nd rate proposal going to a first rate entrepreneur will be a success. There are abundant avenues for resources around us. Only thing is that we have to pick the most suited one for our requirement. The finance sub committee felt that the resource crunch need not be a bar for taking up good, viable, feasible proposals by the supplementing agencies or entrepreneurs.

Resource needs of rural sector not to be neglected and rural areas have to be empowered. ATMs with wireless connectivity through CDMA Technology can be provided in rural areas as no electricity is required. In case of urban areas, Municipalities now look to capital market for funds as a Special Purpose Vehicle. House holds have largest share in municipal bonds. Our growth is more domestic driven while others have export led growth. Labour market has to be more flexible. High interest charged by microfinance agencies has to be reduced. Credit guarantee scheme for farmers can be mooted by RBI. Earlier the concept was to do business then think risk, now it is to weigh risk then do business. So overall there is great scope for development of certain sectors in the district which can be enhanced through financial support from various funding agencies.

2.3 Spatial Analysis

In the spatial analysis, the factors analysed are spatial pattern based on settlement studies, spatial pattern evolved from the study of resources, environmental aspects and social aspects.

Initially, the activity pattern existing within the district is derived based on the study of the spatial distribution of the aspects covered in the settlement studies. Here three aspects namely, the land use concentration pattern, functional character and urban profile, which cover all the aspects taken for the study of the settlements (Functional character is determined based on population distribution and land use, Urban profile is derived taking in to account occupational structure and hierarchy of settlements, the land use concentration pattern is studied based on the land use analysis) are combined in order to evolve the activity pattern. The analysis shows that the entire district can be zoned into five. viz. urban activity area, secondary activity area, agriculture, animal husbandry and cottage industries activity area, rural activity area (intensive agriculture activity area) and agriculture area non detrimental to forest (Figure 1.32).



Fig. 1.32 : Activity pattern of the District

As per the settlement analysis, it is found that the settlements in the District can be grouped into four hierarchies (Figure 1.33). The 1st order settlement is Kollam Corporation. Chathannur and Anchal Grama Panchayats are the proposed 2nd order settlements other than the existing 2nd order settlements, Karunagappally, Kottarakkara and Punalur. The 3rd order settlements proposed are Thevalakkara,

Kadackal, Velinallur, Vettikkavala, Pathanapuram, Kundara and Sasthamcotta Grama Panchayats. The remaining Grama Panchayats are classified as 4th order settlements. The study of nodes revealed that three higher order nodes are there in the district. The 1st order node is Chinnakkada in Kollam Corporation. Karunagappally, Kottarakkara, Punalur, Anchal and Chathannur are the 2nd order nodes.



Fig. 1.33: Hierarchy of settlement and nodes

roads connecting the lower order settlements with the higher order settlements and minor roads connecting lower order settlements each other.

A final proposal of the road network is derived taking in to account those existing roads and suggesting new road links in those areas where the existing road is insufficient.

National Highway Department has a proposal of a new NH (NH 220) from

Kollam to Theni via Chengannur, Changanassery and Kottayam. As per the tentative alignment, this NH connects following centres within Kollam District viz. Kollam HS Jn - Thevally-Anchallummodu-Elampalloor-East Kallada-Bharanikavu-Chakkuvely-Sooranad and then enters Pathanamthitta District.

The initial phase of this proposed alignment (of NH 220) from Kollam HS to Elampalloor and the last phase Bharanikavu-Sooranad are not included in the suggested alignment of road derived based on the settlement studies. The first phase of the proposed NH-220 is close and parallel to the existing NH-208 and both ends of Kollam (Chinnakkada) and Elampalloor are already connected by NH -208.

The only additional junction served by the first phase of the NH 220, is Anchallummodu, which is already well connected to Chinnakkada and hence the alignment of the first phase of the proposed NH- 220 is not having much significance.

A new alignment from Kollam (Chinnakkada) to Kannanallur is proposed as the first phase of the NH -220. This



Fig. 1.34 : Schematic representation of the road net work

stretch of the road as per the approved Master Plan for Kollam Town is proposed as a 20 m wide road. The last phase of the proposed NH- 220 is maintained as such. So the revised suggested alignment for the NH-220 is Kollam (Chinnakkada) – Kannanalloor-Kundara-Bharanikavu-Chakkuvely-Sooranad.

The transportation net work planned for connecting important junctions and settlements includes three types of roads net work viz: Major roads, Sub major roads, and Minor roads.

2.3.1. Major Roads

Major roads as per the planning concept, consists of four lane roads. The following roads are included in major roads.

1. The three National Highways (NH -47 , NH -208, NH -220) passing through the district.
2. A new road Kottiyam- Kannanallur-Kundara –Bharanikkav-Karunagapally. (This is an existing road but not of the status of a major road)
3. Existing State Highways. Following stretches of state highways pass through the district
 - a. Nilamel-Ayur –Kottarakkara-Kulakkada (MC Road)
 - b. Ayur-Anchal-Punalur-Pathanapuram
 - c. Paripally-Nilamel-Chithara
 - d. Kulathupuzha-Chithara
 - e. Sasthamcotta-Bharanikavu-Adoor
4. Coastal road from Thangassey port to Paravur and its extension to Chathanur.
5. Road starting from NH 47 near Chathanur to Ayur through Velinallur.

2.3.2. Sub Major Roads

The following roads are included in the

sub major roads category.

1. Chavara- Sasthankotta road
2. Road from Paravur to Varkala
3. Paravur- Parippally Road

2.3.3. Minor roads

The following roads are included in minor roads category.

1. Kannanalloor- Pooyappally- Ayur Road
2. Bharanikavu–Chandamukku (near Kottarakkara)- Pooyappally–Kuriumoode Jn. Road
3. Kottarkkara – Pathanapuram Road
4. Anchal – Kadackal Road
5. Anchal – Thenmala Road

2.4 Spatial Structure

The spatial structure of the district is obtained by overlaying the activity pattern, road network and hierarchy of settlements derived (Figure 1.35).

Since the resources are the backbone of any economy, the spatial pattern of major

resources in the district also need to be incorporated to detail out the spatial structure evolved from the settlement studies. The key sectors which can contribute to the spatial structure are agriculture, animal husbandry, industries, mining and geology, tourism and environment which have manifestations on land.

The land use pattern clearly reveals a concentration of agriculture land in the mid land area of the district. While wet agricultural land, though not much in area, is predominantly concentrated in the low land area, dry agriculture contributes to the major chunk of agricultural land in the mid land area.

As per the Local Level Analysis Reports, prepared so far by the SICs in connection with the preparation of LDPs, the major economic base of the LSGIs in mid, mid up land and some of the LSGIs in high land regions is agriculture.

Thus there is a concentration of agriculture activities in the mid and mid up land regions.

For the purpose of analysis, these crops in the district are classified as major , sub major and minor crops based on area of cultivation and revenue generated. The crops included in major crops are Coconut, Rubber and Pepper. Banana, Rice, Tapioca and Arecanut are the sub-major crops. All the remaining crops are classified as the minor crops. It is noticeable that all the three major crops identified are commercial crops.

For evolving the crop wise spatial



Fig. 1.35: Spatial Structure of the district obtained by overlaying the activity pattern, road net work and hierarchy of settlements

pattern of the district, detailed analysis of major and sub major crops are made. Since Cashew tops the maximum average farm price at the State level among the minor crops, it is also included in the analysis. The analysis includes land use pattern, crop suitability, and spatial distribution of cropping intensity of the selected crops. [Cropping intensity of a particular crop in an LSGI is the ratio between (the area under cultivation of that crop in the LSGI to the total cropped area in the LSGI) and the (Area under cultivation of that crop in the district to the total cropped area in the district)]. Higher value of cropping intensity (i.e., more than 1) indicates that the intensity of cultivation of that particular crop is more than the average intensity of cultivation of the same crop in the district.

From the analysis of major crops, three distinct patterns of cultivation of major crops viz. coconut, rubber and pepper are seen with coconut concentrated in the coastal belt, rubber concentrated in the mid land and mid up land areas and pepper concentrated in the up land and high land regions of the district. Among the sub major crops, only paddy has a distinct cropping pattern with concentration in the mid land area. Hence from the study of the intense cropping area of major and sub major crops, a distinctive pattern of cropping can be observed.

Despite the pressure due to urban land demand, this area needs to be developed keeping in mind the environmental impact of water logged paddy land which can act as water recharging pools as well. In the agriculture development perspective, rubber undoubtedly is the major cultivation for the district. There is a clear-cut pattern of intense agricultural area in the mid land area comprising primarily of rubber cultivation. The eastern tract of the district is obviously forest area, which is below the 33% standard as stipulated by the Ministry of Environment and Forests. So this area needs to be treated with utmost care for its development even though there are areas where rubber and pepper are intensely cultivated.

In a nutshell, there are four distinctive agriculture development patterns in the district.

1. Sparsely distributed crop cultivation area in the low land where homestead cultivation such as coconut, jackfruit etc,

can be promoted.

2. Mixed cultivation area in the low –mid land area where paddy cultivation can be sustained and cashew, vegetable and fodder cultivation etc can be promoted.
3. Intense crop cultivation area in the mid land where Rubber can be sustained and pineapple and cashew cultivation etc. can be promoted.
4. Resource based area where forest resources are to be conserved. Intense afforestation is to be promoted while rubber and pepper cultivation areas in between are to be sustained.

For evolving the activity pattern of animal husbandry sector, distribution of major livestock viz. cattle, buffaloes and goats which form more than 99% of total livestock in the district and poultry are considered. To get the concentration of animals and poultry with respect to the geographical area of each LSGI, spatial distribution of density (total number per unit area) of each of the above species are prepared based on the data collected by the special TAC of animal husbandry and dairy development sector.

Also from the local aspirations elaborated in the Local Level Analysis Reports prepared by the SICc in connection with the preparation of LDPs, it is seen that animal husbandry activities are considered as one of the important economic bases in the LSGIs towards northern and southern parts of the district.

In the district, cattle constitute about 57% of total livestock population. From the analysis of spatial distribution of density (cattle per Sq.Km) of population of cattle, it is seen that there is a concentration in the western part of the district (low land and portions of mid land adjacent to low land) except Kollam Corporation and surrounding areas. Though the total number of buffaloes in the district is considerably small (Only 1 % of total live stock population), from the point of view of production of milk and meat, buffaloes play an important role. From the spatial distribution of density of buffaloes, it is seen that the concentration is again to the western part of the district mainly in the low land area. Goats constitute about 41 % of total live stock population. As there is quick return in goat rearing which need comparatively less area of land, goat rearing activity has got importance. The

spatial distribution of density of goats shows a concentration in the west and central area of the district. Poultry consists of fowls, duck and other birds of which the major part is that of fowls. As in the case of State, backyard poultry rearing is practiced in the district also. Analysis of spatial distribution of density of poultry per sq.Km shows a concentration in low and mid land area of the district. In general notwithstanding the existing potential for animal husbandry activities in the low and mid land area, the unexploited potential in the mid upland is also to be explored for promoting animal husbandry activities.

Industrial land use concentration clearly reveals a concentration of industrial land in the low land area of the district, in particular in and around Kollam Corporation area. Also from the Local Level Analysis Reports, it is seen that LSGIs in and around Kollam Corporation have identified industrial development as their major economic activity.

As per the sectoral analysis made by Sub committee of special TAC on 'industries and trade', there are mainly four types of industries in the district. They are large and medium, traditional industries such as Handloom, Coir, Cashew, Khadi, small-scale industries and Coir co-operatives.

As per the spatial distribution of large and medium industries they are concentrated in and around the urban centers of the District and also along the major traffic corridors.

From the analysis of spatial distribution of cashew industries, it is clear that Cashew industries are more or less concentrated in the mid land region along NH 208.

Also from the sectoral analysis of industries sector, it is seen that the handloom industries are concentrated in Kollam corporation area and Khadi industries are concentrated in low land area.

It is seen from the spatial distribution of SSI units in the district that the concentration of SSI units is generally in the urban centres. Also from the spatial distribution, it is found that the coir cooperative societies are mainly concentrated along the Coastal belt and Ashtamudi Kayal area. When the spatial concentration of all industries together is analyzed it is clearly seen that concentration of industries are in the low and mid land regions. However in order

to sieve out the major industrial concentration areas the spatial pattern is evolved based on the criteria of above-district average values of various types of industries

The spatial pattern thus evolved from this clearly shows that apart from Corporation, there is a definite concentration of industrial area in the northern and southern coastal belt.

Having a coastal stretch of 37 Km and enriched with numerous inland water bodies including the back waters, the district has immense potential for the development of fishing activities. From the study of fisheries sector, it is evident that there is good scope for the development of under utilized potentials of marine activities in the coastal area and also the inland fishing activities in and around Ashtamudi kayal.

Mining activities are predominant in the district as other neighboring districts are concerned. Panmana Grama Panchayat is well known due to the presence of the large-scale industry, Kerala Minerals and Metals Ltd (KMML). Two of the most potential mining activities in the district are those of Mineral sand and China clay.

From the analysis of tourism sector, it is found that Kollam Corporation, Thenmala Grama Panchayat, Paravur municipality, Munroethuruth Grama Panchayat and Perayam Grama Panchayat are the main potential areas for tourism activities. From the sectoral studies it is also found that, in order to make the tourists stay in Kollam it is essential to develop the existing tourism potential of Kollam Corporation area. Further the potentials of Thenmala, Paravur and Munroe Thuruth are to be enhanced. The immense potential, of portions of Ashtamudi kayal and near by local bodies, in particular of Perayam area needs to be enhanced.

Improvement in quality of life cannot be achieved solely through economic development. Various social aspects will also influence the comprehensive development of an area. Here the spatial pattern of social backwardness is looked into for enhancing the quality of life of people in the backward areas. Social backwardness is closely linked to economic aspects and also it is quite often seen among the Scheduled Castes and Scheduled Tribes. Hence the social backwardness is measured in terms of

these two criteria – number of families Below Poverty Line (BPL) and number of SC/ST families. Those Local Self Government Institutions where both the number of BPL and SC/ST families are higher than the district average (BPL concentration index and SC/ST concentration index greater than or equal to one) are taken as most socially backward. The socially backward areas of the district are concentrated in the central and eastern parts of the District

In terms of pollution the most critical areas in the district are Kollam Corporation, and surrounding local bodies and the Ashtamudi Kayal region. Thus the coastal belt at west, back water and lakes in the inland paddy cultivation areas in the mid land, and the forest area at east belong to the environmentally sensitive areas of the District. Therefore due consideration has to be given for environmental conservation in these areas while framing the Development Concept.

Through the study of settlements, major resources and social and environmental aspects, it can be seen that the district has a definite spatial pattern in terms of activities and resources■

[<< previous](#)
[<< VOL-I pers](#)
[next >>](#)



Part 2

Integrated Development Vision

This part comprises the development goals and objectives of the plan derived based on findings of various analyses, the spatial structure of the district and the District Development Concept evolved through integrating sectoral studies and spatial structure.

1. Major findings from Analyses

1. The existing land use pattern of the District shows that agricultural land use in nearly 40% of the total area. The Spatial Distribution of the land use shows that most of the agricultural area is concentrated in the mid land and high land regions of the district. And also the general character of settlements show that most of them are rural in nature, indicating that **there is scope for developing the agriculture sector as one of the economic bases of the District.**
2. The occupational structure of the district shows that (Refer Chapter 6), more than 70% of the total workers engage in non-agricultural pursuits, (even the rural area

shows the same pattern) indicating a declining trend of primary sector in Kollam District. **This indicates that the agricultural land in the district is either unutilized or under utilized.** From the point of view of economic as well as environmental stability of the district, the agricultural land should be put to optimal use.

3. Population growth rate of the district is comparatively low. **An increase of only about 2 lakh population is expected by 2021.**
4. The population growth rate pattern among LSGIs of the District shows that growth rate is the highest in those LSGIs adjacent to Kollam Corporation. **It can be presumed that in migrants to the district prefer to live in the periphery of urban areas rather than within.** If this tendency is continued it will result in the conversion of agricultural land in rural areas for residential and other non-agricultural purposes resulting in the

destruction of the economic base of rural areas.

5. Low work force participation rate and significant out migration from the district indicates **decline in local economic activities both rural and urban in the District.**
6. A shift (towards service sector) in the occupational structure of the rural areas resulting in the possible **destruction of the rural character of rural areas.** There is dilution in the rural nature of the rural areas of the district as far as the occupational structure is considered. At the same time industrial activity in the urban areas is also on the decrease and the share of other workers category in the work force is increasing. This has resulted in **narrowing down of the boundary distinguishing the character of rural and urban areas in terms occupational structure.**
7. A surge in the urban population and extent of urban area is likely in the district

leading to **significant change in the urban profile.**

8. High population density of the district in general and its coastal areas in particular and the presence of fragile ecosystems comprising water bodies, forest and paddy lands **impose restriction on high level of industrialization of the district.**
9. **Even though there exist Urban-Rural continuum, there is a clear demarcation of urban activity concentration areas, agricultural activity areas and forest land areas of the district making it possible to assign definite development character to each region.**
10. The local bodies of the district show **four distinct characters – Urban, rural, semi urban (predominantly urban) and semi rural (predominantly rural), which is a pointer on the likely economic base of each local body.**
11. The district is blessed with potential resources **such as tourism potential spots, minerals, lengthy coastal stretch with potential for fishing, availability of skilled cashew laborers.**
12. The present urban area of Kollam comprising **Kollam Corporation, Punalur and Paravur Municipalities fails to attract economic activities and in turn fails to create developmental impulses.**
13. The spatial analysis of the settlement study shows the existence of **a clear activity pattern in the district comprising Urban activity zone, Agricultural activity zone, non detrimental to forest zone, Intense agricultural activity zone, Secondary activity zone and Agricultural allied activity zone.**
14. On analyzing the sectors related to major resources such as Agriculture, Industries, Forest, Animal Husbandry, Fisheries, Mining, Tourism etc. it is seen that **the district is having areas of concentration of the above activities. Same is the situation regarding environmentally sensitive areas.**
15. From the analysis of Agricultural Sector, four distinctive agriculture development patterns have evolved viz. **Sparsely distributed crop cultivation area in**

the low land where homestead cultivation such as coconut, jackfruit etc can be promoted, **Mixed cultivation area in the low –mid land area** where paddy cultivation has to be sustained and cashew, vegetable and fodder cultivation etc can be promoted, **Intense crop cultivation area in the mid land** where rubber to be sustained and pineapple and cashew cultivation etc. can be promoted and finally **resource base area** where forest resources are conserved. Here, intense afforestation has to be promoted while rubber and pepper cultivation are sustained.

16. **Industrial developments are mainly concentrated along coastal belt of the district and to the north and north-east side of Ashtamudi Lake.**
17. **Coastal belt is suitable for marine fishing and Ashtamudi Lake and surrounding areas are found suitable for inland fishing.**
18. Mining activities especially **black sand mining has got immense potential within the district;** the potential areas are coastal areas to the north of Kollam Corporation and Ashtamudi kayal and surrounding areas. Also **China clay is found in Kundara and Perayam Grama Panchayats.**
19. **Kollam district, especially the Kollam Corporation and the tourism spots at Thenmala, Paravur, Manrothuruthu and Vellimon area and portions of Ashtamudi and Paravur back waters, has got tremendous tourism potential.**
20. **Ashtamudi lake is deteriorating due to pollution, silting and encroachment.** The coastal area where coastal regulations are applicable, the lake sides etc. which are rich in aquatic bio content as well as the paddy fields and forests are the areas to be given thrust for environmental conservation.
21. **Forest area within the district has got economic potential. Also it is one of the main environmentally sensitive areas of the district.**

2. Development Goals and Objectives

The major development goals set up for the IDDP are,

- Optimum utilization of resources for economic development and social justice
- Attain a certain level of self-sufficiency in primary and secondary sectors

- Attain balanced development
- Ecological conservation and environmental protection.

The major development objectives derived are

- To revitalize the declining growth trend of the district through optimum utilization of resources by identifying the key sectors of development of different areas and coordinating their complementary sectors spatially.
- To selectively concentrate urban and rural economic activities and diversify the economic base mainly through strengthening production sectors
- To conserve the ecologically sensitive areas and to eradicate environmental pollution
- To attain certain level of self-sufficiency especially in the production sector
- To up bring the weaker sections of the society by rendering them job opportunities, better services and social security
- To develop an efficient road network pattern

3. District Development Concept

The process of integrating sectoral studies and spatial structure, to evolve development concept is schematically shown in Figure 2.1.

The development concept of the district, with a balanced spatial structure and development activity zones, gives an overall idea about the direction of development of the District. The concept is derived giving due importance to the environmental aspects of the district and envisages control measures in and around the environmentally sensitive areas. The concept will act as a guiding tool for various sectors of development for formulating their development policy and consequently the sectoral projects and programmes within the sectoral policies.

The district development concept is derived by incorporating the findings of spatial analysis of production sectors in the spatial structure of the district evolved through settlement analysis. The spatial structure comprises of hierarchy of settlements and nodes, road network and activity pattern. Settlements of the district are categorized in to four hierarchies. There is one higher order settlement – the Kollam Corporation –and five second order settlements viz. Karunagapally,

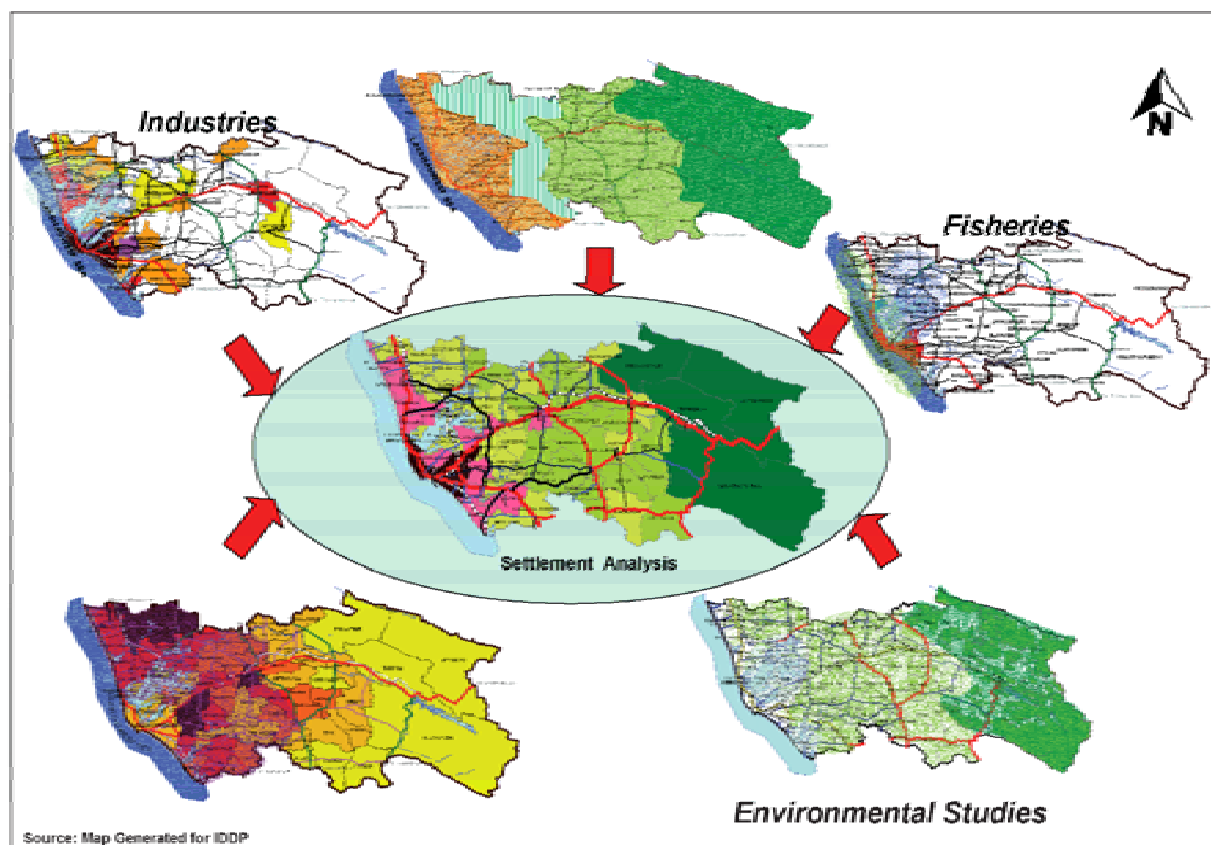


Fig. 2.1: Integration of the findings of spatial analysis of sectors and settlement studies

Kottarakkara, Punalur, Anchal and Chathannoor. The first order settlement is supposed to provide higher order facilities in Education, Health and in other sectors to the entire district population. The second order settlements are supposed to provide second order facilities of various development sectors to the surrounding area. A district level road net work with roads of three hierarchies viz major roads, sub major roads and minor roads are suggested, such that it connects all the higher order nodes and settlement each other. The activity pattern showing the likely major economic activity in each LSGI area is also suggested in the spatial structure of the district.

Through the sectoral studies the activity pattern of those development sectors which has physical manifestation on land is studied. The sectors of agriculture, animal husbandry, industries, tourism, fisheries as well as the environmental and socio-economic aspects are studied in this regard.

3.1. Development Zones

A development zone is delineated by grouping the settlements possessing similar major economic activity pattern as per the

spatial analysis. When a grama panchayat or municipality falls in a particular zone, it only specifies the thrust development sector of those LSGIs. The LSGI can perform other supplementary activities also (as per sectoral detailing).

As per the development concept derived, the district is divided in to six development zones (Figure 2.2).

1. Zone A - Bio Reserve Zone

In order to preserve the environmentally sensitive areas of the district, the areas where natural forest land use is concentrated is delineated as a Bio Reserve Zone. In this zone, no activity that causes deforestation of any kind shall be permitted. Afforestation, cultivation of crops like Rubber, Pineapple and Pepper are found most suitable for this zone. This zone will be under the purview of Forest Conservation Act.

2. Zone B - Agro Development Zone

The intensive agricultural area as per the spatial analysis of settlement studies and the area of concentration of agricultural activity as per the spatial analysis of the Agricultural sector are included in Agro Development zone of the district where intensive agricultural activity can be promoted. In this zone, though

all types of agriculture activities are to be permitted, dry crops like Rubber, Pine apple, Pepper are found more suitable. Also this zone may be used for intensive Animal Husbandry activities.

3. Zone C - Agro-allied Development Zone

The area adjacent to Agro Development zone, where agriculture and allied activities are dominating over urban activities forms the Agro Allied Development Zone. This zone is suitable for the cultivation of crops like Paddy, Coconut, cashew etc. Also animal husbandry activities and agro based industries like cashew processing, food processing etc are very much suitable for this zone. In addition, this zone is suitable for providing wholesale markets and warehousing facilities for supporting the agriculture activities of the Agro Development Zone.

4. Zone D - Special Development Zone

The areas adjacent to Agro Allied Development Zone where urban activities are dominating over rural activities is delineated as Special Development Zone. In this Zone special types of developmental activities, in line with the existing activities, which are found very much suitable for those particular places are intended.

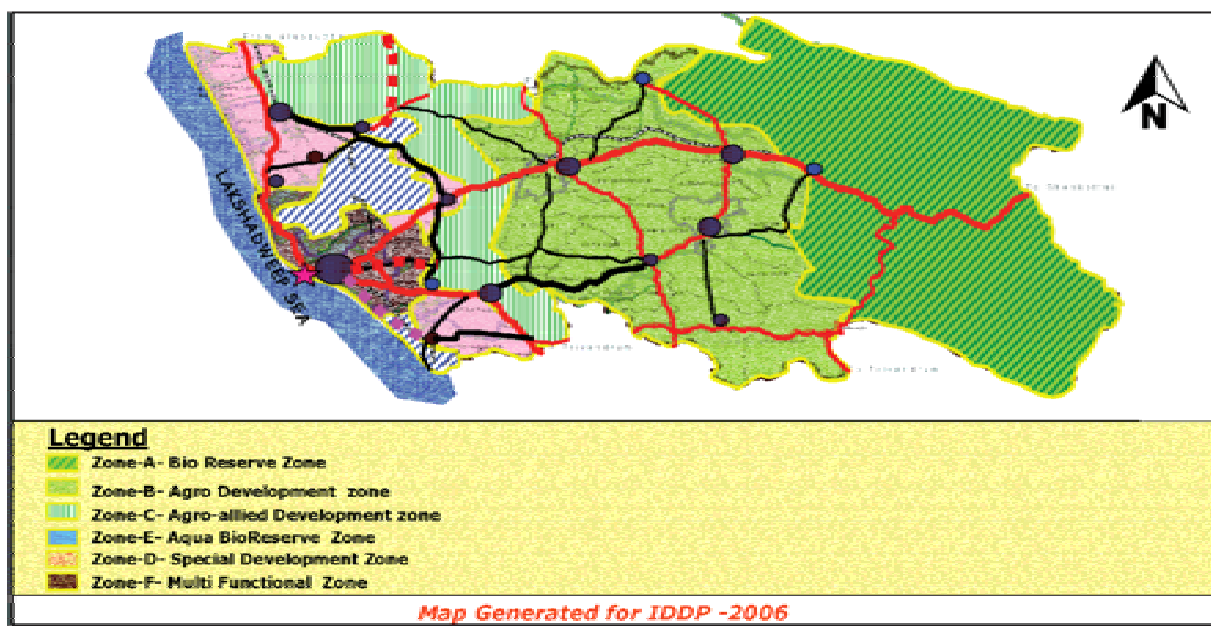


Fig. 2.2: Different Development Zones of the District

Special Development Zone is further sub divided in to four Sub Zones according to the type of activities suitable.

Sub Zone 1: This zone to be developed as a part of Thiruvananthapuram - Kollam IT Corridor and high technology (IT, BT, NT) based industries are to be introduced in this Zone. Sub Zone 2: Industries based on clay, cashew and starch are found suitable for this Sub Zone.

Sub Zone 3: Due to the close proximity of Ashtamudy Kayal and its situation adjacent to NH 208, this zone has tremendous tourism potential. Hence this zone is to be developed as a tourism hub of the District. All developmental activities to promote tourism without affecting the environmental sensitiveness of Ashtamudy Kayal are to be permitted in this Sub Zone.

Sub Zone 4: In this zone, value addition units and industries based on marine resources, coir, plastic and chemicals are suggested. As the existing industries, especially chemical industries are causing pollution utmost care to be taken for installing efficient treatment facilities to prevent pollution from the existing as well as proposed industries.

5. Zone E - Aqua Bio-Reserve Zone

This zone comprises the major water bodies within the district like, Sasthamcotta Lake, Ashtamudy Kayal, Paravur Kayal, Nadayara Kayal and major rivers and surrounding land. The zone is an environmentally sensitive zone. No

activities that affect the water resources are to be permitted in this zone.

To protect the aqua bio resources, rules applicable to CRZ to be enforced in this zone also. Tourism, inland fishing, protection activities for aqua resources, traditional industries like coir which are eco friendly are found suitable in this zone.

The Sasthamcotta kayal and surrounding areas together to be delineated as a watershed area and integrated protection activities are to be planned and implemented in this water shed for the preservation of the lake. Those agricultural activities, fishing activities and other allied activities which do not affect the water resources of the lake are permissible in this zone.

6. Zone F - Multi Functional zone

This zone is delineated including the existing municipal areas and those Local Self Institutions which are found to attain municipal status as per future urban profile of the District. Multi Functional zone is again classified into multi functional zone 1st Order, and multi functional zone – 2nd order.

1st Order Multi functional zone: In this zone all urban activities including higher order educational and health care facilities and a transportation net work copping up with the requirements etc are to be made available. This zone will act as a service centre for the entire district. Suitable projects and programmes are to be implemented to exploit the urban potential

of this zone. The environmentally sensitive areas of this zone are to be preserved by preventing pollution. For this strict rules and regulation to be enforced in this zone.

2nd Order Multi functional zone: In this zone all type of 2nd order urban activities, 2nd order educational and health care facilities and enabling transportation facilities etc. are to be provided. This zone will act as a service centre for the hinter lands and this zone is very much suitable for industries utilizing agricultural produces of hinter land.

3.2. Hierarchy of Settlements

The proposed hierarchy of settlements required for a balanced distribution of facilities to all the Local Self Government Institutions in the district consists of 1st order settlements, IInd order settlements, IIIrd order settlements and IVth order settlements. The proposed hierarchy of settliment is shown in Figure 2.3.

3.3. Hierarchy of Nodes

The proposed hierarchy of nodes arrived at based on population concentration, centrality with respect to surrounding service area, existing hierarchy of nodes viz Ist order, IInd order and IIIrd order. The hierarchy of nodes (proposed) is shown in Figure 2.4.

3.4. Transportation network

The transport net work with all the four categories of roads is shown in Figure 3.5.

Since almost all the major railway stations along both routs are situated in identified higher order settlements, it can

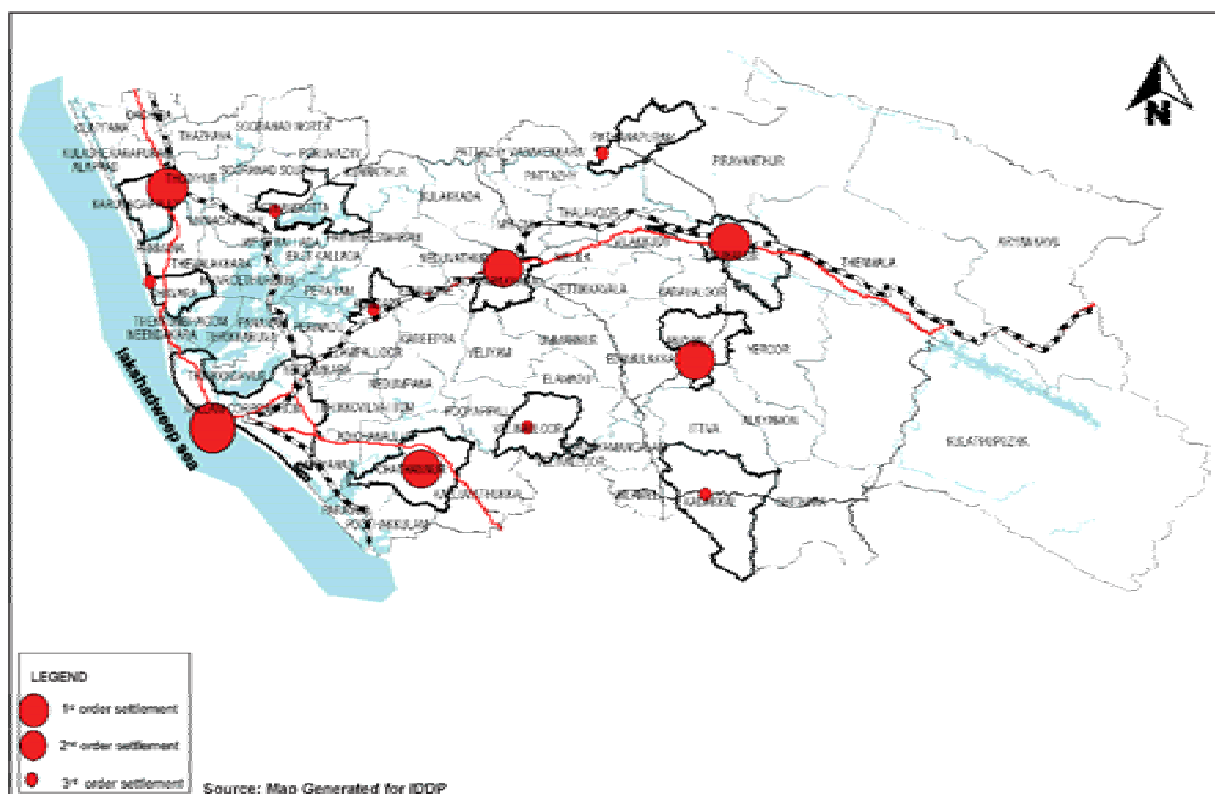


Fig. 2.3 : Hierarchy of settlements

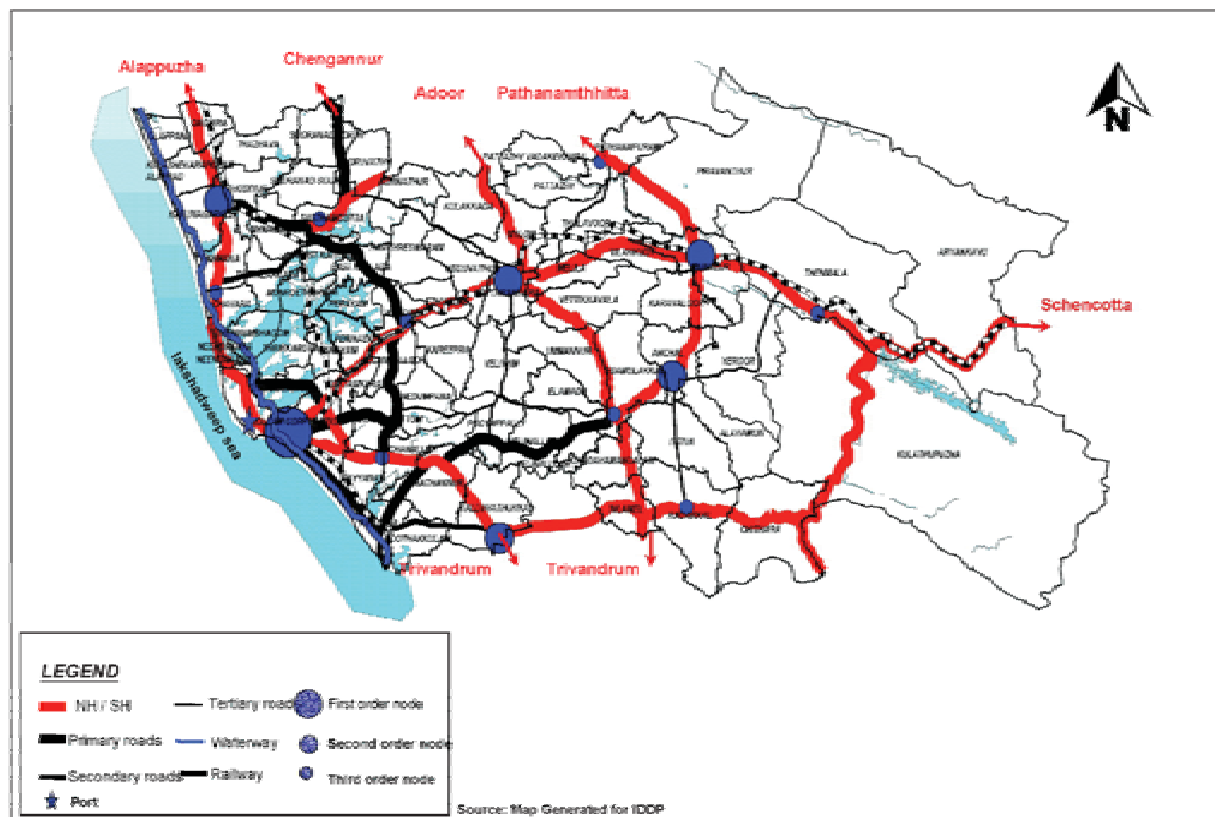


Fig. 2.4 : Future transportation network with hierarchy of nodes

be concluded that the development impulse created due to the presence of railway stations in the respective areas are well taken care of.

The Government of India have

declared the section of west coast canal between Kollam and Kottapuram as National Waterway No:3. Kollam Corporation, Paravur Municipality and Karunagappally are the three major

settlements enroute which will have direct impact due to the water way.

Development of Tangassery Port is a major project on the anvil in the district which when materialized will create direct

impact on economic development. A port road from Tangassery via Paravoor, proposed to meet the NH-47 at Paripally to facilitate cargo movement from Trivandrum side and Eastern part of the District also forms component of the Port development.

Projection of Population and Occupational Structure

Main development objective of the Integrated Development Plan for Kollam is to revitalize the declining growth trend of the District through optimum utilization of the resources in the District and to diversify the economic base through interventions in production sectors. The resources (natural and man made) in sectors like agriculture, animal husbandry, tourism and fisheries as well as the black sand deposits of Kollam coast, give scope for a diversified economic base for the District. At the same time environmental protection should also be given prime importance. Manifestly, optimum utilization of the resources in the District will have reflection in the future occupational structure and future population of the District.

As per the development concept, Kollam is divided into six development zones. Each development zone has its own development potential which has to be taken into account to ascertain the future occupational structure, population and distribution of population within the district. Zone E is an environmentally sensitivity area of the district consisting of mainly the forest land. Any activity that result in deforestation is not permitted here. Only medium level agriculture activities expected here. Hence an enhanced growth in population and work force is not expected in this zone. Only natural growth in population and slight increase in agricultural work force is expected.

In zone B intensive agricultural activity is proposed. This will bring more cultivators and agricultural labourers into the zone. Consequently there will be increase in growth rate population in this zone.

The zone C is suitable for cultivation of crops like paddy, coconut, cashew, etc. Also animal husbandary activities and agro based industries like cashew processing and food processing are found suitable for this zone. Hence increase in the work force is expected in this zone and as a result an increase in populations is expected. The increase in the work force will mainly be in

primary sector i.e., agricultural sector.

In zone D and F, urban activities are dominating over the rural activities. IT/ BT based industries, tourism activities, industries based on marine resources, coir, plastic and chemicals are suggested in this zone. There will enhancement in the number of workers - mainly in secondary and tertiary sector - in this zone and consequent increase in population.

Zone E is formed by major water bodies within the district. Polluting activities are prohibited in the local bodies falling within the zone. Only natural growth in population is expected in this zone. The likely impact on occupational structure also varies according to the nature of activities suggested in the development zones.

The average projected population growth rate (trend based) of the district during the plan period (2021) is 3.5% which can be assumed as the lower limit of the accelerated population growth rate. Definitely the induced developments will accelerate the population growth rate above the lower limit.

However, Kollam cannot abstain from the general trend of decreasing of population growth over decades prevailing among the districts in Kerala. The growth rate during 1991-2001 is 7.38%. Hence it can be assumed that the accelerated future decadal population growth rate of the district will be in the range of 3.5% to 7.38% which is again depends mainly on the migration pattern of population due to the development scenario visualized in the development concept. From the analysis of population with respect to birth rate, death rate and migration, it was found that during 1991-2001, the net migration in the district was -98024 (4.07% of the total population in 1991) indicating excessive outmigration from the district. Since enhanced growth is anticipated in Zones B, C, D and F where 90% of the population

of the district lives, there is all the probability that the net migration will become zero by the end of the plan period. This means that, during the plan period, there will be in migration of 98,024 persons. Percentage wise, it is 3.79% of the total population of the district in 2001. Due to this, the expected population growth rate during 2011-2021 will be 6.8% (sum of trend based growth rate [3%] as found in population projection and 3.79%, the additional growth rate on account of immigration). This is well within the range of 3.5 to 7.38 and towards the upper side of the range. On interpolation, the population growth rate during 2001-2011 is found as 7.00%.

Distribution of projected population among the development zones.

The projected population is distributed among different zones taking into account the existing and the trend based projected population growth rate and the types of development envisaged in each zone as per the development concept.

Average decadal Population growth rate of Zone E and A are 5.1% and 0.38% respectively during 1991-2001. Assuming only trend based population growth during the plan period (only natural growth is expected as per the concept), average decadal population growth in these zones are calculated as 2.49% and 0.10% respectively.

In the case of Zone D and F where high enhanced growth rate is expected, it is assumed that high growth during 1991-2001 will prevail in future also.

In the case of Zone B and C where enhanced growth rate is expected, population growth rate is calculated such that the average population growth rate of the District is 6.8%.

Accordingly the Zone wise population expected during the plan period is shown in Table 2.1.

The share of population in Zone A and

Table 2.1 : Zone wise projected population

Zone	Decadal growth Rate existing	Trend wise growth rate-Projected	Induced growth rate -Projected	Population in 2021
Bio Reserve Zone (Zone A)	0.65	0.1	0.1	109636
Agro Development Zone (Zone B)	7.1	3.8	6.25	881062
Agro Allied Development Zone (Zone C)	9.23	5.77	8.1	566012
Special Development Zone (Zone D)	7.76	4.53	7.76	645500
Aqua Bio Reserve Zone (Zone E)	5.38	2.49	2.49	113642
Multi Functional Zone (Zone F)	7.59	4.16	7.59	621447

E is decreasing whereas in other zone it is increasing. This shows that the suggested population distribution is in conformity with the development concept.

Projection of Work Force

Work force Participation Rate (WPR) at the end of the plan period (2021) based on trend will be about 34.26. But due to the proposed developments (as per development concept) at the end of the plan period, WPR will be higher than this.

It is accepted that a WPR of 40 % indicates a well off society as far as the job opportunities are concerned. The present WPR of Kollam District is only 32% and attaining a WPR of 40% by two decades is very difficult. The WPR of the surrounding Districts shows a maximum value of 34% (in Alappuzha District). The WPR of the State as per 2001 census is only 32.3 %. Considering all these a WPR of 36% is targeted (2% above the lower limit of 34%) as the WPR for future population of Kollam District.

Assuming a uniform increase, WPR of the district will be 34 and 36 by the end of 2011-2021 respectively.

From the analysis of existing WPR Zone wise, it is found that average existing WPR of Zone D and F is the least (31) comparing that of Zone A and B (34) and in Zone B and C (32). Zone D and F being the urban activity zones as per the development concept, the WPR values contradicts the popular belief that urban area creates more job opportunities.

'Selective concentration of urban and rural economic activities and diversification of the economic base through interventions in production sectors to prevent the dilution of economic base of rural and urban areas' is one of the development objectives of the Development Plan. Another objective is to protect the environmentally sensitive areas of the District. These two objectives will have a direct bearing in the determination

Table 2.2 : Zone wise projection of WPR and total workers

Zone	WPR	Population in 2021	Total workers projected	Main workers (Projected)
Bio Reserve Zone (Zone A)	33.2	109636	36399	30123
Agro Development Zone (Zone B)	36.21	881062	319033	264027
Agro Allied Development Zone (Zone C)	37.29	565012	210693	174367
Special Development Zone (Zone D)	35.64	645509	230059	190394
Aqua Bio Reserve Zone (Zone E)	35.71	113642	40582	33565
Multi Functional Zone (Zone F)	37.66	621447	235280	194714

of future WPR and its spatial distribution.

In order to arrest the trend of migration of people from urban to rural areas, WPR in both urban and rural areas should have the same value. That is, the average of WPR in Zone D and F should be equal to that in Zone B and C. But in Zone A and E, the existing WPR is assumed to continue. At the same time the combined average WPR of the district should be equal to 36.

Taking into account of all the above, the Zone wise WPR and number of workers are projected and shown in Table 2.2.

Projected occupational structure

The occupational structure of an area is determined by the constituent category of main workers in the area. In Zone D and C constitute about 44.72% of the total area and 49.25% of population of the district, increase in agricultural labourers and cultivators are expected. Only a marginal increase in house hold, industrial worker and other workers are expected in these zones whereas significant increase in industrial workers and other workers category are expected in Zone D and F. In Zone A and E only moderate change in occupational structure is expected. The previous decades data shows that the main to marginal workers ratio of Kollam is 4.8. The zone wise marginal workers (projected) are calculated using this ratio.

The main workers (projected) is distributed zone wise taking into accounts limiting conditions of an occupational structure intandum with the development concept, zone wise WPR has projected (Table 2) and total main workers are calculated based on the ratio of main to total workers.

The occupational structure so projected is shown in Table 2.3. From the table it is found that the impact on occupational structure of Zone B and C is increase in cultivators and agriculture laborers by about 7% and that in Zone D and F, increase in industrial and service sector workers by about 2%. In Zone A and E the existing scenario remain as such. The projected impact on the occupational structure of a district as a whole is that cultivators and agricultural labourers will increase by 2% each. The house hold industrial workers will increase by 1% and other workers categories will be reduced by 5%.

3.5. Development Policies and Strategies

The general development policy for the district carved out is as follows.

District Development Policy Statement – 2021- General

To economically develop the district by 2021 mean while maintaining an eco-friendly environment where there is optimum production, provision and utilization of goods and services and where

Table 2.3: Projected occupational structure

	Zone	Cultivators - 2001	Agri Labr - 2001	HH ind wrks - 2001	Other 2001	Impact on occupational structure	Cultivators - 2021	Agri Labr - 2021	HH ind wrks - 2021	Other - 2021
		%	%	%	%		%	%	%	%
1	Bio Reserve Zone (Zone A) and Aqua Bio Reserve Zone (Zone E)	6.59	12.94	3.49	76.96	Existing scenario remain as such	7.59	13.94	3.49	75
2	Agro Development Zone (Zone B) and Agro Allied Development Zone (Zone C)	10.9	17.16	2.08	69.84	Increase in Cultivators and Agricultural laborers	14	20.7	2.1	62.84
3	Special Development Zone (Zone D) and Multi Functional Zone (Zone F)	1.41	4.12	2.57	91.88	Increase in Industrial sector workers and service sector workers	1.3	3	3	92.7

people can live a better quality life through social development.

Development Strategies – 2021

- Economic development through production enhancement and value addition of goods
 - Agricultural development by obtaining self sufficiency in food crops and enhancing production in commercial crops
 - Co-ordination of various agencies in irrigation
 - Soil conservation treatments based on the spatial zones defined in the district development concept
 - Fisheries development by development of fish seed production centres, enhancement of fish production for self sufficiency, enhancement of fish production for economy generation
- Development of live stock and poultry products for self sufficiency
- Optimum utilization of the mineral resources of the District especially mineral sand, China clay and ordinary sand
- Economic development in forest sector through optimum utilization of forest products
- Industrial development through development of agro processing industries, strengthening and modernization of traditional industries and revival and diversification of closed and defunct public enterprises
- Tourism development through various measures such as developing back water and beach tourism, promoting eco tourism, destination developments, cultural and traditional tourism and pilgrim tourism, generating a tourism network, developing marketing facilities for enhancing tourism promotion as well as attracting private investors
- Creating an eco-friendly environment
 - Conservation of water bodies
 - Conservation and regeneration of mangroves as well as flora and fauna
 - Conservation of sacred groves
 - Abatement of air pollution
 - Abatement of noise pollution
 - Conservation of hillocks
 - Controlling land pollution
 - Solid waste management
 - Ecological conservation of forests
 - Prevention of critical issues such as forest fire, encroachments etc.
 - Greening of non forest land■

[<< previous](#)
[<< VOL-I pers](#)
[>> end](#)



Part 3

Development Proposals

This part consists of the detailed development proposals of various development sectors based on the district development concept and the policies and strategies for the year 2021 including phasing of activities.

1. Sectoral Proposals

1.1. Agriculture

In the Agriculture Execution Plan for 2021, the proposals for the development of various aspects of agriculture are incorporated taking into account the spatial distribution, labour distribution, agro-climatic characteristics and socio-cultural scenario of the district. Each LSGI has to take up activities based on proposals integrating various agencies for optimum utilization of resources. Surplus production and price fluctuations can be controlled to a greater extent by adopting planned schemes in agriculture.

Technology Interventions require urgent attention. No significant development suitable for local needs is developed during last few decades in farm sector. Necessary

refinement, precision techniques are to be developed through research institutions. Policy changes and social consensus are to be evolved with the participation of stakeholders to have a prosperous farming community in the district.

The proposals of agricultural sector are classified into crop wise proposals for self sufficiency, economy generation, infrastructure proposals such as market development and trading and special proposals such as high tech cultivation.

Proposals for Development of Crops for Self sufficiency

The crops which are targeted for development and productivity improvement are rice, vegetables (bitter gourd, amaranthus, snakegourd, bhindi, brinjal, green chillies, cowpea, cucumber, bottle gourd, ash gourd, pumpkin, moringa, coccinia etc.), tapioca and sesame as per analysis. Rice, vegetables and tapioca constitute a major portion in the day to day diet of Keralites. However, their production is far below the requirement and we are

depending on other states to meet our needs. Hence the first and foremost objective should be to attain self sufficiency in these crops. Measures like enacting suitable legislation for rice, promoting high tech cultivation for vegetables and intensive cultivation for tapioca are required in this regard. In the case of sesame, self sufficiency can be achieved by compulsorily raising the crop in third crop rice fallows of the traditional onttukara tract comprising of Ochira, Karunagapally, Chavara, and Sasthamcotta Block Panchayat areas. According to the district development concept thrust for agriculture is given in the agro development zone and agro allied development zone. So majority of the crop development proposals are concentrated in these zones. Various proposals for development of crops for self sufficiency are detailed location specifically as follows.

Integrated Rice cultivation:

As evident from the sectoral studies, the district suffers heavy dependency of

rice, the major food crop. So it is essential that maximum possible level of self sufficiency is attained in paddy cultivation. This has to be done in an integrated manner as shown in Figure 3.1.

In the present scenario total rice production is 20646 T. As per the requirement analysis, 21000 T of rice by 2011 and 35000 T of rice by 2021 would be required. It is expected that by

coastal sandy tract of Onattukara region. Here existing paddy lands are proposed to be retained and productivity to be increased. The paddy areas to be conserved in various zones shown in the Development Concept have been specifically identified. In all other areas, the paddy fields are to be retained in general. Suggested locations are at all the panchayats except Munroe Island,

North and Mynagappally will be brought under the scheme.

● Paddy Processing Centres:

Timely procurement and processing of rice will help to maintain assured price for cultivators. It will also encourage employment generation. Flour and value added products can be manufactured and made available at lesser costs. The processing centres are intended at Kadakkal, Sasthamcotta and Kottarakkara which are nearer to major paddy areas.

Vegetable cultivation:

Vegetable cultivation has to be done in an integrated manner as shown in Figure 3.2.

73212T vegetable would be required by 2021 and it is expected that by implementing various schemes like 'vegetable seed village' and 'intensive vegetable cultivation and improving productivity' self sufficiency can be achieved in the case of most of the vegetables by 2021.

Tapioca cultivation:

Intensive cultivation of tapioca as inter crop in coconut gardens to be taken up in traditional areas with special thrust in Kadakkal, Kulathupuzha, Kalluvathukkal, Anchal and Poothakulam. In Agro Development Zone, existing area to be retained and productivity to be increased in the Grama Panchayats of Alayamon, Anchal, Neduvathoor, Kottarakkara, Veliyam, Pooyappally, Yeroor, Chadayamangalam, Chithara, Ittiva, Kadakkal, Thalavoor, Vilakkudy, Nilamel, Melila, Mylom, Ummannur, Vettikkavala and Velinalloor. In Agro-allied Development Zone, existing areas to be retained and productivity to be increased in the Grama

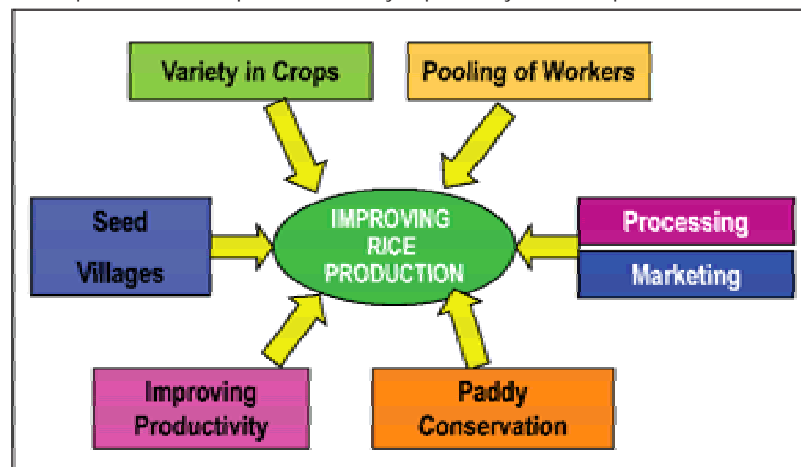


Fig. 3.1 : Integrated rice cultivation – A schematic diagram

implementing various proposals listed below, food security to a certain level can be met by 2021. The following actions and programs are proposed.

● Paddy Seed Villages:

Seed requirement for the district will be met through this programme. Suitable varieties will be selected and multiplied in the seed villages at Mylom, Neduvathur, Thalavoor and Sooranad North. One seed processing centre will also be established at Kottarakkara.

● Improving Rice Production and Productivity through Paddy conservation:

Paddy fields in the entire Agro Development Zone are to be retained and productivity to be increased. In case of Agro allied Development Zone the proposal is to retain the existing area and to increase productivity. Also proper collection, storage marketing and processing systems has to be ensured in this zone. Special attention is to be given to Chittumala chira and Polachira ela. In the case of Special Development and Multi Functional Zones, though the thrust is for development of secondary and tertiary activities, there are certain paddy areas to be retained. The Sub Zone 4 of Special Development Zone comes under Kayamkulam to Chavara

Alappad, Aryankavu, Thekkumbhagam and Neendakara. These areas can also be used for fish culture for the purpose of production enhancement for self sufficiency through fish culture. The proposal for renovation of Grama Panchayat Ponds for Fish Culture and Aqua Culture Estate of fisheries sector can also be linked here.

● Aromatic and Medicinal paddy cultivation:

The proposal intends to propagate the cultivation of special rice like, Njavara, Basmati, and Jeerakasala etc. which are now high in demand. Traditional areas of cultivation like, West Kallada, Sooranad

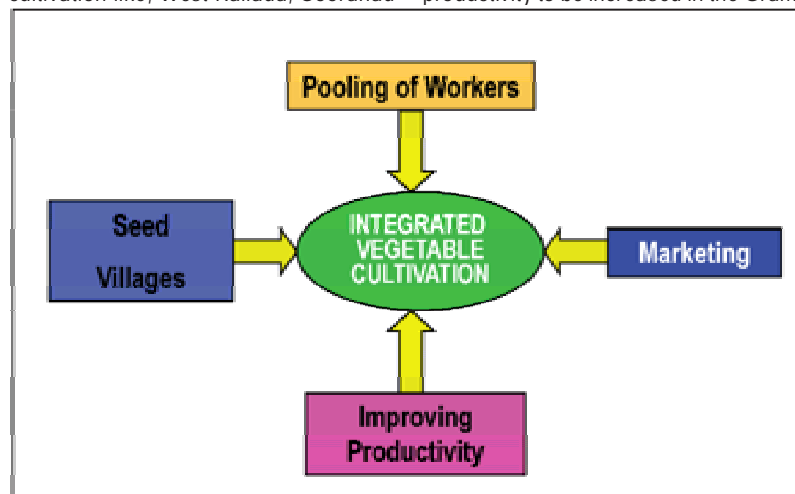


Fig. 3.2: Integrated vegetable cultivation – A schematic diagram

Panchayats of Thazhava, Chathannoor, Kunnathur, Poruvazhy, Sasthamcotta, Sooranad north, Sooranad south, Kulakkada, Kalluvathukkal, Elampalloor, Nedumpna, Pavithreswaram, Mynagappally, Thodiyoor, Ezhukone and Kareepra. In the Multi Functional Zone existing area to be retained and productivity to be increased in Chathannoor Grama Panchayat.

Rural homestead farming:

The proposal intends to provide self sufficiency of common households to their basis needs to some extent. The proposal is to select 25,000 households of average plot area 10 to 30 cents to develop model homestead farms with vermi composting as an integral part and is suggested in almost all LSGIs. Flexi credit model of NABARD can be accepted as a benchmark.

Sesamum cultivation:

The proposal envisages cultivation of Sesamum in summer rice fallows of Onattukara region viz. Clappana, Oachira, Kulasekharapuram, Thazhava, Mynagappally, Thodiyur, Thevalakkara, Chavara, Panmana, Sooranad South, Sooranad North, West Kallada, Sasthamcotta, Kunnathur and Poruvazhy Grama Panchayats. The total paddy area in these Panchayats is more than 1700 Ha. However, Sesamum crop is raised only in about 270 Ha of rice fallows at present. It is proposed to bring additional area of 500 Ha under the crop. Anticipated production at the rate of 350 kg / Ha will be 175 MT. Value addition units are proposed to be set up at Thazhava and Mynagappally.

Proposals for Development of Crops for Economy generation

The crops which are targeted for growth to attain economic development are identified as Rubber (48087 Ha), Coconut (50320 Ha), Pepper (13565 Ha), Banana (9584 Ha), Cashew (4404 ha) and Pineapple (5000 Ha).

It is proposed that by 2021 the entire Agro Development Zone shall be transformed in to Organic Farming Zone (Figure 3.3).

Integrated Rubber Cultivation:

Rubber at present is the highest economy generating commercial crop in the district. However in the long run the promotion of rubber cultivation in the district may prove to be grave as far as

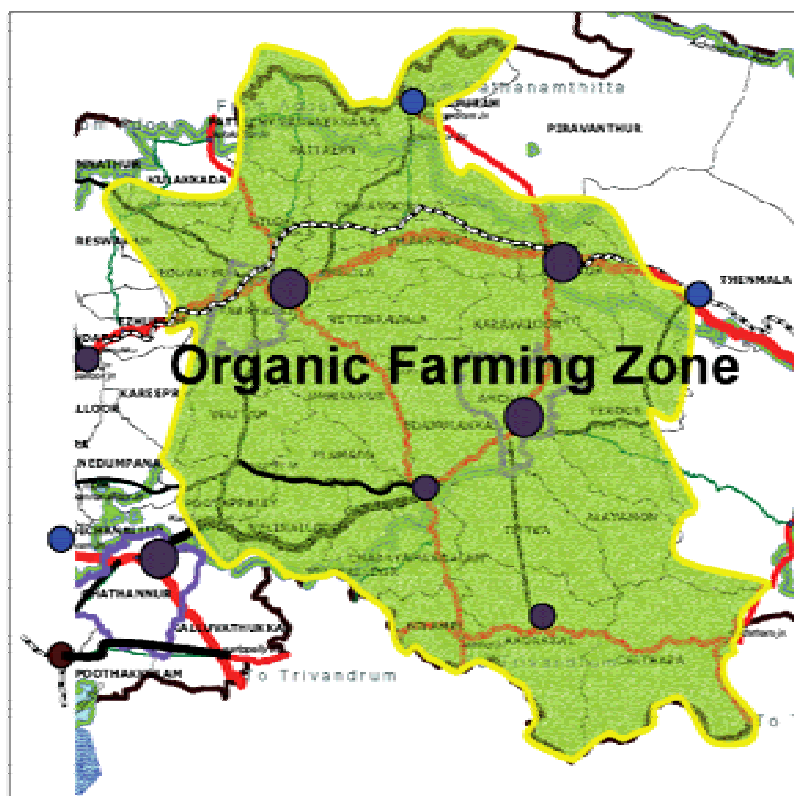


Fig. 3.3 : Organic farming zone

sustainability is considered because rubber is a mono crop. So even in the Agro Development Zone area expansion for rubber is suggested only in few LSGIs.

The LSGIs where restricted rubber cultivation in the Agro allied development Zone is proposed are Kunnathur, Poruvazhy, Sooranad North, Kulakkada, Ezhukone and Kareepra (Productivity to be increased and area to be gradually reduced to 50% by 2021 and Apiculture to be promoted).

The LSGIs where restricted rubber cultivation in the Bio Reserve Zone is proposed are Piravanthoor, Kulathupuzha, Thenmala and Aryankavu (Existing area to be retained and productivity to be increased and Apiculture to be promoted).

The LSGIs where restricted rubber cultivation in the Sub Zone 2 of Multi Functional Zone is proposed are Kottarakkara, Punalur and Anchal (Existing area to be retained and productivity to be increased and Apiculture to be promoted).

Rubber cultivation is not generally proposed in other LSGIs in these Zones as well as in the LSGIs in Aqua Bio Reserve Zone, Sub Zone 1 of Multi Functional Zone and Special Development Zone which are more or less in the coastal belt.

● Expansion of area under rubber cultivation :

Rubber area expansion needs to be approached with social concern and the expansion programme needs to be confined to selected areas of Kulathupuzha, Aryankavu, Thenmala and Piravanthur Grama Panchayats. By 2021 all the plantations would be replaced by high yielding varieties.

● Productivity improvement of Rubber:

The scheme is intended for LSGIs where contiguous area is cultivated with rubber. Replanting of senile plantations and crop management forms part of the scheme. Around 20,000 ha of existing plantations will be brought under the scheme by 2011. Remaining 20,000 ha will be replanted during 2011-2021 period



Rubber cultivation

depending on senility. 39 LSGIs of Zone A, B and C will be benefited.

- **Apiculture in Rubber Plantation:**

Honey bee rearing is a good source of supplementary income for marginal farmers and labours. New planters can also be engaged. Apiculture is to be implemented in 39 Panchayats of Zone A, B and C. 4 lakhs hives in about 40000 Ha is intended to be established.

- **Coconut Cultivation:**

Coconut is another major crop identified in the District. Generally the coastal belt enjoys its concentration. The existing area under coconut is proposed to be retained with productivity increase through rehabilitation. Under area expansion of the Grama Panchayats in Sub Zone 4 of Special Development Zone including Panmana, Chavara, Neendakara, Thevalakkara, Clappana, Kulasekhara-puaram, Oachira, Mynagappally and Sasthamkotta are included. Due to its proximity to the sea, in Alappad Grama Panchayat the existing area under coconut cultivation towards eastern side of Kollam thodu has to be retained and productivity to be increased. In Sub Zone 1 of Special Development Zone including the LSGIs of Poothakkulam, Kalluvathukkal and Paravoor Municipality also the same strategy is adopted. In all other zones existing area is proposed to be retained and productivity to be increased. The proposal for area expansion is for 200 Ha.

- **Rehabilitation of coconut:**

Productivity of coconut is poor in the district mainly because of senility and closer planting. 50% of the existing palms need to be replanted. Farms of suitable sizes will be selected and palms will be planted scientifically with quality seedlings so as to enable inter cropping also. 10,000 ha of area will be brought under the scheme initially. The area will be selected from Zones B and C. The scheme will be implemented in all LSGIs.



Coir worker - Anchalumoodu

- **Coir pith composting and other products:**

Scientific methods of coir pith removal and its composting or processing is needed to reduce pollution and to enhance the utility of coir pith. Coir pith can be made into blocks and processed for use in horticulture industry. 10 centres around Aqua Bio-Reserve Zone are to be established on an experimental basis each with a capacity of 500 Tons.

- **Value addition of Coconut oil and Products:**

Value addition of coconut by production of coconut oil and other products is targeted here. 60% of the proposed production of coconut is expected to be used as industrial raw material. By 2011 an estimated no. of 54 million nuts will be available for industrial use and by 2021 the number of nuts available will be 91 million. Therefore further 2 more expeller units at Kalluvathukkal and Kottarakkara are to be established. Further, value added products such as virgin coconut oil, coconut milk powder, aromatized coconut oil, coconut oil lubricant for automobiles etc. can be developed. Coconut oil based cottage industries can be developed nearer to major extraction units. Further, cluster based enterprises can be promoted at Karunagappally, Kalluvathukkal and Kottarakkara.

- **Pepper Cultivation:**

- **Productivity improvement in Pepper:**

A massive rehabilitation programme has to be implemented in 10000 Ha. Average size of pepper holdings is taken as 25 cents. Thus the number of cultivators benefited is anticipated as 1,00,000. The scheme will be implemented in 47 local bodies in zones A (4 nos.), B (26 nos.) and C (17 nos.). Plant population is 1100 standards /Ha and the no. of vines required is 3300 at the rate of 3/ standard for pure crop. For inter crop, plant population is taken as 1100/Ha i.e. 1 plant/ standard. Every year, from 2008 onwards, 2000 Ha will be covered under the programme.

The LSGIs in the Agro Development Zone where existing area to be retained and productivity to be increased are Alayamon, Anchal, Neduvathoor, Kottarakkara, Veliyam, Pathanapuram, Pattazhy, PattazhyVadakkekkara, Pooyappally,

Yeroor, Chadayamangalam, Chithara, Elamadu, Ittiva, Kadakkal, Thalavoor, Vilakkudy, Nilamel, Melila, Mylom, Ummannur, Vettikkavala, Velinalloor and Punalur Municipality.

The LSGIs in the Agro Allied Development Zone where existing area to be retained and productivity to be increased are Chathannoor, Kunnathoor, Poruvazhy, Sasthamcotta, Sooranad north, Sooranad South, Kulakkada, Pavithreswaram, Ezhukone and Kareepra.

The LSGIs in the Bio Reserve Zone where existing area to be retained and productivity to be increased and Area Expansion required are Piravanthoor, Kulathupuzha, Thenmala and Aryankavu.

The LSGIs in the Sub Zone 2 of Multi Functional Zone where area expansion is required are Chathannoor Grama Panchayat and Punalur Municipality.

On an average 10% of vines have to be replanted every year, so that 110 vines /Ha will be required each year. $2000 \times 110 = 2,20,000$ vines would be required in the year 2008. Planting material production will be taken up by Department farm and approved nurseries.

- **Banana Cultivation:**

1500 Ha is proposed to be brought under banana crop mainly in Agro Allied Development Zone.

The LSGIs where existing Intensive cultivation as inter crop in the Agro Development Zone are Alayamon, Anchal, Neduvathoor, Kottarakkara, Veliyam, Pathanapuram, Yeroor, Nilamel, Melila, Mylom, Ummannur, Vettikkavala and Edamulakkal.

The LSGIs where Intensive cultivation as intercrop and establishing of value addition units in the Agro Allied Development Zone are Thazhava, Chathannoor, Kunnathoor, Poruvazhy, Sasthamcotta, Sooranad north, Sooranad south, Kulakkada, Nedumpana, Mynagappally, Ezhukone and Kareepra.

The LSGIs in the Special Development Zone where existing area to be retained and productivity to be increased are Poothakkulam, Kalluvathukkal and Paravur Municipality.

The LSGIs in the Sub Zone 2 of Multi Functional Zone where Area Expansion is required are Kottarakkara, Anchal Grama Panchayats and Punalur Municipality.



Plantain cultivation

● Value addition of banana :

Banana is being cultivated in 10,000 Ha in the district. Banana is the base product for many health preparations and baking industry. Banana powder, banana wafer, chips etc are some of the preferred products. Units of average production capacity 500 ton/ year can be established to produce export quality products. 10 such units in major banana cultivating areas are intended.

Cashew Cultivation:

Cashew sector development is of immense importance in the district. As pointed out in Article 1.3 of Chapter 28; Finance, in the district, the Non Farm Sector shows maximum credit delivery due to high credit off take by cashew exporters.

The LSGIs where existing area under cashew are to be retained and productivity to be increased in the Agro Development Zone are Neduvathoor, Kottarakkara, Pathanapuram, Pattazhy, Pattazhy Vadakkekara, Pooyappally, Chadayamangalam, Ittiva, Thalavoor, Vilakkudy, Melila, Mylom, Ummannur, Vettikkavala and Velinalloor.

The LSGIs where Existing area to be retained and productivity to be increased in the Agro allied development Zone are Thazhava, Mynagappally, Thodiyoor and Ezhukone.

The LSGIs where cashew is to be cultivated in revenue purampoks, land available in public sector undertakings, Govt. office compounds etc. in the Special Development Zone – Sub Zone 2 are Elampalloor, East Kallada, Kundara and West Kallada.

The LSGI where existing area to be retained with HYV grafts in the Sub Zone 2

of Multi Functional Zone is Chathannoor Grama panchayat.

● Cashew Development Programme (Area expansion and re-planting):

Presently, cashew is being cultivated in 4400 ha in the district. At least 75% of the area needs to be replanted with high yield varieties. The programme aims at rehabilitation of 3000 ha of plantations.

● Cashew Planting in Theeravanam area:

In the entire area of coverage of Theeravanam Project along the coastal line being implemented by Forest and Fisheries Dept., cashew cultivation is proposed as a second line of casurina cultivation as linked to the Article 7.5; Fisheries. The area would cover parts of Multi Functional Zone (Kollam Corporation and Karunagapally Grama Panchayat), Special Development Zone and Aqua Bio Reserve Zone (Paravur Municipality).

Pineapple cultivation:

New planting in 5000 Ha (20000 plants/ Ha) as inter crop in the first year, followed by ratoon in next two years and again new planting in a cyclic manner is proposed. Anticipated yield is 25 T/ Ha i.e. 1.25 lakh tons/ yr. The proposal is suggested in all LSGIs.

Proposal for Jatropha Cultivation:

It is proposed to cultivate Jatropha in an area of 50 Ha mainly in the waste lands and excavated (mixed) region of Chavara, Neendakara, Panmana, Kundara and Nedumpana Grama Panchayats.

Maintenance of Native crops:

Fruit trees like Jack, Tamarind, Garcinia, etc are some among them. Minor tubers, millets and pulses are important as they contribute to the food security. Such crops are to be encouraged on selective basis to meet the requirement of the population. Efforts for their promotion are required in all LSGIs.

Floriculture:

Studies reveal that Agroclimatic zonation of Kollam District is very well suited for floriculture. As floriculture requires lesser land area it is suited for Multi Functional zones in the point of view of both production and marketing as well as in Perinadu Grama Panchayat proposed as Tourism hub. Production strategy is through the establishment of flori clubs. A collection and marketing facility centre will be established in the Ashramam destination

development proposed by tourism sector.

Aracanut cultivation:

Alternative measures such as promoting the use of 'leaf petiole' (making plates from palm leaves) etc can be resorted to promote aracanut cultivation. Araca palms can be raised as boundary crop in homesteads. The proposal is suggested in all LSGIs.

Medicinal Plants:

The LSGIs in the Agro development Zone where area expansion and conservation for medicinal plants is required are Alayamon, Anchal, Edamulakkal, Karavallur, Pathanapuram, Pattazhy, Pattazhy Vadakkekara, Yeroor, Chadayamangalam, Chithara, Ittiva, Kadakkal, Thalavoor, Nilamel, Mylom and Punaloor Municipality.

The LSGIs in the Bio Reserve Zone where existing area under medicinal plants to be retained and productivity to be increased and area expansion is required are Piravanthoor, Kulathupuzha, Thenmala, Aryankavu.

The LSGIs where additional area as intercropping in garden land in the Sub Zone 2 and 3 of Special Development Zone for Medicinal Plants proposed are Elampalloor, East Kallada, Kundara, Perayam, West Kallada and Perinadu.

Proposals for Market Development and Trading

● Primary and Secondary Agricultural Markets

Primary markets are proposed at Karunagapally, Chathannoor, Punalur, Anchal, Kadakkal and Kottarakkara. Considering the road, rail connectivity and land availability, the secondary market is proposed at Kottamkara.

● Service Centres:

Service Centres are proposed in association with primary markets where from farmers can avail various services. Banking services and input services will be provided at the centre. Maintenance and hiring of agricultural machineries and implements will be undertaken at the centre. Technology transfer will be a major activity of the service centre. They are proposed basically at Multi Functional Zones including Kollam Corporation and other LSGIs like Karunagapally, Chathannur, Kottarakkara, Punalur, and Anchal. A service centre is proposed at Kadakkal also as it is a major regional market serving



Market - Chinnakkada, Kollam

not just LSGIs of Kollam District but also the neighboring LSGIs in Thiruvananthapuram District.

Proposals for Technology based Crop Cultivation

● **Model Bio Technology Centre (Including Microbial Technology Centre):**

A lab complex with facilities for production of any agriculturally important micro biological product is envisaged under this proposal. It can serve the entire farming community in the district. Commercial production of micro-organisms beneficial for farming (agriculture, fisheries, dairying etc.) and production of microbial products like enzymes and other secondary metabolites are proposed. The centres are proposed at Kulathupuzha and Anchal Grama Panchayats due to low temperature and water availability.

The centre consist entities which produce mainly bio control agents and bio fertilizers. Facilities will also be provided for secondary metabolites production and bioreactors in later stages. Private entrepreneurs will be encouraged to start ventures in the centre.

Production of bio fertilizers, bio control agents, effective microorganism and fermentation products for various purposes like dairying, industrial purposes etc. are envisaged.

● **Poly House Cultivation:**

Poly houses are proposed in Sub zone 2 of Special Development Zone. Yield of vegetable can go up to 150 ton/ ha of poly house. 10 ha area is proposed to be taken for venture in the initial phase. The LSGIs selected are Elampalloor, East Kallada, Kundara and Perayam grama Panchayats. Thus by 2021, Sub Zone 2 of the Special Development Zone shall be transformed in to High Tech Agro Zone. High-tech agriculture is to be adopted for production of season independent crops especially

vegetables, flowers and other specialized crops. Construction of green house/poly house is a basic need for this protected cultivation. The yield for vegetable can be increased to around 100 times.

● **Bio Technology and Genetic Engineering Park:**

Establishment of a Biotechnology and Genetic Engineering Park is proposed to meet the research and production requirements in this field. A suitable site will be developed with necessary common facilities for research work in biotechnology. Production of improved varieties of crop plants will be a major activity proposed. Genetic modification, clone propagation, secondary metabolize production etc. are also proposed. Entrepreneurs are encouraged to start their establishments in the Park. Single window system of clearances for life science ventures is proposed. Testing and quality control services and human resources development institutions will become an integral part of the Park. Elampalloor, East Kallada, Kundara and West Kallada are the LSGIs ideal for locating the Park.

Proposals for Agro-ecology Conservation

● **Water conservation programmes:**

Agro development zone and Agro allied zone will be entirely brought under intensive water conservation programme. Flood and early draught in downward areas can also be regulated by this programme. 43 Grama Panchayats are selected and the scheme will be implemented in sessions.

The scheme can be integrated with National Employment Guarantee Programme. Contour bunds, rain pits, rain harvesting ponds, agrostology, basin opening etc. will have to be implemented depending on the area are required.

● **Controlling usage of Chemical fertilizers and pesticides:**

In the Aqua Bio Reserve Zone ie in the LSGIs of Trikkadavoor, Thrikkaruva, Thekkumbagam, Munroe Island, Panayam and Perayam use of chemical fertilizers and pesticides is to be restricted. In the LSGIs of East Kallada, Sasthamkotta, Chavara, Neendakara, Thevalakkara, West Kallada, Kollam Corporation, Paravoor Municipality, Mayyanad, Poothakkulam and Perinad use of chemical fertilizers and pesticides in the areas closer

to water bodies is proposed to be restricted and crops including medicinal plants, pineapple, tree crops (mango, jack fruit etc.), tubers etc. not using chemical fertilizers and pesticides should be promoted.

● **Solar Fencing:**

Aim of the proposal is to protect crops and livelihood of farmers in the periphery area of forests in eastern parts of the district. All the farmers in Kulathupuzha, Aryankavu, Thenmala and Piravanthur are beneficiaries. It will be provided wherever there are man-animal conflicts. The entire cultivated area in the above 4 Panchayats has to be provided with fencing.

Other Proposals

● **Agri-based Cottage Industries:**

Coconut handicrafts, mats like "Thazhappai" are economically important to supplement the income of marginal farmers and labourers. Traditional areas of such activity will be selected and promoted. Advanced technologies can be incorporated to suit international demand. Tourism can also be associated with the proposal. Making of bags, kits etc. using straw, pandanus, rattan etc. will be promoted in Karunagappally, Thazhava, Thenmala, Aryankavu, Kulathupuzha, Thodiyur Grama Panchayats.

● **Recycling Facilities:**

Recycling facilities comprising microbial and mechanical treatment of biological wastes is proposed. The plants will be located in proximity to I order and II order settlements and primary markets. The LSGIs selected are Kollam Corporation, Grama Panchayats of Karunagappally, Kottarakkara, Anchal and Chathannoor and Punalur Municipality. In other areas vermin wastes in homestead composting etc will be promoted.

● **Welfare of Agriculture Labourers and Farmers :**

Cultivators and Agricultural labourers constitute 17% of the total main workers in the District. Fragmented land pattern, higher proportion of women labourers etc necessitates development and popularization of ergonomically suitable light machineries. Labour bank system to be developed as an institution in practice enabling an assurance programme for the livelihood. Micro credit for the benefit of farmers is to be made available at the

reach of the farmers through proper organizational setup. Labour insurance scheme may be implemented. Agro technology must be included in the curriculum of High Schools.

● Research and Training Centre:

The district farm functioning at Kottukal in Ittiva Grama Panchayat has the basic facilities for training and demonstration. It has established modern methods of cultivation practices including micro propagation and organic farming. The centre is proposed to be developed to cater the training needs of the district and to do the basic research in the development of agriculture technology.

● Mechanization of Agricultural Operations:

As evident from the sectoral analysis, rice and coconut are the two major base systems of cultivation in the district. But paddy area is fast dwindling offering no further scope for mechanization. Possibility of designing smaller machines for use in isolated fields is to be explored. Research institutions and Kerala Agriculture University have to take sincere efforts to design and develop these equipments. As far as coconut is concerned, there are no labourers available for plant protection. Convenient and ergonomically designed equipments for plant protection and tillage operations are to be developed and popularized. Harvesting and primary processing of coconut also require mechanization.

1.2 Irrigation

Irrigation sector as such has no individual existence in the absence of agriculture and is the most important supporting factor for agriculture. The District agricultural policy Kollam – 2021 aims to attain a certain level of self sufficiency in food crops while improving production of commercial crops and value addition and even export of crops are promoted.



Ottakkal weir - Thenmala

According to the district development concept the thrust for agriculture is given to two zones viz. the Agro Development Zone and Agro Allied Development Zone. Hence the proposals of irrigation sector for 2021 are framed to support the agricultural sector to attain the goal in these zones. Thus optimum utilization of available water for sustainable agricultural development to facilitate maximum production of food crops is the irrigation policy by 2021.

The major crops which require irrigation are paddy, banana and vegetables. As per the critical evaluation under sectoral analysis, problems in non-utilisation of created potential and problems of existing schemes were analysed. Irrigation development proposals are framed considering the major problems identified, viz.

1. Water available for agriculture is not under the control of the farmer.
2. Agricultural area and the desire to engage in agricultural activities are declining day by day.
3. The present water tight compartment system of various departments having linkage to agriculture is one of the main hurdles for cultivation.

What we need first is to bring water under the control of the farmer. The farmer should have the assurance that their crops will not be failed on shortage of water. Such a situation will certainly persuade farmers, inclined to put an end to cultivation, to continue cultivation in their land and also to cultivate the existing bare land.

Even though it is expected that the agriculturist should have a say on the spot where water is needed, the quantity of water and the time of requirement, both in Minor Irrigation (M.I) and Kallada Irrigation Plan (KIP) the control of water is still vested in the hands of the departmental officers. The main aspect that prevents the departmental officers to hold on the true spirit of irrigation may be the diversity of crops, agricultural activities and concerns of the people. In KIP, water is let out through canals in turn and the proposed turn is always overturned creating an uncertainty in the availability of water in time. Another factor is that the structure from which water is let out to the crops is not under the ownership of the farmer. Considering these factors the development proposals are

framed to address the problems. Ferrocement storage tanks of the type we use for the rain water harvesting is to be constructed at suitable spots from where water can be taken to the agricultural lands by gravity flow. The ownership of the storage tank is vested fully on the farmer's organizations. The rough cost of such structure comes to Rs.1.5 per litre of storage water.

Irrigation sector activities, based on the above system planned for the elucidation of the problems observed, are classified into utilization of the existing potential and creation of new potential.

Proposals for utilisation of the existing Potential

● Utilisation of potential in Minor Irrigation

In Minor Irrigation, utilisation of potential is to be mainly dealt with regarding the Lift Irrigation (LI) Schemes. There are 8 L.I.Schemes in the district-Aryankavu, Chathanloor, Adichanelloor, Kulakkada, East Kallada, Thodiyoor, Thazhava and Sooranad North.

Possibility of new LI Schemes may be investigated while preparing LDPs for Sooranadu South, Karunagappally, Mynagappally and Panmana from Pallikkal River and in Mayyand, Kalluvathukkal, Pooyappally, Velinalloor, Chadaya-mangalam, Elamadu, Edamulakkal and Ittiva from Ithikkara River.

As per the District development policies and strategies agricultural thrust zones are Zone B and Zone C i.e. in the Agro Development Zone and Agro -allied Development Zone. Also agricultural activities in the Multi-Functional Zone require irrigation. There is no L.I. Schemes in the Agro Development Zone. The L.I. Schemes in Adichanelloor, Chathanloor, Thazhava, Thodiyoor, Kulakkada and eight L.I. Schemes in Sooranad North Grama Panchayat are in the Agro Allied Development Zone. The L.I.Scheme in East Kallada is in Special Development Zone and that in Ariyankavu is in the Bio Reserve Zone. The potential created by the L.I.Schemes in Ariyankavu can be utilised for irrigation of medicinal plants if considered in the zone.

The utilisation of potential created in Zone C is to be given prime importance. The main activities needed for the utilisation of potential are (i) Identification of area

where farmers are enthusiastic to take up agriculture. (ii) Replacement of the very old damaged pump sets in the schemes (iii) Maintenance or modification of the water conveyance system to convey water to the ferro-cement tanks constructed considering the area where farmers are dedicated to agriculture. The suggested locations for the above proposals are at Thodiyoor, Thazhava, Chathanoor, Adichanalloor, East Kallada, Aryankavu, Kulakkada and Sooranad North Grama Panchayats.

● Utilisation of potential in Kallada Irrigation Project

Since KIP is envisaged to irrigate both wet and dry lands, the ayacut area shown is inclusive of the dry ayacut area in spite of the area of the padasekharams. Following activities are to be taken up in KIP for utilizing the created potential. The activities are detailed with phasing and costing.

1. Identification of the Padasekharams for first phase intervention. The criteria to be adopted for the selection are (i) Positive attitude of farmers towards taking up agriculture (ii) present status of agriculture in the padasekharam (iii) optimum chance of availability of sufficient quantity of water from all sources of water such as irrigation water (KIP or MI), perennial wells, roof water harvesting etc. (iv) existing or future possibility of co operative farming (v) possibility of co-ordination among various departments connected to agriculture. The proposal like construction of ferro-cement storage tanks, new conveyance system to storage tanks from KIP are implemented in these Padasekharams. The proposals has to be implemented during 2007–2012 with an estimated cost of Rs 105 lakhs.
2. Conducting meetings and discussions of farmers to identify their problems and proposals to solve them. Farmers Association for each spout is to be formed to ensure co operation among farmers. A distributory level association of farmers to deal with problems common to all is also to be formed from the representatives of all spout level associations. All official representatives of the departments related to agriculture should also form part of the distributory level associations.
3. Rectification of the distribution system of the created potential to suit the

requirements of the ayacut area. This includes rectification of the distribution system to facilitate supplying water to the whole area comprising of a number of padasekharams and dry lands as well as making arrangements to supply water to the Ferro cement storage facility of each padasekharam. Farmer's opinion should be considered and their participation should be ensured in the whole rectification process.

Inter-linkages with other sectoral proposals

● Proposals of Agricultural Sector:

Support of irrigation is seen essential in the proposals of Agricultural Sector in paddy seed villages, improving rice production and productivity through paddy conservation, aromatic and medicinal paddy cultivation, vegetable seed villages, intensive vegetable cultivation and improving productivity, rehabilitation of coconut, banana cultivation and biotechnology and Genetic Engineering Park.

In the various proposals of agricultural sector, Panchayats where there is no irrigation potential at present can be classified into three categories. The first category is a set of Panchayats viz. Mayyanadu, Chadayamangalam, Ittiva, Elamadu and Edamulakkal where possibility of irrigation from L.I.Scheme from Ithikkara river may be investigated while preparing LDPs.

Second category is Karunagappally and Panmana where investigation may be done to ascertain the possibility of L.I.Scheme from Pallikal river while preparing LDPs.

Rest of the Panchayats namely East Kallada, Kundara, West Kallada, Anchal, Yeroor, Nilamel, Bhoothakkulam, Melila, Chavara, Neendakara, Thevalakkara, Clappana, Oachira, Kulasekharapuram, Pattazhy Vadakkekara, Pattazhy, Kadakkal, Alappad, Aryankavu, Kulathupuzha, Thenmala, Thrikkadavur, Thrikkaruva, Chithara, Thekkumbhagam, Mandrothuruth, Panayam, Perayam, Perinadu, Kottamkara, Thrikkovilvattom, Piravanthoor and the Kollam Corporation and Punalur Municipality are the third category. No other source of irrigation except irrigation from ponds or wells is possible in these LSGIs. Hence these LSGIs are the first priority area for implementation of water conservation measures on

watershed basis. Also water available in the major water bodies like Chittumalachira, Polachira, Cheloorakayal, Vattakkayal etc may be considered. The water from these water bodies can be utilized only with effective salt-exclusion activities.

It may be noted that, the provision of irrigation facilities shall be in accordance with the phasing of agriculture proposals.

An innovative strategy is adopted for the irrigation of agricultural lands of the District. The salient features of the programme are

- 1) Irrigation water is under the control of the farmer.
- 2) All sources of water is utilised
- 3) Most needy areas are identified and phased to target them first.
- 4) Since sufficient storage of water is within the custody of the farmer no need of over irrigation and no chance of under irrigation.

In the rainy season the agricultural area is rain fed as usual. Rain water harvesting structures, having capacity to irrigate the agricultural area for two weeks, is constructed at the elevated area of each agricultural plot or plots. As soon as the rainy season is over a tank full of rain water is ready in the rain water harvesting structure constructed and can be utilised. Before consuming the rain water storage fully the farmer can switch over to irrigation water either from canals of KIP, L.I. Schemes or M.I. Schemes. The scheme is to be implemented with the co-ordination of the Departments and agriculturists.

1.3. Watershed Development

According to watershed development policy of the district, Kollam has to develop the natural resources including land, water and bio mass through integrated watershed management. The proposals are classified zone wise as the conservation activities vary for each zone as per the District development concept.

The proposals suggested for each zone will solve the problems like soil erosion, surface run off, improve infiltration rate, improve agricultural production of main crops, generate better employment opportunities and will improve the rural infrastructure.

The proposals in bio reserve zone will mainly reduce the land slips and land slide problem. Also various proposals for Ashtamudi and Sasthamcotta area will

Table.3.1. Final priority area for Watershed Development for each spatial development zone

Top priority	I priority LSGIs	II priority LSGIs	III priority LSGIs
	Agro Development Zone	Bio Reserve Zone	Bio Reserve Zone
Ashtamudi Back water, Sasthamcotta lake, Paravur Kayal and Edava – Nadayara kayal	Yeroor	Aryankavu, Kulathupuzha	Thenmala, Piravanthoor
	Multi Functional Zone	Agro Development Zone	Agro Development Zone
	Anchal	Edamulakkal, Pattazhy Thekkukara,	Nilamel, Mellia, Pattazhy Vadiakkekara, Kadakkal, Chithara, Alayamon, Mylom, Thalavoor, Karavaloor
		Agro- Allied Development Zone	Agro- Allied Development Zone
		Elampalloor, East Kallada	Kulakkada, Adichanalloor, Ezukone Nedumpana, Thazhava, Thodiyoor
		Aqua – Bio Reserve Zone	Aqua – Bio Reserve Zone
		Thirikkadavur, Thirikkaruva, Thekkumbhagam, Mandrothuruth	Paravoor Municipality
		Special Development Zone	Special Development Zone
		Poothakkulam, Alappadi, Kundara, Perayam, Chavara, Kulasekharapuram, Oechira, Clappana, Thevalakkara, Perayam and Pannadu	West Kallada, Chathanoor, Panmana, Kalluvathukkal
		Multi Functional Zone	Multi Functional Zone
		Thirikkovilattom and Panayam	Punalur Mity, Neendakara, Kottamkara, Kollam Corporation, Mayyanad and Karunagappally

improve the water quality and make more water available for irrigation and drinking purposes.

For the drainage and water logged areas, better drainage facilities are suggested which will solve the problem to a greater intent. On the whole, the proposals suggested will lead to sustainable development of agriculture and allied sectors.

Watershed development is directly linked to four basic sectors of development viz. Agriculture, Irrigation, Drinking water and Environment. So the proposals suggested in watershed sector are prioritized according to the proposals of these sectors.

Considering the priority areas suggested by linked sectors, final priority area for watershed development for each spatial development zone is compiled and given in Table 3.1.

The phasing is based on this. However the treatment measures in each

zone are fixed based on soil conservation priority maps.

Proposals for Bio-Reserve Zone (Zone A)

Treating the LSGIs Piravanthur, Kulathupuzha, Thenmala and Aryankavu on watershed basis is the main aim. Portions of the above LSGIs being susceptible to land-slips and landslides are included in the soil conservation priority area. The proposals recommended for the area are vegetative measures like agro forestry, live fencing and border planting, safe disposal of runoff, measures like brush wood checks and graded bunding and drainage course management like gabion structures. In the down stream side, vertical drop structures for water harvesting, ring ponds and development of springs are recommended.

Proposals for Agro Development Zone (Zone B)

Treating the LSGIs Alayamon, Anchal, Neduvathoor, Edamulakkal, Karavaloor,

Kottarakara, Veliyam, Pathanapuram, Pattazhy, Pattazhy Vadiakkekara, Pooyappally, Yeroor, Chadayamangalam, Chithara, Elamadu, Ittiva, Kadakkal, Thalavoor, Vilakudy, Nilamel, Melila, Mylom, Ummanoor, Vettikavala, Velamanoor and Paravoor municipality on watershed basis is the main aim. Portions of the above LSGIs come under midland to up-land areas and are having moderate erosion status. Therefore regular watershed development programmes are proposed in this zone. The proposals recommended for the area are vegetative measures like agroforestry, live fencing, cover cropping, contour strip cropping, contour vegetative hedges and mulching. Mechanical conservation measures include contour stone pitched and earthen bunds and contour trenches. Drainage course management like gabion structures, check dams, water harvesting systems, diversion drains, ramps, supporting walls and bank stabilization structures are recommended. In the down stream side, vertical drop structures for water harvesting, ring ponds and development of springs are recommended.

Proposals for Agro Allied Development Zone (Zone C)

Treating the LSGIs, Thazhava, Chathanoor, Kunnathur, Poruvazhy, Sasthamcotta, Sooranad North, Sooranad south, Kulakkada, Kalluvathukkal, Elampalloor, Nedumpana, Pavithreswaram, Mynagappally, Thodiyoor, Ezhukone and Kareepra on watershed basis is the main aim. Portions of the above LSGIs come under midland to up-land areas and are having moderate erosion status. Therefore regular watershed development programmes are proposed in this zone and special attention is to be given to prevent the siltation of Sasthamcotta Lake. The proposals recommended for the area are vegetative measures like live fencing, cover cropping, contour strip cropping, contour vegetative hedges and mulching. The suggested locations are at Thazhava, Chathanoor, Kunnathur, Poruvazhy, Sasthamkotta, Sooranad North, Sooranad South, Kulakkada, Kalluvathukkal, Elampalloor, Nedumpana, Pavithreswaram, Mynagappally, Thodiyoor, Ezhukone and Kareepra Grama Panchayats. Mechanical conservation measures include contour

stone pitched and earthen bunds and contour trenches. Drainage course management like Check dams, water harvesting systems, ramps, supporting walls and bank stabilization structures are recommended. For protection of the catchment area of Sasthamcotta Lake, contour stone pitched bunding, retaining walls, gabion structures, silt trap pits, live fencing and bamboo planting can be adopted.

Proposals for Special Development Zone (Zone D)

Treating the LSGIs Alappad, Karunagapally, Panmana, Chavara, Neendakara, Thevalakkara, Clappana, Kulasekharapuram, Oachira, Mynagappally and Sasthamcotta for solving the water logging and saline water intrusion is the main aim. Portions of the above LSGIs comes under low land to mid-land areas and are having slight to moderate erosion status. The proposals recommended for the area are agroforestry measures like mangrove and bamboo cultivation. For reclamation of waterlogged areas, retaining walls, side protection walls, diversion drains etc are proposed.

Proposals for Aqua Bio reserve Zone (Zone E)

Treating the LSGIs Thrikkadavoor, Thrikkaruva, East Kallada, Sasthamcotta, Chavara, Neendakara, Thekkumbhagom, Thevalakkara, West Kallada, Munroe Island, Panayam, Perayam, Perinad, Mayyanad, Poothakkulam, Kollam corporation and Paravoor municipality for solving the water logging is the main aim. Portions of the above LSGIs comes under low land to midland areas and are having slight to moderate erosion status. Catchment of Ashtamudi lake to be protected to avoid siltation. The proposals recommended for the area are agroforestry measures like mangrove and bamboo cultivation. For reclamation of waterlogged areas, retaining walls, side protection walls, diversion drains etc are proposed.

Proposals for Multi Functional Zone (Zone F)

Treating the LSGIs Thrikkovilvattom, Kottamkara, Mayyanad, Panayam, Neendakara and Kollam Corporation for reclamation from water logging is the main aim. Portions of the above LSGIs comes under low land to mid land areas and are having slight to moderate erosion status.

The proposals recommended for the area are agroforestry measures like mangrove and bamboo cultivation. For reclamation of waterlogged areas, retaining walls, side protection walls, diversion drains etc are proposed.

1.4. Animal Husbandry

The animal husbandry sector is facing serious challenges due to the changing socio economic pattern of the district. The fragmentation of land and limited availability of fodder has resulted in considerable decrease in the number of livestock and poultry. But the consumption pattern shows a sharp increase in the consumption of milk, meat and egg. The rising demand is met by import of these items from neighbouring states. This has resulted in the wide fluctuation of the market price of these items. In order to have stability in the supply of these products the internal production is to be increased. This should be given special attention as a measure of achieving food security. The projects are designed taking into consideration, various aspects such as land availability, current livestock population and other infrastructure prospects as per integrated approach of different sectors.

According to the district sectoral policy, by 2021, Kollam has to attain self sufficiency in milk, egg and meat by creating farmer attractive environment thereby improving the economic status of the rural poor and achieving new standards in animal welfare. The proposals given under are evolved with utmost care and made location specific such that they will definitely lead to achieve the set objectives.

Proposals for Development of Live stock and Poultry Products for Self Sufficiency

● Milk Production:

As per the proposals of agricultural sector, the entire Agro Development Zone is proposed to be transformed into an

organic farming zone by 2021. Supplementing to that this zone is also proposed to be transformed as organic dairy farming zone by 2021.

- **Large scale dairy farms** : It is proposed to establish large scale dairy farms 4 in selected LSGIs. Each LSGI will be having 4 such units of 50 milk animals. Kunnathoor, Poruvazhy, Sasthamcotta, Kulakkada, Kalluvathukkal, Nedumpna, Pavithreswaram, Mynagappally, Ezhukone, Kareepra and Adichanallur Grama Panchayats of Agro-allied Development Zone are selected for the purpose. The farms will act as model units for profitable dairying in the region.
- **Medium scale dairy farms**: It is proposed to establish dairy units with 10 milk animals in each unit in selected LSGIs viz. Thazhava, Sooranad north, Sooranad south, Elampalloor and Thodiyoor Grama Panchayats of Agro-allied Development Zone.
- **Ksheera Samrudhy Dairy scheme**: The scheme aims to increase the number of breeding stock of cattle by establishing units of 2 cows / buffalo in selected LSGIs. Beneficiaries will be farmers interested to rear cattle.
- **Existing dairy farms with increased productivity** : It is proposed to improve the productivity of the existing dairy animals. The farmers engaged in large scale dairy farming practices will get the benefit of the proposal. Based on the district development concept, Thazhava, Sooranad North, Sooranad South, Elampalloor and Thodiyoor Grama Panchayats of Agro-Allied Development Zone are selected and animals having production potential of 15-20 liters of milk will be given assistance for increasing productivity by means of super bull semen, embryo transfer, by pass protein feeding and climatic control measures.
- **Fodder production units** : It is proposed to increase the availability of fodder to farmers thereby reducing the cost of production. Beneficiaries will be the farmers interested in agriculture with required land. High yielding fodder varieties from reputed sources are to be grown by the farmers. Since the animal husbandry activities are concentrated in the Agro-Allied Development Zone, fodder production units are also suggested in this zone. Minimum of 15



Dairy farm - Punalur

units will have to be started in each LSGI. Grama Panchayats of Thazhava, Sooranad North, Sooranad South, Elampalloor, Thodiyoor, Chathanoor, Mynagapally, Ezhukone, Nedumbana, Pavithreswaram, Kareepra, Adichanallor, Pavithreswaram, Kunnathoor, Kalluvathukkal, Poruvazhy, Sasthamcottah and Kulakkada are the LSGs proposed to be covered.

- **Feed production/ Mixing unit and Feed analytical lab** : Proposal includes establishment of feed mixing unit with capacity to produce 1000 tonnes of feed per day. A Feed Analytical Lab is set for ensuring the quality of raw materials and the feed manufactured. The unit is proposed at Karunagapally.

- **Silage production units** : It is proposed to establish silage production units in selected LSGIs in order to make available preserved fodder in the lean season during which heavy shortage of fodder is encountered.

The proposal will be implemented by the dairy extension officer of the selected block. Grama Panchayats selected for implementation of the scheme are Thazhava, Sooranad north, Sooranad south, Elampalloor and Thodiyoor.

- **Mobile milking units** : It is proposed to establish mobile milking units in selected panchayats with the support of self help groups. The selected group will be provided with one milking machine, vehicle for transportation, disinfectants etc.

Grama Panchayats selected for implementation of the proposal are Chathanoor, Thazhava, Sooranad north, Nedumpana, Thodiyoor, Kalluvathukkal, Sooranad south, Poruvazhy, Sasthamcottah, Kunnathur, Kulakkada, Mynagapally, Elampalloor, Pavithreswaram, Kareepra and Ezhukone.

- **Chilling plant** : It is proposed to establish chilling units with a capacity of 10000 litre per day at Karunagapally and Kundara so as to facilitate easy marketing of the milk produced in the district.

- **Quality control of milk and milk products** : The scheme aims to ensure quality control of milk and milk products that are marketed in the field. Quality control labs will be set up with the facilities

to check the quality of milk and milk products. Grama Panchayat/ Municipalities in Multi functional zone 1 and Multi functional zone 2 are selected for implementation of the proposal.

- **Establishment of milk processing cum products factory** : A plant having capacity to handle 30000 litres of milk per day is proposed to be established at Anchal. The major objective is to ensure steady supply of quality milk and milk products in the region.

- **Dhenuraksha scheme**: The scheme aims to protect the breeding stock of cattle from premature slaughter. Beneficiaries will be the farmers with cattle having extended infertility problem. The scheme will be implemented in selected LSGIs of the district through Kudumbasree's or Self Help Groups (SHGs). They will be purchasing the animals at meat rate. Feed and medicines will be provided in subsidized rate. 2 units of housing with 10 animals each will be established in the selected Grama Panchayats. The units will be functioning under the strict technical control of the veterinary institutions in the Grama Panchayats. Once the infertility problems are solved the animals will be handed over to needy farmers.

Grama Panchayat / Municipalities selected for implementation of the proposal are Nedumpana, Nilamel, Pathanapuram, Pattazhi, Kaduva-thode, Karavalloor, Chadayaman-galam, Vilakudy, Piravanthoor, Kulathupuzha, Sasthamcottah, Poruvazhy, Kalluvathukkal, Pooya-ppally, Melila, Punalur, Velinallor, Veliyum, Alayamon, Thenmala, Aryankavu, Kareepra, Kulakkada, Kunnathoor, Mynagapally, Thala-voor, Neduvathoor, Anchal, Mylom, Elamad, Vettikkavala, Adichanallor, Ezhukone, Pavithreswaram, Umma-nnoor, Edamulackal, Kottarakkara, Ittiva, Kadakkal, Chithara and Yeroor.

- **Comprehensive Baby Calf Health Scheme**: All the calves born in the district will be covered under the scheme. All the female calves born will be enrolled to the nearest veterinary dispensary from where a health card will be provided to each calf. Upto 6 months of age, calves will be under the coverage of the scheme and will be provided with starter feed,

feed supplements and medicine including dewormers at subsidized rates. It is intended to cover around 20000 calves every year.

- **Calf Feed Subsidy Scheme** : Calf feed subsidy scheme covering the entire healthy calves born in the district is proposed as a part of the development programme.

● **Egg Production:**

- **HI-tech Parent stock and Poultry farm rearing high producing cross bred layer birds and hatchery**

The aim is to set up modern poultry farm rearing about 10000 birds at regional poultry farm, Kureeppuzha, Kollam Corporation. The farm will rear the birds in fully automated system.

- **Large scale Duck parent stock**

The proposal is to establish duck parent stock units in order to increase the availability of good quality eggs for hatching out at Paravur and Munroe Island.

- **Quail Parent Stock Farm and Hatchery**

It is proposed to establish a quail parent stock farm rearing 1000 birds and a hatchery with setting capacity of 4500 eggs per week. Two units each will be set up at Veliyam and Sasthamcottah Grama Panchayats.

● **Nurseries**

It is proposed to establish poultry nurseries in selected LSGIs. Purchased from the hatcheries on the day old stage, the birds are reared in the nurseries and are marketed at 45-60 days of age to the grass root level farmers. The birds are reared under strict scientific management practices during the initial phase of growth. This will ensure the availability of quality chicks in the district. The proposal includes setting up of poultry nurseries, in 5 selected LSGIs so as to ensure steady supply of quality chicks. It is proposed to establish units for marketing 2000 grower birds per month.

Grama Panchayats selected for implementation of the proposal are Chathanoor, Veliyam, Anchal, Pathanapuram and Sasthamcottah.

- **Large scale poultry/ quail farms**

It is proposed to set up large scale poultry or quail farms in selected LSGIs. Five units, each rearing 1000 nos. of poultry and quail, are to be established in each LSGI. Following Grama Panchayats

are selected for implementation of the proposal viz. Chathanoor, Kottarakkara, Anchal, Mayyanad, Elampalloor, Thrikkovilvattom and Karunagappally.

○ Backyard poultry units

The aim is to set up 1000 numbers of small scale poultry units of 10 hens per unit in selected LSGIs with individual beneficiaries.

The Grama Panchayats selected for the implementation of the proposal are Sasthamcottah, Pavithreswaram, Sooranad south, Ummannoor, Edamulackal, Mynagapally, Thazhava, Kunnathoor, Ezhukone, Poruvazhy, Thodiyoor, Sooranad north, Kulakkada, Elampalloor, Nedumbana, Kareepa, Chathanoor and Kalluvathukkal.

○ Duck Rearing Units

It is proposed to set up duck nurseries in selected LSGIs to increase the availability of healthy ducks for egg purpose or meat purpose. The duck nursery will be rearing ducklings up to 60 days of age and will then be made available to interested farmers. Grama Panchayat/Municipalities selected for implementation of the proposals are Paravur, Munroe Island, Punalur and Sooranad South.

○ Backyard duck rearing units

It is proposed to set up 200 small scale backyard duck rearing units of 12 birds per unit.

Grama Panchayat/Municipalities selected for implementation of the proposal are Adichanalloor, Bhoothakkulam, Chathanoor, Karavallur, Kollam Corporation, Kulathupuzha, Kunnathur, Kundara, Mayyanad, Mynagappally, Nedunpana, Panayam, Paravur Municipality, Pattazhy, Pattazhy Vadakkekara, Perayam, Perinadu, Punalur Municipality, Sasthamcottah, Sooranad North, Sooranad South, Thenmala, Velinalloor, Vilakkudy.

○ Homestead Quail units

It is proposed to set up small scale homestead quail rearing units of 100 birds per unit in 25 units per Grama Panchayat.

Grama Panchayats selected for implementation of the proposal are Thazhava, Chathanoor, Kunnathoor, Poruvazhy, Sasthamcottah, Sooranad North, Sooranad South, Kulakkada, kalluvathukkal, Elampalloor, Nedumpna, Pavithreswaram, Mynagappally, Thodiyur, Ezhukone and Kareepa.

● Meat Production:

○ Male Calf fattening Scheme

It is proposed to implement schemes to provide assistance to rear male calves in order to increase the meat production. The scheme will provide feed and feed supplements for the selected male calves

○ Malabari Goat Parent Stock Farm

It is proposed to set a malabari goat parent stock farm at Kuriyottumala in Piravanthur. The parent stock established will supply kids of 3 months of age to the goat nurseries on prior booking. This ensures the availability of good quality kids to the farmers. Farm with 200 goats will be set up to market 500 lambs per year so as to solve the shortage of quality kids in the district.

○ Malabari Goat rearing Satellite Unit

It is proposed to set up small scale goat farms rearing 25 goats in order to increase the meat production in the district. The satellite units will also serve the functions of goat nurseries.

○ Goat rearing Units

It is proposed to set up 50 goat rearing units consisting of 5 goats per unit in selected LSGIs.

○ Goat Nurseries

In order to ensure the availability of good quality parent stock for rearing, it is proposed to establish goat rearing units rearing 50 goats in selected LSGIs. The kids purchased from recognized source will be reared up to 6 months of age and distributed among farmers.

Grama Panchayats selected are Mylom, Edamulackal, Sooranad South and Kareepa.

○ Parent Stock Piggery Farm

It is proposed to establish a parent stock farm of pig at Buffalo Breeding Farm, Kuriyottumala, Piravanthur to ensure the availability of quality piglets in the district. 75 breeding animals will be reared in the farm. They are supposed to produce 1300-1500 piglets per year. They will be reared up to weaning age in the farm after which the piglets will be supplied to needy farmers so as to rear them up to marketable age.

○ Piggery Units

It is proposed to set up piggery units with 10 piglets of 3 months old per unit which will be reared up to marketable age. Grama Panchayats selected for implementation of the scheme are Piravanthoor, Kottarakkara, Edamulackal,

Thenmala, Pooyapally and Pathanapuram.

○ Rabbit Parent Stock Unit

It is proposed to establish a parent stock farm of rabbits at Buffalo Breeding Farm, Kuriyottumala, Piravanthur, to ensure the availability of quality kits in the district. 200 breeding animals will be reared in the farm to produce about 500 kits per month which will be supplied to needy farmers to rear them up to marketable age.

○ Rabbit Nursery

It is proposed to establish units marketing breedable rabbit kits of 1 month age one unit per selected Grama Panchayat for rearing 50 rabbits to ensure the availability of kits. Grama Panchayat/Municipalities selected for implementation of the proposal are Pooyapally, Pavithreswaram and Kollam Corporation.

○ Rabbit Units

It is proposed to set up rabbit units as a new source of meat to the people. One unit will contain 10 female and 2 male breeder rabbits. The cost includes cost of rabbits cage, feed, insurance, veterinary aid etc.

○ High Tech Broiler Farm

It is proposed to increase the meat production of our district by establishing broiler farms with modern rearing facilities. The birds will be reared in cage system in 2 or 3 tiers in order to reduce the space for rearing. Grama Panchayat/Municipalities selected for implementation of the proposal are Kottankara, Thrikkovilvattam and Mayyanad of Multifunctional Zone I, as well as Punalur, Kottarakkara, Chathanoor, Anchal and Karunagappally of Multi Functional Zone II.

○ Broiler Farms

It is proposed to set small broiler farms in order to increase the meat produced in the district. The units shall be allotted to groups like Kudumbasree or self help groups. Farms marketing 400 birds per month are proposed.

Grama Panchayats selected for implementation of the proposal are Sooranad South, Pavithreswaram, Sasthamcottah, Mynagapally, Thazhava, Kunnathoor, Ezhukone, Poruvazhy, Thodiyoor, Sooranad North, Kulakkada, Elampalloor, Nedumpna, Kareepa, Chathanoor and Kalluvathukkal.

○ Turkey farm including hatchery

It is proposed to strengthen the already functioning regional poultry farm at

Kureepuzha by increasing the number of parent stock and the capacity of the hatchery etc. Proposal includes construction of rearing sheds and hatchery building, purchase of machinery for hatchery and other recurring expenses associated with implementation. The existing strength of 1000 birds will be enhanced to 5000. A turkey meat processing unit and product manufacturing unit is also envisaged in association with the farm.

○ Homestead Turkey Units

It is proposed to establish household turkey units in selected LSGIs. Proposal requires construction of shed, purchase of turkey, cost of feed, equipments and other miscellaneous expenses. It is envisaged to establish 20 units with 10 birds each in selected LSGIs.

Grama Panchayats selected for implementation of the proposal are Soornad South, Pavithreswaram, Sasthamcottah, Ummannoor, Edamulackal, Mynagapally, Thazhava, Kunnathur, Ezhukone, Poruvazhy, Thodiyoor, Sooranad North, Kulakkada, Elampalloor, Nedumpana, Kareepra, Chathannur and Kalluvathukkal.

○ Slaughter houses

It is proposed to establish modern slaughter houses in all block head quarters and urban areas by 2011 which are a pre requisite for safe and hygienic meat production.

○ Abattoir and Meat Production

The proposal is for setting up of an abattoir for humane slaughter, facilities for chilling and processing of meat. A rendering plant will also be attached along with the abattoir.

○ Meat processing units

It is proposed to establish a well equipped meat processing unit with facility to carryout all processes from slaughter of animal to packing of meat including production of value added meat products.

○ Meat export

It is proposed to establish a meat export unit in Chavara in order to export the surplus meat that is produced in the district.

Other Infrastructure

● Veterinary specialty hospitals

The proposal is to establish veterinary hospitals with modern facilities. These hospitals will be having modern facilities for disease diagnosis, modern laboratory and separate

inpatient and out patient ward for large and small animals, well equipped operation theatre and post operative ward etc.

Grama Panchayat/Municipalities selected for implementation of the proposal are Punalur, Pathanapuram, Kottarakkara, Adichanallur and Karunagappally.

● Artificial insemination centre

The proposal is to establish more number of artificial insemination centers considering the requirement of one center for every 500 breedable cattle.

Grama Panchayat/Municipalities selected for implementation of the proposal are Thazhava, Chathannoor, Kunnathoor, Poruvazhy, Sasthamcottah, Sooranad North, Sooranad South, Kulakkada, Kalluvathukkal, Elampalloor, Nedumpana, Pavithreswaram, Mynagapally, Thodiyoor, Ezhukone, Kareepra, Mandro Island, Karavalloor, Kadakkal, East Kallada, Thekumbhagom, Yeroor, Perinad, Paravoor, Elampalloor, Chithara, Pooyappally, Piravanthoor, Thenmala, Kulathupuzha and Aryankavu.

● Semen holding bank

It is proposed to set up holding units for high quality semen purchased from sources other than the present ones. These units will be purchasing semen doses from competent authorities and will be distributing the same to the interested farmers.

● Marketing outlets (LIPCOS)

LIPCOS a new marketing system is suggested. "Livestock Products Co-operative societies" are to be set up in five places of every Grama Panchayats in Kollam district. More outlets will be set up in municipalities and corporation. An apex body at district level will be set up governed by Jilla Panchayat a team with officials and representatives of self help groups. This body should develop operating protocols and organize marketing with common brand name, advertising etc.

The society will be procuring milk, egg and agricultural products initially and selling them farm fresh. Later on processed meat will also be included. Initially this will be located in public buildings / attached to veterinary or other institutions. These marketing outlets can be interlinked to the primary agriculture markets proposed by agriculture sector.

Proposals for animal welfare

Under animal welfare schemes for

prevention of cruelty against animals, population control programme for dogs etc. are proposed.

Other Proposals

Other proposals include elephant rides at Perinadu (inorder to attract tourists) and Poothakkulam (considering its present potential) and ornamental poultry rearing unit at Perinadu Grama panchayat.

Zoonotic Disease Control Programmes

Analysis reveals that many of the emerging diseases of human are of animal origin. Hence a disease free healthy livestock and poultry population is a must for achieving healthy human population. Following schemes / programmes are to be implemented in this respect.

● Comprehensive Rabies Control Programme

The programme aims at eradicating rabies by vaccinating susceptible population and controlling the stray animal population. This proposal will cover all the LSGIs.

● Avian influenza control programme

The programme aims at controlling the bird flue disease. This proposal will cover all the LSGIs.

● Zoonotic disease surveillance Cell

This is a comprehensive mechanism to have surveillance on the disease patterns of the animal and poultry population and have strict vigil on emerging zoonotic diseases. The cell should take proactive steps to avert such threats.

1.5. Fisheries

According to the district fisheries policy, by 2021 Kollam has to become a major Marine Export Zone considering its potentials for Inland and deep sea fishing and aqua culture and also proximity to port while giving emphasis to aqua resource conservation and fisher folk welfare.

Marine, fresh water, brackish water and western ghat fish diversity contribute to the fisheries wealth of the state and it has an important role in modulating the



Fishing boats - Kollam

economy of the state. The state receives a considerable income through export of fish and fishery products.

From time immemorial Kollam district has a unique position in the state's fisheries scenario. Now in order to augment the situation the present efforts through formulation of Integrated District Development Plan of which fisheries sector is a major component is a pathfinder. The developmental suggestions and proposals in this sector are almost in line with the State's Fisheries Policy. The developmental proposals are formulated in such a way that the capture based fishery will be sustained, Inland and Aquaculture production will be augmented in a most environment friendly manner and exports will gain a large stride which will give considerable momentum in the foreign exchange earnings. The district will attain self sufficiency in fish production and its utilization and effective measures will be taken up to conserve fish and fishery resources, development of the fisheries infrastructure and industrial fisheries. Socio economic upliftment of the dependent downtrodden, creation of alternative employments etc. will be attained. The proposals framed in this regard are listed here under.

Proposals for Seed Production Centres

The proposals for seed production centres include carp seed hatchery, carp seed rearing units, shrimp hatchery, scampi (fresh water prawn) hatchery, mud crab hatchery, marine and brackish water fin fish hatchery, marine ornamental hatchery, larvorous fish seed production centre and all male tilapia seed production centres.

● **Carp Seed Hatchery:**

It is proposed to set up a district seed farm at Adichanalloor chira, Adichanalloor which is in the Agro allied Development Zone.

The components of the proposal include deepening of the chira, reclamation of land in the chira for the construction of hatchery building, vertical nursery ponds, and larval rearing ponds, setting up of induced breeding facilities, setting up of brood stock and grow out ponds, water circulation system, electricity and aeration facilities etc.

● **Carp Seed Rearing Units:**

The suggested locations are Grama Panchayats of Oachira, Thazhava, Karunagapally, Thodiyoor, Chavara, Thevalakkara of Sub Zone 4 of Special Development Zone and the Grama Panchayats of Edamulakkal and Yeroor of Agro Development Zone.

● **Shrimp Hatchery:**

In order to ensure availability of quality shrimp seeds a commercial level shrimp hatchery is proposed in the District. The suggested locations are at Neendakara and Chavara Grama Panchayats.

● **Fresh Water Prawn Hatchery**

Considering the export potential of scampi and the growing demand for the seeds for aquaculture it is proposed to set up a scampi hatchery in public sector. The suggested locations are at Neendakara and Chavara Grama Panchayats.

● **Mud Crab Hatchery:**

Considering the export potential of crabs and the growing demand for crablets one crab hatchery is proposed to be set up in public sector. The suggested locations are at Neendakara and Chavara Grama Panchayats.

● **Marine and Brackish Water Fin Fish Hatchery:**

It is proposed to set up a fin fish hatchery in public sector at Neendakara and Chavara Grama Panchayats.

● **Marine Ornamental Fish Hatchery:**

Considering the growing demand for marine ornamental fishes in the international market it is desired to set up a marine ornamental fish seed producing centre in public sector.

The suggested locations are at Neendakara and Chavara Grama Panchayats.

● **Larvorous Fish Seed Production Centre:**

It is proposed to start up a larvorous fish breeding and production centre at Punukkannoor chira of Elamballoor grama panchayat.

● **All Male Tilapia Seed production Centres:**

Starting up an 'all male tilapia seed production centre' in the district will considerably increase the fresh water fish production and hence the proposal. It is envisaged to start up an all male Tilapia seed production centre in the Maruthady vattakkayal area in Kollam Corporation.

Proposals on Production Enhancement for Self Sufficiency

The proposals for achieving self sufficiency include production enhancement mainly through aquaculture and stock enhancement programme.

● **Aquaculture:**

Proposals in aquaculture include fresh water fish culture, paddy cum fish culture, integrated pig cum fish culture, integrated duck cum fish culture, integrated poultry cum fish culture, pen culture and running water fish culture, all male tilapia culture and renovation of Grama Panchayat ponds for fish culture each of which are detailed out with components, period of implementation, costing and responsible agencies.

Other Proposals:

Other proposals for self sufficiency include production enhancement through social fisheries, reservoir fisheries, open water ranching and sea ranching.

Proposals for Economy Generation

Proposals for economy generation include production enhancement through aqua culture, capture fisheries and tourism fisheries.

● **Export Oriented Aquaculture**

Proposals for aquaculture for export include ornamental fish culture, shrimp farming, mussel farming, oyster farming, prawn farming, cage culture, mud crab farming, marine pearl culture, aqua culture estate, fresh water pearl culture, seaweed farming, clam culture, spirullina culture, mussel and oyster spat collection units, marine ornamental fish collection and trade units and aqua pet trade units.

● **Capture Fisheries:**

Proposals for capture fisheries include deep sea fishing by diversification of excess number of mechanised fishing fleet and popularisation of eco-friendly gears for the sustainable fisheries by providing suitable subsidy to fishing implements.

● **Tourism Fisheries:**

Proposals for tourism fisheries include game fisheries, aqua techno park, oceanarium, deep sea fishing tour, fisheries museum and ornamental fish Shows.

Proposal for Resource Conservation

● **Marine**

Proposals for resource conservation include the specific proposals like for marine, back water and other inland areas.

Proposal for resource conservation in

marine include proposals like Theera Vanam/Haritha theeram programme, enforcement of KMFR Act and establishment of artificial reef for revitalizing the aquatic environment.

Conservation proposals for backwaters include marine bio reserve, enforcement of Inland Fisheries Act, mangrove afforestation, fish wealth conservation through removal of stake nets, replacement of kayal latrines, dredging of backwater, silvo-fisheries at Ayiramthengu and Scheme for Controlling the Little Cormorants Population to prevent the reduction of fishery wealth.

Conservation proposals for other inland areas include fish sanctuary, mahaseer hatchery, pisci- clubs and ranching of larvivorous fishes in drainage canals and other open waters for the biological control of mosquitoes.

● Backwaters

○ Marine Bio Reserve

Conservation of natural stock of fish and other aquatic life is the most important way to sustain the Ashtamudi estuary for present and future generation of dependent people. The Wild Life (protection) Act of India (1972) provides legal protection to many aquatic animals. Chapter 4 of this Act, dealing with sanctuaries, National parks, game reserves and closed areas is equally applicable to marine reserve and marine parks.



Marine bio-reserve area - Ashtamudi estuary

It is proposed to establish a marine bio reserve at the upper part of the Ashtamudi estuary which would be helpful for the lost habitats of true residential and migratory fishes such as *Etroplus suratensis*, *Scatophagus argus*, *Ehirava fluvialis* and can serve as an undisturbed spawning area, where by the depleted stocks can be recovered in the estuary.

"Marine Bio Reserves" are zone where no fishing is allowed and fish stocks are maintained. They provide sustainable longevity of the inland fishing industry, renewable fish stocks and an important research focus". Total out lay of the proposal is 200 lakh rupees. The suggested locations are at Ashtamudi lake region of Munro Island, Panayam and Perayam as shown in Figure 3.4.

The Marine bio reserve will be established in an area of about 2 sq. km at the upper Kayal region of the Ashtamudi lake in and around the peeyamthuruth (pallyam thuruth) situated in the middle of Perumon Kayal from where mud is excavated for the

construction of railway bridges. This thuruth will be the base station for the proposal with kayal patrolling facilities. The proposal will be implemented by Fisheries department in association with FIRMA, HED, LSG'S, Water Transport Dept. etc and with the support of Forest Department.

It is suggested that the proposal for Ashtamudi lake tourism circuit and a circuit by passing the marine bio reserve area of tourism sector shall be suitably modified such that, boat traffic and fishing activities will not be permitted here. The boundaries will be marked by fixing end posts and the area will be kept undisturbed using fish aggregating devices.

○ Enforcement of Inland Fisheries Act

In inland fisheries sector, the gears employed for fishing are classified in to fixed engine and free nets. In addition, people often resort to usage of undesired destructive mode of catching fish like dynamiting, electric fishing, deposition of thoopum padalum etc. The law relating to inland fishing in Kerala is contained in the 'Indian Fisheries' Madras Amendment Act-1927 and the Travancore- Cochin Fisheries Act-1950. Kollam district comes under the preview Travancore-Cochin Fisheries Act-1950. In order to exercise the powers of the Travancore-Cochin Fisheries Act-1950 and the Rules made there by the Department of Fisheries setup a backwater patrolling wing. Speed boats are provided with these wings. On annual basis a sum of Rs. 5 lakhs is needed for the backwater patrolling.

○ Mangrove Afforestation

Realizing the fact that destruction of mangroves is taking place at an alarming rate, it is necessary to implement programmes for afforestation of mangroves in selected locations or Grama Panchayas with a view to preserving bio diversity. Seedlings of selected species will be raised in nurseries at Ayiramthengu Government fish farm and will be planted in selected locations / Panchayats ensuring community participation at local level.

○ Fish Wealth Conservation through Removal of Stake Nets

The Ashtamudi estuary is subjected to high fishing pressures exerted by the unusual increase in the number of fixed and wandering gears. There were 918 stake nets and 1283 Chinese dip nets in

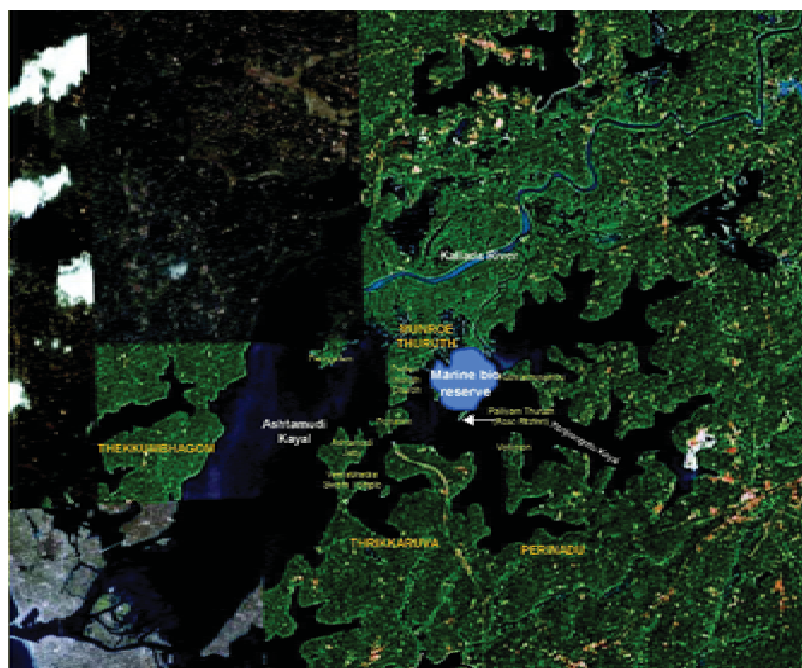


Fig. 3.4 : Marine Bio-Reserve

operation in the backwater. It is estimated that on an average annual basis about 2000 tons of juveniles of Penaeid prawns are indiscriminately filtered from the Ashtamudi Kayal. Stake nets are also operated during high tide period which is locally known "Ettam kettu". Indiscriminate intervention on this estuarine environment is disturbing the migration of juvenile prawns also hampering the eco balance of the natural resources. It is proposed to remove all the stake nets operated near the bar mouth of Ashtamudi estuary by providing adequate compensation to stake owners.

○ Replacement of Kayal Latrines

The dominating deleterious effect resulting from the disposal of sewage to rivers and estuaries is that of O₂ depletion. This sometimes led to eutrophication and associated problems. In Kollam district there are over 10000 kayal latrines on the banks of Kayamkulam lake, Karunagapally Vattakayal, T.S. canal, Ashtamudi estuary, Kollam thodu, Paravur kayal and Edava Nadayara kayal. All these kayal latrines should be removed and replaced with pucca septic tanks. So a total sanitation scheme for the residents near the bank of these water bodies is proposed. The LSGIs included are Alappad, Neendakara, Chavara, Thekkumbhagom, Thevalakkara, Thrikkaruva, Panayam, Munro Island, Paravoor, Mayyanad, Trikkadavoor, Kollam, W.Kallada, Perayam, Karunagapally, Clappana, K.S.Puram, E.Kallada, Poothakkulam, Adichanalloor and Panmana.

○ Dredging of Backwater

The depth of the Ashtamudi estuary, shows a decreasing trend during the past decades. The reduction in depth is mostly brought about by the deforestation activities taking place at the catchment areas, siltation, sediment deposition due to change in water current and current velocity, dredging of the sub fossil deposits etc. Large scale extraction of water from the rivers for the purpose of agriculture, irrigation, etc have resulted in the drying up of Kallada river during summer months whereby a steady elimination in the fish wealth have taken place due to the habitat loss.

In order to maintain proper depth in the backwaters dredging out of the already deposited sand/mud is essential. Immediately after that it is essential to

dredge out about 100 cubic meters of sand / mud from the estuary.

○ Silvo-Fisheries at Ayiramthengu

The recent trend in aquaculture is towards sustainability. One of the main sustainable alternative to coastal/ aquaculture pond development associated with mangroves is Silvo-Fisheries. It is a form of integrated mangrove tree culture with brackish water aquaculture. Mangrove tourism will help to imbibe awareness on mangrove conservation. In Ayiramthengu we can explore the possibilities of mangrove and tourism. The harmonious co-existence of tourism and nature will be balanced through man education and peoples' awareness. The present proposal is to bring the 39 ha area of Ayiramthengu Govt. fish farm under the fold of Silvo-Fisheries.

○ Scheme for Controlling The Little Cormorants Population to Prevent the Reduction of Fishery Wealth

The proposal aims to reduce 70% of the bird population from its present level of 1 lakh numbers. An incentive is given at the rate of Rs. 5 per bird for shooting down the bird with air gun. Thus the total out lay of the proposal is estimated as 4 lakh rupees which include the cost of air gun, bullets and training. The LSGIs covered are Alappadu, Neendakara, Chavara, Thekkumbhagom, Thevalakkara, Thrikkaruva, Panayam, Munro Island, Paravoor, Mayyanad, Trikkadavoor, Kollam, W.Kallada, Perayam, Karunagapally, Clappana, K.S.Puram, E.Kallada, Poothakkulam, Adichanalloor and Panmana.

● Other Inland

○ Fish Sanctuary at Kulathupuzha

Kerala is blessed with rich biodiversity of fish fauna. But recently many of these fish species were categorized as critically endangered, facing serious risks of extinction in the wild. 31 species were listed as endangered, 18 species were assessed as vulnerable category and 13 species were recorded as threatened. Serious efforts to protect the fish biodiversity are needed in the case of these indigenous ornamental fishes and cold water fishes.

In order to protect the threatened species from extinction and to conserve the resources, fish sanctuaries need to be developed at appropriate places where, the existing stock is enriched by ranching

and providing natural or artificial fish aggregating devices. The proposal is to establish a fish sanctuary at Kulathupuzha for protecting cold water fishes.

○ Mahaseer Hatchery at Kulathupuzha

Indigenous species like Tor Mussallah are included in the category of endangered fishes. Measures to increase their resources need to be taken up by programmes like river ranching, culture, establishment of sanctuary etc.

At present there is only one hatchery for the cold water fish the one at Rajamala in Munnar maintained by TATA Group. The production of the seeds of trout only is carried out there. The present proposal envisages to setting up a Mahaseer hatchery under public sector, at Kulathupuzha for the mass production of its seeds.

○ Pisci- Clubs

Fishery resources are not inexhaustible. Conservation of the natural fisheries resources is a dire necessity of the period. In the marine and brackish water sector the main problem arise due to pollution, over fishing and indiscriminate fishing. In inland sector the biodiversity is alarmingly declining due to a variety of reasons like obstruction of river courses, regulation and diversification of water flows, damming, sand mining and habitat destruction, loss of riparian canopy cover, deforestation leading to soil erosion, illicit fishing etc.

Lack of awareness regarding the necessity of conservation of fish stock among the new generation is a major hurdle in the success of conservation efforts. These warrant a scheme for providing awareness to the younger generation on various aspects of fishery and water resource conservation. Hence a scheme is proposed to organize pisci-clubs in the manner of Science or Nature clubs in all high schools of the district. The scheme will be implemented by Jilla Panchayat through Fisheries Department in association with Education Department.

○ Ranching of Larvivorous fishes in drainage canals and other open waters for the biological control of mosquitoes

The introduction of larvicidal fishes in water bodies where mosquitoes breed should definitely result in a very effective control on the population of the mosquitoes. In selection of the larvicidal fishes for such

a control, preference is given to fishes with small size, breed frequently, have little food value and hardy enough to withstand the difficult ecology of these swampy waters. The guppies, gambusia and several indigenous fishes like danio, rasbora, esomus, puntius etc have such qualities.

It is proposed to ranch 5 lakh such larvicidal fishes in to the drainage canal and other water bodies in the district to control the dreaded epidemics every year. The suggested locations are at Kollam Corporation, Karunagapally, Paravoor and Punalur. The proposal is linked with Health.

Proposals on Infrastructure Development

Proposals for infrastructure development include infrastructure for Marine Export Zone, marketing and for research, extension and training.

● **Infrastructure for Marine Export Zone:**

Proposals for Marine Export Zone include infrastructure for Thangassery port, modernisation of fishing harbours, modernisation of fish pre processing centers, depuration units and value added fish products units.

● **Infrastructure for Marketing:**

Proposals on infrastructure for marketing include modernisation of fish markets, establishment of cold storages and cold chain, fish booths, economic empowerment of fisher women SHG's through the development of micro enterprises, providing insulated crates for fish vending, vehicle for the fish vending women group, controlled atmosphere packing (CAP) units, cluster production centres, dried fish product making unit, sea food restaurants, fish meal production unit, fish silage production unit, ready to cook/ ready to fish product making unit, aqua/ fishery stores and live fish markets.

● **Infrastructure for Research, Extension and Training:**

Proposals on infrastructure for research, extension and training include matsya vikjana kendram, establishment of new matsyabhavans and infrastructure facilities for the exiting matsyabhavans, model demonstration fish farm, establishment of fisheries research laboratory, fish quarantine and inspection unit, strengthening of matsyabhavans as knowledge centres for fishermen in coastal villages and aqua book shelves.

● **Other Infrastructure:**

Proposals on 'Other Infrastructure' include setting up of feed mills, establishment of inland fish landing centers, establishment of boat berthing facilities, net mending unit, fisheries roads and establishment of guide lights.

Proposals for Fisher Folk Welfare

Following are some of the proposals for fisher folk welfare.

Fishermen housing scheme, providing land to landless fishermen, providing assistance to fishermen house renovation, providing sanitation facilities to fishermen houses, fishermen house electrification, roof top rain water harvesting For fisher house holds, saving cum relief scheme, sea rescue squad, educational concession to fisher folk, maintenance of Karunagapally Regional Fisheries Technical High School, free ration to the fishermen of mechanized boats and allied worker at the fishing harbours during trawl ban period, kerosene subsidy for fishing, fishermen development rebate on HSD oil, providing LPG kit to OBM based marine plywood canoes, providing solar lamps to MPC's, providing GPS and wireless sets to the small mechanised fishing vessel, providing assistance to fishermen for treatment of fatal diseases, fishermen old age pension, fishermen group insurance scheme, fishermen personal accident insurance scheme, matsyafed input security scheme, providing subsidy to suitable components of fishing gear, and scheme for motorisation of country craft.

By the implementation of these developmental proposals as described in a phased manner, the district will be in a position to achieve nearly 1 Lakh ton fish production at the end of 2015 and 2 lakh ton at the end of 2022. This provides a livelihood to 0.5 lakh people directly in the year 2015 and 0.7 lakh people in the year 2022. Over and above the key point suggested by the District Fisheries Policy as "Marine Export Zone" will be touched even before the completion of the implementation of the developmental suggestions and the District will attain the status as the model fishery district in the National level.

3.6 Industries

According to the district Industries Policy, by 2021 Kollam has to be converted into a destination of environment friendly

agro processing and traditional industries while giving thrust to IT and health service sectors through the creation of skilled personnel. Accordingly the thrust areas are developing agro based industries, strengthening and modernizing traditional industries, developing health service industries and knowledge based industries along with required intervention in human resource development. Proposals in this respect are briefed here under.

Proposals for Agriculture and Allied Processing Industries

● **Agro Bio Based Industries**

Fairly a large number of people in Thevalakkara and West Kallada Grama Panchayats are depending upon coir industry for their livelihood. Coir pith dumped in bulk quantities in the coastal areas adversely affects the ecology of the locality. Research and studies conducted by Coir Board has led to the utilisation of coir pith for the production of briquettes, design doors, partition boards etc. It is proposed to start an industrial unit at Thevalakkara Grama Panchayat.

● **Fish Processing**

In the present scenario, there is ample scope for value added fish products. It is proposed to start 5 fish processing units each in Kollam Corporation, Alappad, Chavara, Karunagapally and Neendakara Grama Panchayats in line with the suggestions of Fisheries sector.

● **Dairy Unit**

According to the analysis of animal husbandry sector, the milk production in the district is much lesser than the demand and the demand supply gap is filled by the neighboring States. Animal husbandry sector has, therefore, recommended a mini diary unit at Mynagapally Grama Panchayat in Kollam District.

● **Milk processing unit with chilling plant**

According to the industries sectoral analysis, it is seen that there is scope for a milk processing unit in the eastern parts of the district. Anchal in Kollam District (under the Multi Functional Zone) is an ideal location for setting up milk processing unit with chilling plant facility.

● **Food Processing Unit**

Based on the sectoral analysis results, it is proposed to set up 12 micro food processing units. Of these 7 are suggested at Alayamon, Edamulakkal, Pathanapuram,

Yeroor, Kadakkal, Ummannur and Vettikkavala Grama Panchayats in Agro Development Zone and 5 are suggested at Sooranad North, Sooranad South, Thodiyoor, Kareepra and Kulakkada Grama Panchayats in Agro-Allied Development Zone. The agriculture sector, proposes for productivity improvement and promotion of banana cultivation and pineapple cultivation etc. The agricultural products in increased quantity thus produced can be processed in the food processing units suggested here.

● **Flour Mills and Curry Powder Manufacturing Units**

There is ample scope for starting curry powder units and flour mills in the Panchayat areas especially where agriculture is prominent. The following panchayats are ideal to start such units namely Alayamon, Anchal, Neduvathoor, Edamulakkal, Karavaloor, Kottarakkara, Veliyam, Pathanapuram, Pattazhy, Vadakkekara, Pooyappally, Yeroor, Chadayamangalam, Chithara, Elamadu, Ittiva, Kadakkal, Thalavoor, Vilakkudy, Nilamel, Melila, Mylom, Ummannur, Vettikkavala, Velinalloor in addition to Punaloor Municipality.

Apart from these, large scale paddy processing centers are suggested in agriculture sector, in Grama Panchayats of Kadakkal, Kottarakkara and Sasthamcotta. Also expeller units for value addition of coconut are proposed.

Proposals for Strengthening and Modernizing Traditional Industries

● **Mechanized Coir Manufacturing Units**

Considering the availability of raw material, ie, husk and other favorable factors as evident from sectoral analysis, it is suggested to set up coir manufacturing units one at Kulasekharapuram Panchayat and the other at Paravur Municipality both in Sub Zone 4 of Special Development Zone. An extent of 50 cents of land in each location shall be provided by the local body for establishing the units.

● **Handloom Industry Renovation Centre**

Karunagappally, Kottarakkara and Chathannoor are the main handloom centers in the District catering to the domestic market suiting to the local tastes and preference. There are about 40 working Handloom Co-operative Societies having 10000 (appxly.) registered weavers with 6000 looms in Kollam District.

A common facility service center (CFSC) for dyeing of yarn and calendaring of cloth is proposed at Chathannoor for the sustainable development of Handloom industry in Kollam District.

● **Clay Based Industries**

Clay based industries have good scope in Kollam District. Taking advantage of this potential, it is decided to propose a clay based unit at Chathannoor for the production of pottery items, flower pots, statues etc. The availability of clay in abundant quantities is the attraction of Chathannoor and nearby areas.

● **Value Added Cashew Kernel Unit**

Kollam is the mother land of Cashew Kernels in the world. The town of Kollam has the scope of becoming a town of Export Excellence for its cashew exports. As pointed out by Finance sector, the Non Farm Sector shows maximum credit delivery due to high credit off take by cashew exporters. Also there is a proposal for rehabilitation of 3000 ha of cashew plantations by 2014 (Agriculture sector). Keeping this in mind, it is recommended for setting up value added cashew kernel units in Panchayats like Elampalloor, Ezhukone, Kalluvathukkal, Kareepra, Kunnathur and Pavithraeswaram.

● **Handloom Units**

Setting up of 10 Handloom units in Kollam District at strategic locations like Kollam Corporation, Grama panchayats of Chathannoor, Karunagappally, Kottarakkara, Kulathupuzha, Mayyanad, Pavithreswaram, Poruvazhy, Thodiyoor and Paravur municipality is proposed.



Handloom - Pooyappally

● **Manufacturing of Bamboo Based Products and Handicrafts Items**

Pirvanthoor, Kulathupuzha, Thenmala and Aryankavu are the Grama Panchayats located in the eastern part of the District. The tribal people in these areas are experts in the manufacturing of bamboo and cane based products such

as baskets, mats, cane furniture, handicraft items etc. Raw materials for the manufacturing of the above products are available in plenty in these areas. Therefore raw material depot for collection and distribution of raw materials and training programmes in the manufacturing of attractive Handicraft items are proposed.

There is scope for starting 5 units in each Panchayat totalling to 20 units in four panchayats.

● **Development of Existing Industries**

A large number of SSI units at Elampalloor, East Kallada, West Kallada and Perayam Grama Panchayats are struggling hard for their existence. Most of the above units are working with the conventional type of machineries and other facilities. For the development of such units they have to switch over to CNC machineries and computer technology. If such technologies are adopted, the quality of products can be improved and capacity of the unit can be increased.

At least 3 units each from the above four Grama Panchayats shall be identified for which expansion proposal shall be prepared by District Industries Centre and implemented with the support of financial Institutions. Necessary training shall be given to the entrepreneurs at appropriate level by different agencies.

● **Development of Existing Industries and Starting of Micro Units**

Though Coir Mats and Matting Industrial Co Operative Society was registered at Poothakulam Panchayat, it has not started production till date. Infrastructural facilities like land, building etc are still available with the society. Starting of industrial units with service of expert workers for the production of attractive items from coir yarn is proposed. Also micro units are proposed at Paravur municipality and Kalluvathukkal Grama Panchayat.

Proposals for Health Services industries

● **Public Medical Centre and Bio Medical Industries**

The number of hospitals with modern facilities is growing day by day which require bio medical equipments. In this context, there is ample scope for starting a bio medical equipment manufacturing unit at Kollam. The unit is proposed at Chathannoor Grama Panchayat.

● **Ayurvedic Medicine Manufacturing Units**

Punalur is an ideal location for starting Ayurvedic medicine manufacturing units due to the availability of raw materials, especially medicinal plants from surrounding Panchayats. Skilled labours in the manufacturing of various kinds of 'Lehyams', 'Tablets', 'Arishtams' and herbal and other oils are available in this area.

Proposals for Knowledge based Industries and Services

The proposals include setting up of an IT Park at Paravur in an extent of 5 Acres of land and an IT park at Kundara. Also entrepreneurship development training is proposed in the premises of District Industries Centre, Kollam Corporation will work like a sub centre of KIED.

Proposals to Revive and Diversify Closed Public Enterprises

● **Revival of Premo Pipe Factory**

M/s Premo Pipe Factory is located in an extent of 9.00 acres of land in Chavara Grama Panchayat. The land is adjacent to the N.H and very close to Kollam Town. Factory buildings having adequate space are available in the above premises. At present Kerala Water Authority is sourcing the entire quantity of PVC pipes from outside agencies at exorbitant prices. Therefore this unit can be converted as a production centre of PVC pipes for Kerala Water Authority.

● **Rehabilitation of Alind, Kerala Ceramics Travancore Chemicals**

M/s Alind, M/s Kerala Ceramics and M/s Travancore Chemicals all located at Kundara in Kollam District are state owned public sector enterprises. The industrial policy of the state makes necessary provisions for the revival of potentially viable sick public sector enterprises. Therefore the Technical Advisory Committee on Industries and Co-operation discussed the above cases in detail and recommended to revive the above PSUs in a period of 5 years. The existing infrastructural facilities like land, building, and machinery can be utilized for the rehabilitation process. The rehabilitation can be carried out by adopting modernization, diversification, privatization, joint venture operation etc.

● **Revival of Pomsy Biscuit Unit**

Pomsy, a private concern engaged in the manufacturing of biscuits, which comes under medium scale industry. The unit is

defunct at present due to financial problems. Government has to take steps to revive the unit in consultation with the management.

● **Revival of Parvathy Mills**

There is a proposal for starting a large scale garment manufacturing unit at Parvathy Mills, Kollam by utilizing the infrastructural facilities available there. At present the mill is working under loss and the capacity is not fully utilized. Since this is a Public Sector Undertaking (PSU) under National Textile Development Corporation, GOI and GOK shall take appropriate steps to start the new venture.

● **Revival of other Closed and Defunct Industries**

It is a fact that a large number of units which are started under PMRY Scheme are either closed or defunct due to various reasons such as lack of working capital, mismanagement and inadequate marketing of products etc. Industries Department shall identify revivable units from among the closed units with concrete proposals for revival. The Grama Panchayats of Alappad, Panmana, Chavara, Kulasekharapuram and Oachira shall provide necessary funds in the plan proposals for assisting the above said units.

Creating a Pool of Skilled human resource

Industrial units are on the look out for trained persons for providing employment. Therefore job seekers having required qualifications need some experience in the relevant field to become employable. To achieve this objective, the entrepreneurship training centre set up in the DIC premises, Kollam is proposed to function as a finishing school. Need based training programmes will be conducted at this centre as and when required. The training programmes will be arranged in consultation with industry leaders and Industrial Training Department.

It is also proposed to establish a Tool Room Training Centre at Qet Cos premises, Umayanallor. Qet-Cos is a co-operative Institution working under the administrative control of Industries Department. Training in ten batches of 50 students each is proposed every year.

Others

Other major proposals include a small Industrial Estate exclusively for toy

manufacturing at Oachira Grama Panchayat, a mini industrial estate in the existing vacant land available with M/s. Vinayakar Handloom Weavers Industrial Co-op. Society at Nedugolam, setting up of coir yarn manufacturing units in potential locations at Chavara, Clappana, Karunagapally, Kulasekharapuram, Munroe Island, Oachira, Panayam, Perinadu, Thekkumbhagom, Thevala-kkara, Thrikkaruva and Thrikkadavoor Grama Panchayats, light engineering units one each at Elampalloor, Mynagappally, Ezhukone, Kalluvathukkal and Kareepra, setting up of two separate units for the manufacture of screw pine and straw picture products one at Thrikkadavur Panchayt and the other at Thazhava Panchayt, a note book manufacturing unit at Punalur municipality, establishing a large scale school bag manufacturing units one each at Punalur and Karunagappally, promoting wooden and steel furniture units in all Panchayats/ Municipalities/Corporation in a phased manner, establishing a Rubber Wood Treatment Plant.

In addition to the above, rubber based units are proposed in the following Grama panchayats: Alayamon, Anchal, Aryankavu, Edamulakkal, Karavalur, Yeroor, Chadayamangalam, Nilamel, Ittiva, Pattazhy, Pathanapuram, Piravanthur, Mylom, Kulakkada and Kummil. Setting up Food Parks are suggested at Grama panchayats of Kundara, Karunagappally, Kottarakkara, Kollam Corporation, Paravur and Punalur Municipalities.

Also cluster approach for development with common raw material banks, common facility service centres, common marketing centres, and common skill training centres etc. are also suggested.

As far as Kollam is concerned through the implementation of the said proposals with effective forward and backward linkages between the primary, secondary and tertiary sectors, considerable hype can be achieved in the Industrial sector in the district by 2021.

1.7 Health

According to the district health policy, by 2021 Kollam has to enhance the health status of the people of the District through preventive measures and by providing quality treatment through the three systems of medicines. The proposals evolved in tune with this are listed here under system

I

1

2

3

wise. Thus altogether there are a lot of improvements required in the health sector particularly in the control of epidemics, life style diseases etc. which are linked with public hygiene and lot of awareness is essential for the people to prevent the diseases rather than to cure. It is expected that this can be achieved by the timely implementation of these proposals.

1.7.1. Allopathy System of Medicine

Providing Existing Institutions with supportive infrastructure facilities:

As per analyses, spatial distribution of hospitals is not uniform. Distribution of hospitals therefore must be as per need especially focusing on remote areas. The supportive infrastructure facilities for the existing institutions are provided accordingly.

● District Hospital

District Hospital is one of the multi specialty hospitals under Government sector. Even then all specialties are not available particularly, neurology, nephrology, geriatrics, trauma care unit, etc. Though other specialties are there, none of the units are in full swing due to lack of specialist doctors and paramedical staff proportional to patient strength. Also there is extreme lack of modern diagnostic facilities like MRI, Micro biology, Pathology Departments. In these circumstances the following measures have to be implemented.

- The bed strength to be increased according to OP strength. Present bed strength is 537. This is to be enhanced to 750 or more. Thus proposal for enhancing the District Hospital to the status of General Hospital with bed strength of 750.
- In all the departments the post of doctors both general and specialists should be increased according to bed strength. Proposal for posting of concerned specialists according to requirement in specialty hospitals avoiding gross anomalies.
- Additional specialty departments like geriatrics, oncology, neurology, nephrology, trauma care should be added with sufficient specialist doctors and paramedical staff.
- The diagnostic facilities to be improved by establishing microbiology and pathology departments. In addition MRI facilities, Echocardiogram, EEG

are to be newly attached as these are common but essential.

- Bed strength of the pain and palliative clinic at the only District hospital in Kollam Corporation is to be raised from 6 to 15 which will give relief to the cancer patients.

● Women and Children Hospital (Victoria Hospital)

Victoria Hospital is the only hospital exclusively for women and children in the Government sector in the District. Present facilities and infra structures are insufficient, taking into account the no. of patients attending the institution.

The following facilities have to be provided:

- Bed strength should be increased from 273 to the status of Women and Children Hospital, Thycad, Thiruvananthapuram and also the staff strength should be increased according to bed strength.
- Pre-operative and immediate post operative ward with monitor facility is essential.
- Equipments like ventilator, pulse oxymeter, operation table, Boyle's apparatus are required.
- Separate theatre for operating septic cases, elective cases and emergency cases is a necessity.
- Anti natal, post natal ward is very old and in dilapidated condition and needs to be demolished and new construction is to be erected.
- Separate duty room for causality M.O and general M.O.
- Separate ward for septic cases, isolation ward and ward for emergency cases.
- Doctors room for male and female (changing room)
- Separate changing room for all paramedical staff.
- Additional sick room for paramedical staff.
- A separate canteen facility for staff.



Victoria hospital - Kollam

● Taluk Head Quarters Hospitals

The facility at Taluk hospital Punalur are proposed to be increased to the status of District Hospital since it is in a remote area where there is no specialty hospitals in the nearby GPs covering Kulathupuzha, Thenmala, Aryankavu, Anchal, Yeroor, Edamulakkal, Alayamon, Piravanthoor etc.

The following facilities have to be provided:

- Bed strength to be increased from 144 to above 500.
- 5 storied building to be constructed with O.P block at the bottom, investigation. Facility in the 1st floor, theatre facility in the 2nd floor and I.P facility in the 3rd and 4th floor.
- Causality and trauma care unit.
- New specialties like dermatology, ENT, Pediatrics and Ophthalmology etc.

● Government Hospital

The only, new hospital in Govt. sector is proposed at Nedumpna. Presently it is a TB centre.

● Community Health Centres

Community Health Centres (CHC) has to be raised to Indian Public Health Standard (IPHS) status. None of the CHC is having full staff strength according to the CHC pattern. This has to be rectified. In addition to that the infra structure facilities like X-Ray unit have to be made available and the lab facilities are to be improved. Strengthening of primary and secondary level of health institutions by way of optimum use of RCH programmes and NRHM are also required.

● Block Primary Health Centre

For Block Primary Health Centre staff strength is to be increased according to the staff pattern of the PHC. The lab facility at block PHC level has to be enhanced.

11 Block PHC's of the District have to be raised to the status of the Community Health Centre. Modern investigative and diagnostic facilities are to be implemented in Block level hospitals of the district. At present such facilities are available only at P. H. Lab attached to District Hospital. Strengthening of primary and secondary level of Health Institutions by way of optimum use of Reproductive Child Health (RCH) programmes and National Rural Health Mission (NRHM) is also required.

● Mini Primary Health Centres

In all the 53 Mini PHC's of the District, 24 hrs service delivery is to be

implemented. The staff pattern to be raised to 2 M.O's and 4 Staff nurse pattern. Provision to hire vehicle for conducting immunization session and effective supervision and strengthening of primary and secondary levels of Health Institutions by way of optimum use of RCH programmes and NRHM is also required.

● Sub Centre facilities

There are 427 sub-centre in our District including P.P units, of which 209 are functioning in Govt. building and 182 in rented building. The facilities in the Govt buildings have to as per rule, a population of 5000 is required for one sub centre. But at present in some areas population of about 10000 to 11000 exists for one sub centre. Hence 150 sub centres are newly required in addition to the existing 427 sub centres.

● Specialty Care

There is one District TB Centre and one T.B Hospital at Karunagappally. These two hospitals have to be converted to **Hospitals for chest diseases** with improved facilities.

Public Health Lab : Diagnostic facility in the public health lab is to be improved and the lab has to be converted to regional diagnostic Lab. Establishment of advanced facilities like cytopathology, microbiology and pathology is proposed in the public health laboratory at District.

Cancer Care: A separate wing for cancer detection with treatment facility shall be attached to District Hospital. The facility at the palliative care at CHC Neendakara has to be improved.

A separate **Ophthalmic Institute** will have to be started in the District due to high incidence of cataract cases and other ocular diseases.

Proposals for Disease Preventive Measures:

● Awareness Programmes

In remote hilly and tribal areas immunization is incomplete. Drop out cases are more in these areas and hence periodic additional immunization camps and awareness programmes need to be conducted in these areas. Separate Mobile units with sufficient facilities should be made available in these areas (Kulathupuzha, Thenmala, Aryancavu, Piravanthur etc). Awareness camps are to be organized at ward level for control of both communicable and non-communicable disease.

● Detection Camps

Detection camps are to be conducted at LSGIs for life style diseases like Hyper tension, Diabetics, Heart diseases covering all people above forty years of age utilizing Government fund and fund of LSGIs.

Proposals for occupational disease:

● Cashew Workers

Periodic detection camps for cashew workers since prolapse of uterus is found to be more prevalent among cashew workers. This can be done by LSGIs through near by Govt. Hospitals and facilities at factories are to be improved.

The cashew workers should be provided with masks for preventing the entry of dust particles in to the lungs. Instead of the present method of shelling cashew nuts by sitting on the legs, proper raised plat forms should be provided so that the workers can shell the cashew nuts either bystanding or by sitting in a chair.

● Coastal Fishermen

Among fishermen population, periodic screening camps should be conducted with the help of LSGIs, for the detection of cancer of uterus and thyroid diseases.

● Newly Emerging Diseases

Newly emerging diseases like Chikungunya, dengue, leptospirosis etc are on the increase. Early detection facility should be available in block level laboratories. Awareness camps should be conducted at ward level. Such diseases and other communicable disease like diarrhea are associated with improper waste management. Hence there is necessity of proper waste management system which is to be provided by the Local bodies, especially in existing urban local bodies of Kollam Corporation, Punalur and Paravur Municipalities - and future urban centers like Karunagappally, Kottarakkara and Anchal as well.

● Other proposals

- Establish mobile Hospital units with all possible modern facilities and specialist to reach the tribal areas of Piravanthur, Aryankav, Kulathupuzha and Thenmala
- Periodic maintenance of Hospitals and equipments are proposed for improving the service delivery system. Facility for assessing the quality of equipments is also proposed Service contract shall be ensuring along with purchase of equipments like EEG, CT scan, Auto

Analyzer etc.

- Enhancement of Co-ordination between health services and Local Self Governments to take up public health issues.
- Existing unutilized buildings shall be utilized according to the need of the respective institution like conducting conferences, meetings, health education classes etc.
- Timely release of sufficient funds for proper implementation of works.
- Accredited Social Health Activists (ASHA) concept under NRHM has to be extended up to 2021 since their involvement is there in all National programmes.

● Linkages with other sectors:

- The proposal for ranching of larvivorous fishes in drainage canals and other open waters for the biological control of mosquitoes as per Article 7.5 can be linked with the health dept.
- The proposal for propagation to include leafy vegetables having iron content in the diet as per Article 7.14; Social Welfare can be integrated with the Health Dept. There are proposals for strengthening the women component of ICDS. The nutrition component may be strengthened by imparting awareness at Sub centre level which can be achieved through co-ordination of Health and social welfare Dept. As suggested, specialty departments including geriatrics have been provided in the District Hospital.

1.7.2. Ayurveda System of Medicine Requirements

● District Medical Office

District Medical Office (ISM), Kollam has to be modernized with conference hall, video conferencing facilities, modern equipments etc. A District medical store has to be attached to this Office.

● District Ayurveda Hospital, Kollam

District Ayurveda Hospital, Kollam has to be immediately upgraded and bed strength raised to 500 in general sector with specialty wards for Marma, Panchakarma, Visha, Netra, Kaumarabhrithya and Prasooditantra with fifty bed strength each. Following are the other requirements of District Ayurveda Hospital:

Special pay wards with 100 rooms, deluxe pay wards with 50 rooms, hi-tech Panchakarma Theatre, mini operating



Government Ayurveda hospital - Asramam, Kollam theatre, ultra sound scan, digital X-ray unit, clinical lab with pathologist, ambulance, staff quarters, physiotherapy unit, recreation facility, canteen service, patient waiting lounge with purified drinking water, toilet and recreation facilities, staff training facility, geriatric centre, research and development wing.

● **Government Ayurveda Hospital, Ayoor**

The Government Ayurveda Hospital, Ayoor situated in Edamulakkal Grama Panchayat shall be strengthened with the following: Bed strength is to be increased to 200 in general sector, Panchakarma, marma, visha specialty units with 20 beds each, X-ray unit, clinical laboratory, physiotherapy and separate Panchakarma theatre for male and female, staff quarters, pay ward and telephone facilities etc.

● **Government Ayurveda Hospital, Paravoor**

In the Government Ayurveda hospital in Paravoor Grama Panchayat, following improvements are suggested - Bed strength is to be increased to 200 in general sector, Marma, panchakarma and manasika (Psychiatry) specialties are to be introduced, X-ray unit shall be provided, clinical laboratory shall be provided, pay ward and telephone facilities are to be provided, staff quarters etc

● **Government Ayurveda Hospital, Thalavoor**

Following improvements are suggested Government Ayurveda Hospital at Thalavoor.

Bed strength to be increased to 200 in general sector, marma, panchakarma specialties are to be introduced, X-ray unit, clinical laboratory, pay ward and telephone facilities are to be provided

● **Government Ayurveda hospitals at Kottarakkara, Karunagappally, Poruvazhy, Kunnathur and Nedumpna**

The five Government Ayurveda Hospitals are at Kottarakkara,

Karunagappally, Poruvazhy, Kunnathur and Nedumpna Grama Panchayats are proposed to be strengthened as follows:

Bed strength of the hospitals is to be increased to 150 each, medical officer specialized in kayachikitsa and marma is to be appointed in all the five hospitals, X-ray, clinical laboratory, physiotherapy and telephone facilities are to be provided.

● **Government Ayurveda Dispensaries**

Government Ayurveda dispensaries at Kannanloor, Kottamkara, Srayikkad, Thrikkadavoor, Kuzhikkalidavaka, Chavara and Vadakkevila are to be upgraded to 50 bedded hospitals.

● **Government Ayurveda Dispensaries now functioning in Tribal areas**

Government Ayurveda dispensaries are now functioning in tribal areas at the following places: Thenmala, Achencoil, Kulathupuzha and Yeroor. Among them Government Ayurveda Dispensary, Thenmala may be upgraded to 150 bedded hospital envisaging the regional demand.

● **Construction of own building for Ayurveda dispensaries**

Government Ayurveda dispensaries in places like Eravipuram, Cherukarakani, Mundrothuruth, Piravanthoor, Kundara, Elampalloor, Chathanoor, Srayikkad, Achencoil, Chadayamangalam, Chithara, Kareepra, Devikulangara, Panayam Perayam, Umayanloor, Thamarakkudy are now functioning either in rented building or building with insufficient facilities. So new buildings are to be constructed to house these Ayurveda Dispensaries at the respective Grama Panchayats.

● **Starting of new Ayurveda Dispensaries**

Induction of either Ayurveda dispensary or hospital with I.P facilities is proposed to support the public health system in Kulashekarapuram, Sooranad North, Vettikkavala, Melila, Vilakkudi, Pattazhi Vadakkekara, Pathanapuram, Pooyappally, Neduvathoor, Poothakkulam, Kalluvathukkal, Elamadu, Nilamel and Pattazhi Grama Panchayats.

Development at a glance

● **Medicinal Plant cultivation Unit**

An area of nearly 10 acres of fertile land where water for irrigation is available (preferably in Thenmala adjacent to forest) may be acquired and medicinal plant cultivated for the purpose of manufacturing ayurvedic medicines. Here we can cultivate the most wanted and most rarely

available plants. Thus the hardship of collection of rare species of plants could be rectified to a small extent, at the same time enhance the quality of medicines that are used in Government Ayurveda hospitals and dispensaries.

● **Medicine manufacturing Unit**

A medicine manufacturing unit can be installed adjacent to the cultivation unit. Products from this institution can be utilized for the larger needs of patients and other beneficiaries approaching Government Ayurveda institutions.

The above two units can be controlled and administered by separate authorities who are under the District Medical Office. The medicines produced in this factory can be supplied in the hospitals and dispensaries with a view of availing good quality medicine at reasonable price. The income thus generated can be utilized for the development purpose of each institution.

● **Manufacture of Ayurveda Medicines**

Now Oushadhi is the sole supplier of Ayurveda medicines to Ayurveda Department. This system leads to frequent shortage of medicine to the Ayurveda Institutions. In order to rectify the defects in the timely supply of medicines, district level manufacture and supply of medicines is to be introduced and this should be brought under the control of the Department of Indian Systems of Medicine.

● **Control and supervision of Private Ayurveda Institutions**

Control and supervision of private Ayurveda institutions and massage institutions through a licensing system is to be introduced to control the illicit method of private Ayurveda institutions.

● **Prevention, Treatment and Creation of Public awareness of Epidemics and Communicable diseases**

A permanent solution for the newly emerging diseases like dengue fever, leptospirosis, chikunguniya etc and other seasonal viral diseases is to be established. A district level unit with all emergency medicines with a team of medical officers and other required employees to assist them is to be made readily available on call on any spot at any time in the district. It should be managed and guided by the District Medical Officer.

Detection camps for life style disease

like hyper tension, diabetes and other occupation related ailments should be conducted at the regional and local body levels. It is to be mainly concentrated on highly populated areas and dwellings of workers like cashew workers, fishermen, coir workers, agriculture workers etc. In view of this, places like coastal areas, lakeside areas and other interior areas of the district namely Achencoil, Aryankavu, Kulathupuzha, Thenmala and Anchal can be given preference.

● Health Tourism

Ayurveda can be effectively marketed through the fast growing health tourism concept and can be linked to Tourism as mentioned in Chapter 49; Tourism. However the licensing of such facilities in both public and private sectors shall be done by the Directorate of ISM. Construction of pay wards, deluxe rooms and providing world class facilities are imperative.

General development proposals in view of up-gradation of existing Government Ayurveda hospitals

This basically includes up gradation of number of beds in District Ayurveda Hospital, Kollam, Government Ayurveda Hospitals at Paravoor, Thalavoor, Ayoor, Kottarakkara, Karunagappally, Poruvazhy, Kunnathur and Nedumpana and Government Ayurveda Dispensaries at Kannanalloor, Kottamkara, Srayikkad, Thrikkadavoor, Kuzhikkalidavaka, Chavara and Vadakkevila.

1.7.3. Homeopathy System of Medicine

Providing Institutions with supportive infrastructure facilities:

● Providing New Institutions

To bridge the major gap identified in the sectoral analysis report ie, "lack of institutions" new dispensaries in 41 panchayats, community homoeopathy hospitals in 13 blocks and 3 taluk/urban head quarter hospitals has to be started in a phased manner. Lab facilities attached to all hospitals, computer with internet facilities, vehicles to carry out mobile clinics at the outskirts are necessities that cannot be over looked. Existing institutions shall be uplifted and modernized for achieving their full out put.

To fulfill the aim, activities are being proposed on yearly basis from 2008 to 2021 for infrastructure development. This is done by providing new institutions,

development and modernization of the existing institutions.

As evident from the concept of Homoeo sector it is essential to concentrate in the area of providing new institutions. Two Taluk Head quarter Hospital at Kunnathur and Kottarakkara, an Urban Head Quarter hospital at Paravur, Community Homoeo Hospital at Anchal, Kadakkal, Mayyanad, Chavara, Chathannoor, Anchalumood, Oachira, Vettikkavala and homoeo dispensaries in 41 Grama Panchayats are the new institutions to be provided.

● Proposal for Development and Modernization of Existing Institutions

○ District Medical Office

Reviewing the sectoral analysis report, in Government sector it is seen that the existing institutions like the District Medical Office, District Homoeo Hospital, Taluk Hospital in Karunagappally, Municipal Hospital in Punalur, 31 rural and 6 urban dispensaries has to be developed and modernized to bring out their full potential to the maximum benefit and delight of the suffering humanity.

The central controlling unit of the Department of Homoeopathy in the District is currently functioning in the first floor of District Homoeo Hospital. To carry out its wide range of activities with maximum effectiveness the district medical office is to be provided with land, building and other infrastructure facilities.

○ Kollam District Homoeo Hospital

This major referral unit of all Homoeo institutions in the district shall be equipped with minimum bed strength of 100 providing OP/IP medical care facilities in general as well as in pediatric, gynecological, geriatric, life style diseases, pain and palliative, mother and child health care. Separate wing for mental health research is also provided. Mental health, de-addiction and rehabilitation center in separate block with in the corporation limit under the control of District research unit with minimum bed strength of 10, shall function. Additional block and pay wards shall function as per the requirement. Full-fledged lab and updated diagnostic facilities shall render their services. Specialty clinic for thyroid, cancer, allergy, arthritis, occupational and life style diseases shall function in different parts of Kollam Corporation under the control of District hospital and District

research unit.

○ Taluk/Urban Head Quarters Homoeo Hospital

Government homoeo hospital Karunagappally and Government homoeo hospital Punalur are the only functioning hospitals at Taluk / Municipal level. Providing land and building and other facilities will help the institutions to serve the suffering humanity to the best of their ability.

○ Government Homoeo Dispensaries

These dispensaries are providing medical care facilities in general and weekly mother and child, geriatrics and specialist care as per the requirement of the area. Improving the existing condition will create greater ambience and will help a great deal in providing better health care facilities at the grass root levels.

Proposal for Coordinated Functions of Three Systems of Medicine

While thinking about better community health, the present approach of watertight compartmentalisation of the three systems of medicine is detrimental to easy and early achievements. In Kerala, health institutions from primary health centres to district hospitals of the three systems of medicine have already been transferred to the LSGIs. The functions and functionaries are also transferred. The LSGIs have to work out locally suitable action plans considering the infrastructure support and human resource in these three systems of medicine. For example some LSGIs can take up initiatives in housing the three systems of medicines under common roof so that the patients can access disciplines of their choice. This will also strengthen the coordinated treatment efforts of the three systems of medicine and ultimately improve the quality of health services delivery mechanism.

1.8. Drinking Water

The District Drinking Water and Sanitation Policy 2021 aims to provide sufficient drinking water and sanitation



Water tank - Asramam, Kollam

facilities in the district while assuring sustainability of water resources in the district. In line with the policy, a series of proposals for source improvement, water supply schemes and proposals for sanitation are drafted.

Proposals for Source Improvement

● Proposals for Improvement of Ground Water Sources:

One major source of drinking water in Kollam District is ground water. The number of existing tube wells itself is an indicator for this. However the over exploitation of the ground water has created an imbalance between withdrawal and recharging of ground water. This situation has resulted in the exhausting of ground water source. Hence now it is the time to think about replenishing of ground water. Coastal areas of Kollam district mainly depends on ground water sources. Once the water supply schemes based on river water is implemented in these Grama Panchayats, it is possible to isolate some areas where the number of tube wells can be reduced to a minimum and the existing tube wells can be used for the recharging of ground water by connecting them to the aquifer.

● Proposals for Improvement of Surface Water Sources in General:

○ Proposals for Check dams

It was reported that the availability of fresh water from rivers will be in a threat due to over extraction and steps to ensure the sustainability of the river sources is the need of the hour. It is required to provide check dams and reservoirs at possible locations across Achencovil river, Kallada River and Ithickara river to safe guard the interest of public drinking water system.

The priority areas include Velinallur (Atturkonam in Ithickara River), Kulakkada (Madathanampuzhakadavu in Kallada River), Nedumpna (Kundumon in Ithickara River), Chathannur (Kattachal in Ithickara River), Kalluvathukkal (Aduthala in Ithickara River), Mylom (Andaman Kadavu in Kallada River), Kulathupuzha (Mylammodu in Kallada River), Edamulakkal (Peringallor in Ithickara River), Chadayamangalam (Poongodu in Ithickara River), Poruvazhy (Edakkadu in Pallikal River), Punalur Municipality (Muttathukadavu in Kallada River) and Sooranadu North (Parakkadavu in Pallikal River).

○ Proposals for Soil Conservation Improvement in surface water sources

can be achieved through soil conservation measures. These works are to be executed by Soil Conservation Dept. Surface water sources to be improved through soil conservation can be prioritized based on the outcomes of analysis of severity index and water scarcity. The common LSGIs which are severely affected by water scarcity, distance to water source >0.5 Km and insufficient water supply facilities are given top priority.

● Proposals for Rain Water Harvesting

It was reported that the rain water harvesting can be adopted at very remote areas and isolated pockets where it is very difficult or uneconomical to provide safe drinking water through the conventional and traditional methods. The proposal is to provide rainwater harvesting units for eligible families or clusters where no other source of water is available. In Kollam such highly isolated areas are rare and hence rain water harvesting system as role source of water is not required on a community level. However such schemes can be resorted in combination with other sources and also in source of water in emergency situations. The proposal includes selection of beneficiary and construction of rainwater harvesting units for the individuals.

● Proposals for Non conventional Sources of Water

The vast area of back waters available in Kollam district can be converted into fresh water lakes with artificial means of separation with seawater, after necessary techno-economic feasibility studies, EIA, geographical and morphological studies.

Proposals for Water Supply Schemes

22 LSGIs including Neendakara, Chavara, Panmana, Oachira, Clappana, Karunagappally and Alappad Grama Panchayats under TEAP and Elampalloor, Kottarakkara, Melila, Kundara, Perayam, East Kallada, Kareepra, Kulathupuzha, Eroor, Ittiva, Anchal, Alayamon, Pavithreswaram and Mylom under NABARD Schemes and Kollam Corporation under KSUDP will satisfy the criteria of achieving 100% water supply coverage by area, with 70 – 100 lpcd supply level of potable water by 2021.

The remaining LSGIs are targeted for source improvement, rehabilitation and extension of pipe lines etc. There are new proposals as well, so that the target of

achieving 100% water supply coverage by area with 70 – 100 lpcd supply level of potable water by 2021 is satisfied. The proposals include

- Rural Water Supply Scheme to Ayoor in Edamulakkal Grama Panchayat - Source improvement
- Water Supply Scheme to Kadakkal Grama panchayat for extension of water supply pipe lines
- Water Supply Scheme to Kummil Grama Panchayat -Extension of water supply pipe lines
- Water Supply Scheme to Chithara Grama Panchayat - Extension of water supply pipe lines
- Water Supply Scheme to Nilamel Grama Panchayat - Extension of water supply pipe lines
- Water Supply Scheme to Kadakkal Grama Panchayat -Rehabilitation of existing damaged pipes
- Water Supply Scheme to Kadakkal Grama Panchayat -Construction of OHSR
- Water Supply Scheme to Kadakkal, Kummil, Nilamel and Chadayamangalam Grama Panchayats - Augmentation of the existing scheme
- Water Supply Scheme to Elamadu Grama Panchayat - Extension of water supply pipe lines
- Water Supply Scheme to Ummannoor Grama Panchayat -Extension of water supply pipe lines
- Water Supply Scheme to Chadayamangalam Grama Panchayat - Source improvement
- Augmentation BAWSS to Kundara and adjoining Grama Panchayats and augmentation of RWSS in Ezhukone Grama Panchayat
- Augmentation of ARWSS to Kulakkada and Pavithreswaram in Kulakkada Grama Panchayat
- Augmentation BAWSS to Kundara and



Water tank under construction - Mayyanadu

- adjoining Grama Panchayats, improvements to existing schemes and proposal for mini water supply scheme for Neduvathoor Grama Panchayat
- Augmentation of JBIC assisted Water supply scheme to Meenad and adjoining Villages (Kerala Water Supply Proposal) for Pooyapally Grama Panchayat
 - Augmentation of RWSS to Velinalloor Grama Panchayat
 - Augmentation of JBIC assisted Water supply scheme to Meenad and adjoining Villages (Kerala Water Supply Proposal) for Veliyam Grama Panchayat
 - RWSS to Thrikkovilvattom Grama Panchayat – Source improvement, rehabilitation and extension of pipe line
 - RWSS to Kottiyam - Perayam in Mayyanadu (Part), Adichanallur (Part) and Thrikkovilvattom (Part) Grama Panchayats – Source improvement and rehabilitation
 - RWSS to Mayyanad Grama Panchayat – Source improvement and extension of pipe line
 - RWSS to Kottamkara Grama Panchayat – Source improvement, rehabilitation and extension of pipe line
 - RWSS to Munroe Island Grama Panchayat – Source improvement and rehabilitation
 - RWSS to Thrikkaruva Grama Panchayat – Source improvement and rehabilitation
 - RWSS to Perinadu Grama Panchayat – Source improvement and rehabilitation
 - RWSS to Panayam Grama Panchayat – Source improvement and extension of pipe line
 - RWSS to Thrikkadavoor Grama Panchayat – Source improvement, rehabilitation and extension of pipe line
 - RWSS to Paravoor Municipality – Source improvement, rehabilitation and extension of pipe line
 - RWSS to Adichanallur Grama Panchayat – Source improvement and rehabilitation
 - RWSS to Chathanloor Grama Panchayat – Source improvement and rehabilitation
 - RWSS to Poothakulam Grama Panchayat – Source improvement and extension of pipe line
 - RWSS to Chirakkara Grama Panchayat – Source improvement and extension of pipe line
 - RWSS to Kalluvathukkal Grama Panchayat – Source improvement, rehabilitation and extension of pipe line
 - Proposal for conservation of Sasthamcotta Lake
 - Water Supply scheme to Poruvazhy Grama Panchayat – Source improvement and extension of pipe line
 - Water Supply scheme to Sooranad North Grama Panchayat – Source improvement
 - Water Supply scheme to Kunnathoor Grama Panchayat – Source improvement
 - Water Supply scheme to Mynagappally Grama Panchayat – Source improvement
 - Water Supply scheme to Sasthamcotta Grama Panchayat – Source improvement and extension of pipe line
 - Water Supply scheme to Sooranad South Grama Panchayat – Source improvement and extension of pipe line
 - Water Supply scheme to Thevalakkara Grama Panchayat – Source improvement and rehabilitation
 - Water Supply scheme to Thekkumbhagam Grama Panchayat – Source improvement and rehabilitation
 - Water Supply scheme to Thazhava Grama Panchayat – Source improvement and extension of pipe line
 - Water Supply scheme to Thodiyoor Grama Panchayat – Source improvement and extension of pipe line
 - Water Supply scheme to Kulasekharapuram Grama Panchayat – Source improvement and extension of pipe line
 - Water Supply scheme to West Kallada Grama Panchayat – Source improvement and extension of pipe line
 - ARP- ARWSS to Pathanapuram Grama Panchayat – Extension of pipe line
 - ARP- ARWSS to Thenmala Grama Panchayat – Source improvement
 - ARP- ARWSS to Ariyamkavu Grama Panchayat – Source improvement and extension of pipe line
 - R.W.S.S. to Vilakkudi Grama Panchayat – Source improvement and extension of pipe line
 - R.W.S.S. to Piravanthoor Grama Panchayat – Extension of pipe line
 - U.W.S.S. to Punalur Municipality – Source improvement and extension of pipe line
 - WSS to Thalavoor Grama Panchayat – New proposal
 - WSS to Pattazhy Grama Panchayat – Source improvement and extension of pipe line
 - WSS to Pattazhy Vadakkekara Grama Panchayat – Source improvement and extension of pipe line
 - WSS to Karavallur Grama Panchayat – New proposal
 - RWSS to Vettikkavala Grama Panchayat – Augmentation works.
- Proposals for Sanitation**
- **Proposals for Sewerage System**
LSGIs coming under Multi Functional Zones are considered for proposing new sewerage system. The design population is taken as the proposed population of 2021 as given in Annexure 12 and 13 of IDDP for arriving at sewerage plant capacity and other details.
 - **Proposals for Integrated Low Cost Sanitation (ILCS) for Urban areas**
In areas where the sewerage system cannot be covered, there is scope to cover the households and other public places under ILCS. For this the urban local body has to prepare Detailed project Report and submit to the GOI through GOK. The funding is purely based on the DPR.
 - **Proposals for Community latrines**
The community latrines are to be constructed in habitats where individual latrines are not feasible. LSGIs have to identify such places and community latrines have to be constructed.
 - **Proposals for Ecosans**
As mentioned in the sectoral analysis, the water logged areas in Thekkumbhagam, Chavara, Neendakara, Thevalakkara, Panamana, Trikkadavoor, Thrikkaruva, Mynagappally, Karunagapally, West Kallada, East Kallada, Perayam, Munroe Thuruth and hilly areas of Thenmala, Piravanthur and Aryankavu are areas where Ecosans are suggested.
 - **Proposals for Information, Education and Communication (IEC)**
Awareness creation is a continuous process for keeping the sustainability of sanitation and also to address new challenges in this realm. The essential areas inviting immediate attention are solid and liquid waste management.

Other Proposals

● Quality Monitoring Program - Setting up of Labs

In order to ensure safe water supply a close monitoring of the quality of water being used by all class of consumers shall be in built with the system. It is expected that the recent proposals under implementation in Kollam District will ensure the supply of adequate quantity of water for the majority of the District population. After achieving quantity standards the question of quality will arise. Hence it is necessary to set up a comprehensive laboratory for testing and confirming the presence of any pollutant/contaminates including heavy metals, pesticides and chemicals in the water being supplied.

The proposal includes establishing a comprehensive laboratory for testing the water and waste water parameters. The beneficiaries are the entire population in Kollam District. The unit can be established at Kottarakkara, a multi functional zone, equidistant from all parts of Kollam District.

● Replacing railway crossing for Alappad, Clappana, Oachira and Karunagappally

The railway crossing in the LSGIs of Alappad, Clappana, Oachira and Karunagappally are of MS casing pipe which may last for 10 to 15 years as per the estimate of railway authorities. Hence it will be required to replace them by 2021. The three railway crossings under this works are at Erezha, Krishnapuram and Oachira.

Through the implementation of the proposals in the drinking water sector, at the cost estimated on rates prevailing at 2008, it is envisaged that sufficient quantity of water in the supply level of 70 to 100 lpcd can be made available to the population of Kollam district by 2021.

With all the discussed interventions in the sector of sanitation 100% coverage of HHL, public latrines and appropriate waste management system will become possible by 2021. This will directly improve the health standard of the district. It is implied that special provisions shall be provided for the drinking water and sanitation facilities in the Multi Functional and Special Development Zones.

1.9. Infrastructure

The development proposals encompasses the concept developed for infrastructure facilities in Kollam district, the

linkages of the concept with the development concepts of other 'production sectors' and the detailing of the major proposals planned with a perspective to the year 2021.

As per the District Development Concept, a broad transportation network is derived and which is further elaborated for the entire district to achieve the objective defined in the Policy Statement.

Roads

The 'Proposed Road Network' consists of roads classified under National Highways, State Highways, Primary roads, Secondary roads and Tertiary roads.

● National Highways (NH):

National Highways provide inter-state and inter-district connectivity. It is proposed to upgrade the standards of National Highways to meet the future requirements by providing a Right of Way of 30 metres, with 4-lane carriageway of lane width 3.75 metres and service roads of 3.75 metres each.

The existing National Highways in the district are 57 kilometres of the Kannyakumari - Salem NH -47, 5 kilometres of the NH -47 Bye-pass and 81 kilometres of the Kollam - Thirumangalam NH -208. The National Highway newly proposed is the NH -220 (Kollam - Theni) whose alignment within Kollam district is yet to be finalised.

○ The alignment recommended by IDDP for the Kollam - Theni NH -220 is:

Kollam (Chemmamukku) - Kannanloor - Kundara - Chittumala - Kadapuzha - Bharanikkavau - Adoor.

The LSGIs along the alignment locations for the proposal are Kollam Corporation and Thrikkovilvattom, Elampalloor, Kundara, Perayam, East Kallada, West Kallada, Sasthamcotta, Mynagappally, Poruvazhy, Sooranad North Grama Panchayats. Period of implementation is 2012 - 2021.

● State Highways (SH):

State Highways provide inter-district as well as intra-district connectivity. It is proposed to upgrade the standard of the State Highways to meet future requirements and for easy upgradability, by providing a Right of Way of 30 metres with 4-lane carriageway of 3.75 metres each.

The existing State Highways in the district are the 36.70 kilometres long portion



Bypass (Kallumthazham - Mevaram), Kollam

of the Main Central (M.C.) road (SH 1), the 30.3 Kilometres long portion of the Thiruvananthapuram - Shenkotta (T.S.) road (SH 2), the 13.80 Kilometres long portion of the Punalur - Muvattupuzha (P.M.) road (SH 7), the 7.05 Kilometres long portion of Adoor - Sasthamkotta road (SH 37), the 7.30 Kilometres long portion of the Ayoor - Punalur road (SH 48) and the 23.50 Kilometres long portion of Varkala - Parippally - Madathara road (SH 64).

The State Highways proposed are:

○ Nilamel - Ayoor - Kottarakkara - Kulakkada road

The LSGIs enroute are at Nilamel, Chadayamangalam, Edamulakkal, Ummannoor, Vettikkavala, Melila, Kottarakkara, Mylom and Kulakkada Grama Panchayats. Period of implementation is from 2007 - 2012.

○ Ayoor - Anchal - Punalur - Pathanapuram road

The LSGIs enroute are at Edamulakkal, Anchal, Karavalloor, Punalur, Piravanthur and Pathanapuram Grama Panchayats. Period of implementation is from 2007 - 2012.

○ Pariappally - Nilamel - Madathara road

The LSGIs enroute are at Kalluvathukkal, Nilamel, Kadakkal and Chithara Grama Panchayats. Period of implementation is from 2012-2017.

○ Kulathupuzha - Madathara - Chithara road

The LSGIs enroute are at Kulathupuzha and Chithara Grama Panchayats. Period of implementation is from 2012-2017.

○ Bharanikkavu - Adoor road

The road passess through the Poruvazhy Grama panchayat. Period of Implementation is from 2007-2012.

● Primary Roads (PR):

Primary roads are proposed to provide connectivity between 1st Order Nodes and Junctions. The Right of Way proposed for primary roads is 21 metres with 4-lane

carriageway of 3.75 metres each.

The proposed Primary roads are:

- Tangassery Harbour – Paravur – Chathannur road

The LSGIs enroute are at Kollam corporation, Mayyanad Grama panchayat and Paravur municipality. Period of implementation is from 2007-2017.

- Chathannoor – Velinalloor – Ayoor road

The LSGIs enroute are at Chathannur, Adichanallur, Pooyappally, Velinalloor, Edamulakkal and Elamadu Grama panchayats. Period of implementation is from 2007-2012.

- Kottiyam – Kannanalloor – Kundara – Bharanikkavu – Karunagappally road

The LSGIs enroute are at Mayyanad, Adichanalloor, Thrikkovilvattom, Elampalloor, Kundara, Perayam, East Kallada, West Kallada, Sasthamcotta, Mynagappally and Thodiyoor Grama panchayats. Period of implementation is from 2007-2012.

● Secondary Roads (SR):

Secondary roads are proposed to provide connectivity between 1st Order Nodes and Junctions and 2nd Order Nodes and Junctions. The Right of Way proposed for Secondary roads is 16 metres with 2-lane carriageway of 3.75 metres each with provision for 2.25 metres wide parking bays near junctions and settlements.

The proposed Secondary roads are:

- Chavara – Sasthamkotta road

The LSGIs enroute are Panmana, Thevalakkara, Mynagappally, West Kallada and Sasthamcotta Grama panchayats. Period of implementation is from 2012-2017.

- Paravur – Varkala road

The road passess through Paravur Municipality. Period of implementation is from 2007-2012.

- Paravur – Parippally road

The LSGIs enroute are Paravur Municipality, Poothakkulam and Kalluvathukkal Grama Panchayats. Period of implementation is from 2007-2012.

- Kannanalloor – Pooyappally – Ayoor road

The LSGIs enroute are Thrikkovilvattom, Nedumpana, Pooyappally, Velinalloor, Elamadu and Edamulakkal Grama Panchayats. Period of implementation is from 2012-2017.

- Kadakkal – Anchal – Chengamanad road

The LSGIs enroute are Kadakkal,

Ittiva, Anchal, Yeroor and Thenmala Grama Panchayats. Period of implementation is from 2012-2017.

● Tertiary Roads (TR):

Tertiary roads are proposed to provide connectivity between 3rd Order Nodes and Junctions and other roads. The Right of Way proposed for Tertiary Roads is 12 metres with 2-lane carriageway of 3.75 meters each and two-wheeler tracks on either side.

The proposed Tertiary roads are:

- Bharanikkavu – Kottarakkara – Pooyappally – Kurissumoodu jn. road

The LSGIs enroute are Sasthamcotta, Poruvazhy, Kunnathur, Pavithreswaram, Kulakkada, Mylom, Neduvathoor, Kottarakkara, Ummannoor, Veliyam and Pooyappally Grama Panchayats. Period of implementation is from 2012-2017.

- Kottarakkara – Mylom – Pattazhy – Pathanapuram road

The LSGIs enroute are Kottarakkara, Mylom, Pattazhy Thekkekkara, Vadakkekara and Pathanapuram Grama Panchayats. Period of implementation is from 2007-2012.

- Anchal – Kulathupuzha – Thenmala road

The LSGIs enroute are Anchal, Yeroor, Kulathupuzha and Thenmala Grama Panchayats. Period of implementation is from 2017-2021.

● Railways

Kollam district is catered to by the Ernakulam – Thiruvananthapuram broad gauge double line permanent way which is fully electrified within the district. Further developments in this route can be addition of further branch lines to facilitate operation of Suburban trains using EMUs in the Kollam Jn. – Thiruvananthapuram Central sector. A siding to the Tangassery Harbour needs to be provided for movement of cargo in containers. Improvement of facilities at the railway stations and development of Kollam junction, Paravur



Anchukannara railway bridge, Punalur

station and Karunagappally station are proposed.

Work on the gauge conversion of the Kollam - Madurai Metre Gauge line to broad gauge is going on. With completion of this proposal the tourism potential of this route can be utilised in a better way. Improvement of facilities and development of the Kundara station, Kottarakkara station, Punalur station and Thenmala station are proposed.

Feasibility of railway links connecting Tangassery Harbour and KMML at Chavara to the main line can also be explored to facilitate easy transshipment of cargo from these locations.

● Inland Navigation

The proposed Inland Navigation Network consists of the portion of the Kollam – Kovalam State Waterway from Ashtamudi Lake to Nadayara Lake via the Kollam Canal, Eravipuram Lake, Paravur Lake and Maniyankulam Canal. There is also the Kollam – Kottappuram National Waterway No.III from Kollam Boat Jetty via Ashtamudi lake, Chavara canal, Kannettil canal and Kayamkulam canal.

Development of the National Waterway No.III opens up possibility of transportation of cargo and passenger service boats. It also offers immense possibilities for attracting tourists with the Ashtamudi lake being the centre of lake Tourism. The main industrial centres like KMML and IRE can make use of the waterway for transportation of raw materials and finished products.

In order to improve the water transport infrastructure in Kollam, it is imperative to construct new boat jetties along the navigation routes. Such jetties are proposed at Kappil, Paravur Thekkumbhagom, Kuttoor, Maniyankulam, Mukkam, Thanni, Eravipuram, Thomas Stephen Co., Kachikkada, Mundakkal, Kochupilamoodu, Chamakkada, Olayil kadavu, Thevally, Thoppilkadavu, Mammoottilkadavu, Kavanad, Sambranikodi, Chavara Thekkumbhagom, IRE, KMML MS Plant, Panmana, Ponmana, Vattakayal, Kattikavu, Kannettilkadavu, Panikkarkadavu, Parayakadavu, Pattathilkadavu, Srayikkadu, Alumkadavu, Amrithapuri, Azheekal, etc. In addition to the above boat jetties, the existing facilities at Chavara Thekkumbhagom, Guhanandapuram, Arinalloor, Munroethuruthu, Prakkulam and

Ashtamudi need to be improved.

The navigation channels need to be dredged regularly to maintain the necessary depth for easy movement of vessels. Beautification of the banks of the water bodies and canals with proper maintenance is also proposed. Wayside amenities like Coffee shops, Restaurants, Hotels, Resorts and Shopping Centres are proposed along the banks of the navigation routes.

● Harbours

○ Neendakara Harbour:

Basic standards to maintain hygienic conditions in fishing harbours have come up in International markets, especially in European countries. This necessitates modernisation of Neendakara fishery harbour to equip it to meet the stringent European quality standards. Such a proposal is in pipeline with financial assistance from NABARD. At present there is no cargo handling facility available at Neendakara. The present facilities need to be improved upon to enable cargo handling from the port.

○ Tangassery Harbour:

The Tangassery fishery and cargo harbour will be the centre of all development activities of Kollam City within the next 10 years. The infrastructure facilities being developed for the Harbour will take the lead in improving the commercial activities in Kollam. These infrastructures include a coastal road connecting the harbour to Paravur and thereon to NH -47 (This coastal road can be extended to the North to meet the NH -47 at Sakthikulangara), and railway siding to connect the harbour to the Ernakulam – Thiruvananthapuram broad gauge double line permanent way (This would make it easy to transport cargo containers by freight trains avoiding the congestion of urban roads). A more economical means of transportation of cargo would be by inland water transport. Connecting the harbour

basin with the Ashtamudi lake can facilitate this.

Large capacity storage tanks need to be provided for distribution of potable water at the Harbour and surrounding areas. Operation of heavy machinery, cargo handling equipment, yard lighting, pumps, etc. essential at the port area requires setting up of an electrical substation at the port area.

○ Kayamkulam Harbour:

The estuary of the Kayamkulam Lake is situated 26 kilometers north of Neendakara and is the boundary of the Kollam and Alappuzha districts. The new harbour proposed at this location is intended to provide safe landing and berthing place for mechanized as well as traditional crafts. The harbour will provide an operating facility for mechanised fishing boats from Alappuzha which are dependant on the Neendakara port now. The location of the harbour, work of which is ongoing, is ideal as it is situated quite close to the NH -47, enabling quick transportation of the perishable sea food.

● Housing

As per the analysis, there are certain critical LSGIs with specific housing issues including absolute housing shortage, kutcha houses, Houseless SC/ST and Houseless BPL. The priority LSGIs are listed based on LSGIs coming common in the above aspects.

Sectoral Linkage Analysis

The Infrastructure Development proposals derived from the District Development Concept has been 'tested' for compatibility with the proposals of the 'Production Sectors'. It can be seen from the sectoral linkage analysis above that out of the 188 suggested locations related to the 6 main 'Production Sectors', only 14 are not having direct linkage with the proposed road network. Even in these 14 LSGIs, it is possible to provide connection from a proposed road from a neighbouring LSGI which need to be detailed in the Local Development Plan (LDP) of the concerned LSGIs. Thus there is more than 92% success in the planning of the road network for the district.

Since environment sector has to be given special attention specific measures are suggested to control the effects due to environmental pollution such as:

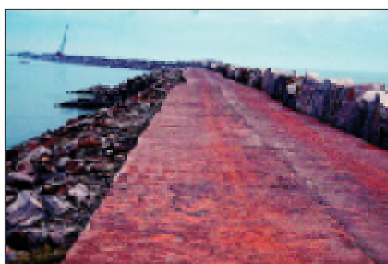
● Bypass to junctions – Congestion at

junctions can be prevented/controlled by providing bye passes at the junctions so that only those vehicles that need to turn off to a byroad approach the junction and all the other vehicles can bye pass the junction without passing through it.

- Road widening for avoiding traffic blocks – Most of the roads in the district are not wide enough to have sufficient capacity to handle the present traffic. Considering the present rate of growth of traffic, it will not be long before the traffic on the roads comes to a standstill. Roads have to be widened to meet a projected traffic volume, 15 or 20 years in the future.
- Providing Grade Separated roads, improving geometry – Intersections of major roads are hot spots for accidents and pollution. It is necessary to properly design these intersections by providing grade separated roads wherever necessary to redirect heavy vehicles to a higher level so that the exhaust from them are taken away up into the atmosphere.
- Roadside Arboriculture – It is well known that greenery absorbs CO₂ from the atmosphere and releases Oxygen. This natural cleansing agent may be put to good use by planting thick foliage by the side of roads to take care of the pollutants and also give a pleasing environment for those travelling along the road.
- It may be proposed that KSRTC buses running on local schedules are converted to CNG by the year 2011 and conversion of all KSRTC buses are completed by 2021.
- Redirection of vehicle exhaust – Multi-axle trailer trucks may be provided with an exhaust pipe that is directed upward just behind the cabin so that the fumes are directed away from lower level.

Interchanges for Coastal Road

Transport of cargo by road will be mainly along the coastal road which is planned as having separate lanes for trucks carrying the cargo and other vehicles. Interchanges will have to be provided at those locations where the cargo trucks may have to move off the coastal road to the National Highway or any other road. These interchanges will have to be designed in such a way that it does not hinder the movement of traffic in the lanes for other vehicles. A tentative layout of such an interchange is designed.



Break water - Thankassery, Kollam

For the successful implementation of the proposals suggested above, support from the following sectors is imperative.

- Motor Vehicles Department
- Kerala State Road Transport Corporation
- Kerala Private Bus and Lorry Operators
- Social Forestry Department
- Pollution Control Board.

Road safety is an issue of prime importance to be addressed with the highest priority. Several accident 'black spots' have been identified during the sectoral analysis of the existing Infrastructure facilities in the district. These are listed road-wise below.

- NH 47
 - Kannettil Bridge near Karunagappally
 - Chavara jn. and Chavara bridge
 - Sakthikulangara
 - Chinnakkada
 - Kappalandimukku
 - Thattamala jn.
 - Mevaram jn.
 - Mulluvila jn.
 - Ayathil jn.
 - Kottiyam jn.
 - Thirumukku near Chathannur
 - Kalluvathukkal jn.
- NH 208
 - Kallumthazham jn.
 - Elampalloor jn.
 - Kundara Pallimukku
 - High embankments of ROBs
 - Kottarakkara Market jn.
 - Kottarakkara Pulamon jn.
 - Punalur town

The above mentioned accidents black spots need to be scientifically analysed and treated reduce accidents.

Road safety consists of three E's; viz., **E**ducation, **E**ngineering, **E**nforcement. It is of vital importance to impart proper education on road safety to the road users (drivers and pedestrians) through conducting of awareness classes, visual media and leaflets/booklets. This can be carried out with the help of Motor Vehicle Department, SHGs and NGOs. There is a very high rate of accidents among drivers (especially of two-wheelers) in the age group of 18–25, causing fatalities and injuries resulting in severe physical handicaps. It would be worthwhile to think of imparting road safety at the High School and Higher Secondary School level in order to reduce accidents to this specific

group of road users. This can be achieved with the support of the Education Department.

The proposals are detailed as follows. In the detailing of the proposals, more specific design details have been worked out and presented. Layout and cross sections of the proposed classifications of roads are designed and the rough costs of each of the proposed alignments are also worked out.

For working out the cost of the proposed roads the following factors have been considered.

- Cost of Land Acquisition
- Cost of Carriageway construction (Bitumen Macadam and Asphaltic Concrete)
- Cost of re-locating existing structures
- Cost of improvement of Junctions
- Improvements of geometrics like sharp curves, steep gradients, etc.
- Road Safety measures like road markings, road signs, etc.
- Pollution control measures like Bye pass to congested junctions, grade – separated roads, roadside arboriculture, phased conversion of buses, lorries and trucks to CNG fuel.
- Widening or reconstruction of existing bridges and culverts
- Protection works like drains, retaining walls, etc.
- Shifting of utilities like power lines, transformers, telecommunication cables, water lines, etc.

The success rate of the infrastructure development concept as shown in the sectoral linkage analysis is indicative of the fidelity of the concept to the overall District Development Concept. The utility of the proposals are further emphasised by the fact that none of the proposed alignments are un-utilised.

Housing is an area which calls for immediate attention from socio-economic point of view.

The biggest impediment to the successful implementation of the proposed alignments will be the availability of funds and land. These resources would be well allocated and utilised to meet the requirements of a 20 year perspective plan.

1.10. Forest

The development policy is that Kollam has to be made rich in Bio diversity by ecionomically developing while

ecologically conserving the forest land and settlements, flora and fauna and making a greener non forest land and the various proposals evolved in line with the policies are briefed here under.

Proposals for Ecological Conservation

● New Fish Sanctuary at Kulathupuzha:

Present stage of the fish population in the Kulathupuzha river adjoining the Sastha temple is under threat and urgent protection and conservation measures are needed. There is ample scope for declaring this area as a fish sanctuary.

● Management of Protected area in Shenthuruni Wildlife Sanctuary:

Shenthuruni Wild Life Sanctuary is coming under the Agasthyavanm Wild Life Circle. Area is being managed as protected area under a Management Plan. The proposal is for the development of Eco-Tourism in the area.

● New Bird Sanctuary at Karali, Kandanchira and Polachira:

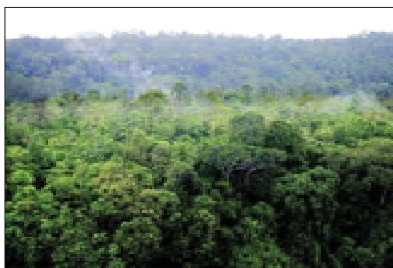
All these areas are destinations of migratory birds. The 17th Asian Waterfowl Census carried out by a group of bird-watchers in January and February has stressed the need for protecting 1,200 acres of wetland in Polachira, Kandachira and Karali at Kollam in Kerala which are home to a number of migratory birds.

● Development of Mangrove areas:

Though fairly good patches of mangroves are seen towards the inner corridors of the estuary (Kayamkulam Lake) 300 m away from the coastline, mangroves are absent along the shoreline. In the Ayiram Thengu area, mangroves are restricted to a small preserves (4-5 ha area) dominated by *Lumnitzera racemosa*, *Rhizophora mucronata*, *Avicennia marina* and *Aegiceras corniculatum*. Other lake shores are devoid of mangroves, though occasional mangrove elements are found distributed here and there and they may not qualify to be considered as a normal mangrove stand. From the environmental



Mangroves - Asramam, Kollam



Forest land - Thenmala

point of view more congenial areas has to be brought under mangrove vegetation either by planting in suitable govt. lands or by acquisition and protection of mangrove areas.

Planting of mangrove seedlings may be carried out every year along all the eight tributaries of the Astamudi lake by planting 1000 seedlings every year with active participation of the LSGIs and NGOs.

● **Completion of Forest Working Plan:**

Punalur, Thenmala, Achancoil, Shenduruni and part of Thiruvananthapuram and Konni are the Forest Divisions coming in Kollam District. All the above Forest Divisions have approved working plans except Thenmala division and are managed as per the provisions as laid down in the working plan. Preparation of Working Plan for Thenmala Division is on the last stage and it is expected that Thenmala Division also will get the working plan approved soon.

● **Prevention of Forest Fire through people's participation**

The objectives include

- To control forest fire with a view to protect and conserve both natural and plantation forest.
- To improve productivity of forest by reducing the incidents and extent of forest fires.
- To devise, test and demonstrate principles and techniques of prevention, detection and control of forest fires.
- Orientation and training of staff and the public through training courses / awareness classes designed to prepare them for participation in the forest fire management.

The requirements are

- Wireless communication sets
- Fire fighting equipments
- Creation of the fire lines
- Construction of watch towers
- Training and demonstration
- Research and publicity
- Participatory Forest Management

The identified area is located in Mannarappara Range in Piravanthoor Grama Panchayat.

● **Consolidation of Forest Boundaries for Protection and Management of Forests:**

Areas where demarcation and consolidation of forest boundaries in Punalur Division come in Pathanapuram, Piravanthoor, Alayamon, Kulathupuzha and Eroor Grama Panchayats. Those in Thenmala Division come in Thenmala, Kulathupuzha and Aryankavu Grama Panchayats. Achancoil Division has areas in Aryankavu Grama Panchayat and Konni Division has areas coming in Piravanthoor Grama Panchayat. Schenthuruni Division has areas in Thenmala and Kulathupuzha Grama Panchayats. Thiruvananthapuram Division has areas in Kulathupuzha Grama Panchayat.

● **Conservation of Species:**

The agriculture sector has recommended the conservation of species such as arrow root, kolinchi, etc. for the subsistence of the tribal population. The forest sector also can take care of this aspect.

Proposals for Greening Non Forest land

As mentioned in the Sectoral analysis, according to the National Forest Policy a minimum of 1/3rd of the total geographical area should be under forest cover. In Kerala it is reported that only 27 to 28 % of the total area is under forest cover. In order to achieve the target as envisaged by National Forest Policy, more areas have to be brought under tree cover. Several programs are in practice such as Entemaram Padhathy, Nammude Maram Padhathy, Vazhiyora thanal etc to bridge the gap of 5%. The first two programs are implemented with the whole hearted support and involvement of the student community in the district. The program started in the year 2007 and is proposed to continue with the distribution of seedlings to new entrants to the Vth standard every year. The above programmes are expected to bridge the gap of 5% within a period of 5 years.

Punalur Division has sites in Pathanapuram, Piravanthoor, Alayamon, Kulathupuzha and Eroor Grama Panchayats. Thenmala Division has sites in Thenmala, Kulathupuzha and Aryankavu Grama Panchayats. For

Achancoil Division the site is at Aryankavu Grama Panchayat. Konni Division has site at Piravanthoor Grama Panchayat. Schenthuruni Division's sites are in Thenmala and Kulathupuzha Grama Panchayats. Thiruvananthapuram Division has sites in Kulathupuzha Grama Panchayat.

● **Government Land / Public Lands:**

As per Kerala conditions, it is difficult to increase the forest area since there is acute shortage of lands. Hence in order to achieve 33% tree cover, the only possibility is to afforest all available Government lands like road purampokes, Revenue purampokes, Government office compounds, areas with LSGIs, school / college compounds etc and to encourage planting in private lands. As per Panchayat Raj Act, 1994, 5% of the plan outlay needs to be spent on environmental protection works. So suitable areas need to be identified under each Grama Panchayat for implementation of the proposal.

● **Private Holdings:**

Homestead planting also will be encouraged. The ongoing programmes like Ente Maram Padhathy, Nammude Maram Padhathy, etc are expected to meet this objective.

● **River Bank Management:**

As mentioned in sectoral analysis banks of rivers are collapsing year after year since there is a depletion of vegetation on the banks. Hence in order to protect the banks and to check soil erosion, a green vegetal cover with suitable species such as reeds, bamboos etc. are the need of the hour. Other local species such as *Thespesia populnea*, Punna, also can be planted. Forest Dept. can raise required number of seedlings of bamboo, and other site specifically suitable species and plant them through participatory approach along the river banks with the active participation of local people and local self governments.

● **Bio shield along Sea shore:**

Agriculture sector recommends the planting of one row of cashew trees along the coast of the district. The forest department has already implemented one programme named "Harithatheeram" to protect the inhabitants of the coastal area by planting few rows of casuarina. This began during the year 2007 continued during 2008 also by planting in the remaining area available for planting.

Proposals for Economic Development

In the forestry sector main thrust is for conservation and hence the scope for various activities for economic development assumes secondary importance. However without affecting conservation aspect, proposals like promotion of alternate species of timber for furniture, value addition to minor forest produce, handicraft with bamboo / reeds, raising medicinal plant nurseries and plantations, multiplication and propagation of seedlings, improving the productivity of the existing plantations etc. are needed.

The implementation of the recommendations is expected to bring about the developments envisaged. The limiting factors for implementation of the recommendations are the paucity of funds and the delay in obtaining sanction from the Central Govt. Since the Forest Department falls under the Concurrent List any major activity in the forest area needs prior approval from the GOI. A better co-ordination of other Departments such as Agriculture, LSGIs etc. is essential for the successful completion of the proposals. Thereby forest resources of the district can be optimally utilized for the development of the sector by 2021.

1.11. Environment

According to the district Environment policy, by 2021 Kollam has to become an eco friendly district through the abatement of pollution, efficient use of environmental resources by protecting and conserving critical ecological systems and resources including wet lands and green open spaces without being detrimental to traditional economic activities. As identified in the sectoral studies and spatial analysis, as far as the bio physical environment of Kollam is considered, conservation of water bodies, abatement of air pollution, controlling land pollution and waste management are the critical aspects.



Industrial air pollution - Kollam

Conservation of Water Bodies

Kollam is rich in aquatic bio reserve comprising of Lakshadweep sea in the west, two of the only three Ramsar sites in the State viz. Ashtamudi back water and Sasthamcotta fresh water lake, three Rivers viz. Kallada, Itthikara and Achankovil rivers, two major kayals viz. Paravur and Edava-Nadayara kayals and a number of fairly large and small size kayals and ponds like Thodiyur Vattakayal, Maruthady Vattakayal, Kanetti kayal etc.

● Ashtamudi Backwater:

One of the Ramsar sites in the district, the Ashtamudi back waters, has an area of 34 sq.km and is subjected to abuse in many ways in the environmental point of view. Special thrust is given to the backwater by earmarking it into the Aqua-Bio Reserve Zone. For saving the backwater from quality deterioration mainly due to pollution the following proposals are put forward. The conservation of Ashtamudi back waters include prevention of direct discharge of waste water through public drains of Kollam Corporation, providing effluent treatment plants for sea food preprocessing plants (peeling sheds), conversion of hanging toilets to eco san toilets / bio toilets, water quality monitoring of Ashtamudi lake and modernization of coconut husk retting units.

○ Prevention of direct discharge of waste water through public drains of Kollam Corporation

Most of the hotels, restaurants, hospitals, clinics, markets and other establishments consuming water are discharging the waste water directly or indirectly into the Ashtamudi lake. Indirect method is mainly through storm water drains and nullahs maintained by LSGIs. It is envisaged to prevent such discharges completely by 2009. The suggested location is at Kollam Corporation.

○ Providing effluent treatment plants for Sea food preprocessing plants(peeling sheds)

There are about 50 numbers of fish processing units in Kavanad, Neendakara and Sakthikulangara area. Most of the solid and liquid wastes are directly entering the lake as there are no treatment facilities. Providing the minimum required treatment for such preprocessing units for meeting the standards by 2010 is envisaged. The suggested locations are at Kollam

Corporation and Neendakara Grama panchayat.

○ Conversion of hanging toilets to eco san toilets/bio toilets

Hanging toilets can be seen everywhere along the banks of Ashtamudi Lake. The human excreta is directly disposed in the lake. This unhygienic practice has to be stopped for improving the water quality of the lake and to promote tourism through the lake.

Eco friendly toilets like eco san toilets and bio toilets shall be promoted while giving proposal for replacing the hanging toilets. Through eco san toilets the waste is converted into bio fertilizer and through bio toilets methane gas can be utilized in kitchens. The suggested locations are at Kollam Corporation, Neendakara, Chavara, Chavara South, Kundara, Perinad and Mundrothuruth Grama panchayats.

○ Water quality monitoring of Ashtamudi Lake

To identify the variations in the chemical characteristics of the lake, intensive monitoring of the lake by collecting and analyzing water samples during monsoon, pre monsoon and post monsoon periods is required. An extensive study incorporating about 50 sampling stations have to be planned and carried out to find out the water quality, its variations and the eutrophication status of the lake. The monitoring has to be continued till 2021 so that the effect of implementation of the proposals detailed elsewhere can also be assessed and corrective measures taken up.

○ Modernization of Coconut husk retting units

There are several coconut husk and fibre retting units functioning at the banks of Ashtamudi lake at Thevalakkara, Chavara, Thekkumbhagam etc. Traditionally such units are located at the banks of the back water because the raw material needs to be soaked / retted in water for 3-4 weeks before defibring it mechanically. A golden colour indicating high quality of the fibre is attainable only after soaking. However the water gets polluted after each soaking. Recently there is a trend in the business to bring the coir fibre from Tamil Nadu for soaking/retting. The reason attributed for such a practice is water scarcity.

So modernization of the coconut husk retting/defibrating units around Ashtamudi lake with the help of M/s. Hindustan Coir, a coir research organization under Govt. of India is proposed. The technology promoted by M/s. Hindustan Coir is based on the bleaching capacity of castor oil when sprinkled on coir fibre. In this process there is no need for soaking in lake water and thus avoiding water pollution. The sprinkling is carried out on land. Another technology patented by the Regional Research Laboratory also helps in avoiding soaking the huskfibre in lake water. Units are to be provided with effluent treatment plants attached to the soaking tanks. The suggested locations are at Kollam Corporation, Neendakara, Chavara, Chavara South, Thevalakkara, Thrikkadavur, Thrikkaruva and Mundrothuruth Grama panchayats.

● **Sasthamcotta Lake:**

Another Ramsar site in the district, the Sasthamcottta fresh water lake, has an area of 373 ha. From the Sectoral studies it is seen that the largest fresh water lake of Kerala is getting polluted due to anthropological activities in and around the lake. Discharge from towns like Bharanicavu and Sasthamcotta, open defecation at the banks of the lake, discharge from poor quality latrines, retting of palm leaves in the lake, laundry activities at certain kadavs, use of fertilizers for plantation crops etc. are observed to be affecting quality of the lake water. Some of the above discharges reach the lake only in the form of surface run off during rain. As per Article 2.2.11, the water quality of the lake has not deteriorated at any alarming level. Remedial measures shall be adopted for preventing it from deterioration.

The main problem faced by the lake is the water level depletion. Therefore special thrust is given to the lake also by

earmarking it into the Aqua-Bio Reserve Zone. The proposals for the lake conservation includes, providing municipal solid waste treatment facilities, construction of fencing along the boundary of Sasthamcotta lake, providing basic amenities like latrines, facility for laundry etc., banning of sand mining and ground water recharging.

Drinking water and Sanitation sector suggests the following conservation measures.

- Prevention of further encroachment
- Prevention of pollution including solid and liquid waste
- Prevention of silting
- Total eco system protection
- Promoting of tourism potential
- Patrolling

The proposal is to be implemented during 2008 - 2011.

● **Coastal Zone Regulations:**

Since the coastal line is environmentally very vulnerable, the existing Coastal Zone Regulations are to be strictly followed by the LSGIs. After the demarcation of High Tide Lines, restriction of industrial and construction activities shall be strictly observed. The suggested locations are at Paravur Municipality, Mayyanad, Kollam Corporation, Neendakara, Chavara, Alappad, Clappana and Panmana Grama panchayats.

● **Paravur Kayal:**

There is an urgent need for the conservation of Paravur Kayal from encroachment and pollution due to various human activities. Direct discharge of waste water to the lake is envisaged to be stopped by 2009. Hanging toilets are to be totally replaced by ecosan / bio toilets /septic tanks by 2009. The coconut husk retting being carried out in the kayal, is also intended to be stopped by modernizing the retting operation by the end of 2011. The suggested locations are at Paravur Municipality, Mayyanad and Poothakkulam Grama panchayats.

● **Edava-Nadayara Kayal:**

Since a portion of the lake at Nadayara is exclusively used for coconut husk retting, there is air pollution and water pollution. While undertaking programs to conserve the lake, due consideration is to be given to the people engaged in traditional coir industry. So a proposal is made

incorporating conservation of the lake without affecting the traditional industry. The suggested location is at Paravur Municipality.

● **Proposals for Other Water bodies:**

20 meter buffering using natural fencing with locally available plants for all major water bodies in the district proposed. This is proposed to be completed by 2015. The suggested locations are at Kollam Corporation, Sasthamkotta, West Kallada, East Kallada, Puthur, Adichanalloor, Nedumpana, Edamad, Anchal, Alaymon, Kottarakkara, Mylom, Pathanapuram Grama Panchayats.

Conservation and Regeneration of Mangroves

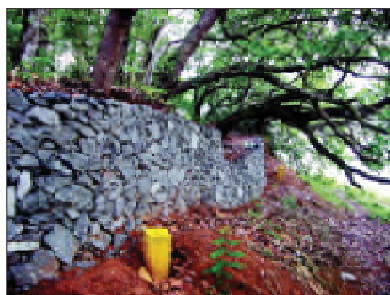
Regeneration is proposed to be done by planting 3 - tier vegetation all along waterfront. The vegetation includes kandal along waterfront, kandal associates as a second layer and third layer as thick bamboo fencing.

The planting of kandal seedlings may be done on muddy soil in the area between low tide line and high tide line after demarcating low tide line with locally available "Nari kallu" or dry rubble or even sand bags according to availability. The proposal is to complete the programme by 2011. The suggested locations are at Kollam Corporation, Neendakara, Chavara, Chavara South, Thevalakkara, Mandrothurathu, West Kallada, Thrikkadavoor, Thrikkaruva, Panayam and Kundara Grama Panchayats.

Conservation of Sacred groves

Sacred groves face various threats in the light of lack of land for human settlements and lack of interest among people for agriculture. Eroding community values are also catalyzing the fast extinction of sacred groves. A proposal is made here for conserving the sacred groves. The suggested locations are at Poothakkulam, Paravur Municipality, Adichanalloor, Elampalloor, Nedumpana, Panmana, Kalluvathukkal, Thevalakkara, Thrikkovilvattom, Chavara, Kollam Corporation, Chavara south, Mayyanad, Thazhava, Oachira and Mynagappally Grama Panchayat.

The programme includes protection of the groves, planting of indigenous species, soil and water conservation and participating approach to restoration.



Sasthamcotta lake side conservation

Abatement of Air Pollution

From the sectoral studies it is seen that the most critical pollution in the district is air pollution.

Out of 666 industrial units creating air pollution, majority is located in Kollam Corporation (79 units). No units are located in 5 LSGIs. The health studies also corroborate the same by finding that the most critical health issue in the district other than epidemics is respiratory diseases. It is seen that the air pollution is high in Multifunctional and Special Development Zones. The location specific proposals in this regard include litigation measures for air pollution from Kerala Minerals and Metal Ltd., air pollution from cashew factories, Air/Noise pollution from vehicles and modernization of brick manufacturing units by providing pucca hood system with chimney and exhaust fan.

- **Air pollution from Kerala Minerals and Metal Ltd.**

KMML is one of the major air polluting chemical industries in the district which is in the Panmana Grama Panchayat of Special Development Zone. Pollution control facilities provided in the factory is satisfactory. But there are occasional emission of chlorine and other toxic gases outside the company premises due to power failures, valve leaks, process control failures etc. During such failures people living in the nearby areas are affected most and get hospitalized some times. Upon the insistence of Pollution Control Board, the company management has initiated to install continuous air pollution monitors for the existing chimneys. Decentralized control systems are also being installed.

- **Air pollution from Cashew factories**

Majority of cashew processing factories of Kerala are located in Kollam district, numbering about 700. Most of the units are located in populated areas basically in Multi Functional Zone. It is a labour oriented industry. The Board prescribes no control measures other than to provide specific heights for the stacks. But the thick emission coming out from the roasting plants and borma units has now become intolerable to the public. Presence of phenolic compounds in the emission was identified by the board earlier. A lot of complaints are received on air pollution.

In these circumstances it is high time

that scientific control measures for reducing air pollution from cashew processing units are planned and insisted for implementation.

- **Air / Noise pollution from vehicles**

Most of the roads in Kollam town are congested. Similar situation is faced in other major towns like Punalur, Kottarakkara, Kottiyam, Karunagappally etc. i.e in the Multi Functional Zone. Traffic produces a lot of noise and air pollution. A diesel jeep or truck produces more noise than a petrol car. A very old or badly maintained automobile produces more noise than a new and good conditioned vehicle. An engine running at a less speed is less noisy than those running at higher speeds. As far as the carcinogenic effect of particulate matter emission from vehicles is concerned, a diesel car is equivalent to 24 petrol cars and 84 CNG cars.

Air pollution and noise pollution due to traffic can be abated by various town planning techniques like construction of barrier walls, allowing single lane traffic, isolated traffic for heavy vehicles, constructing smooth roads etc. For this, the innovative plan is proposed by Infra structure sector is suggested. The suggested locations are at Kollam Corporation, Punalur Municipality, Kottarakkara, Karunagappally, Chathanoor and Anchal Grama panchayat.

- **Modernization of brick manufacturing units by providing pucca hood system with chimney and exhaust fan**

A proposal is made here to modify the emission system of existing 150 no. of wire cut brick manufacturing units operating in Kunnathur, West Kallada, Mylom, Kulakkada and Pavithreswaram, Kottarakkara, Adichanalloor, Nedumpna, Poovatoor, Thazhava, Sasthamkotta, East Kallada, Mynagappally, Sooranad South, Sooranad North Grama panchayats.

Abatement of Noise pollution

A proposal is made for the control of noise to be within the permissible limits and to be implemented by 2015. The suggested locations are at Kollam Corporation, Punalur, Kottarakkara, Karunagapally, Mayyanad, Chathanoor, Anchal and Paravoor Municipality.

The following regulatory measures are to be implemented.

- **Phasing out of old vehicles from plying**

through the roads.

- Laying standards for each type of vehicles and observing strict adherence of the standards.
- Change over of diesel and petrol engine to electric engines wherever possible.
- Revamping traffic system to reduce traffic blocks and traffic jams.
- Promote construction of upper roads to bye pass cities and towns
- To regulate honking of horns at sensitive areas.
- Providing insulation, window shielding etc. to hospitals and school buildings existing near roads of considerable traffic,
- Regulation of amplifiers and loud speakers at religious centres and public programs.

Awareness programmes projecting the necessity of controlling noise.

Conservation of Hillocks

Hillocks are mostly spread over the eastern part of the District. The porous nature of the laterite increases the water holding capacity of hillocks. In the valleys of hillocks it can be ensured that there is presence of water throughout the year. Streams normally originate from hill valleys. Under water flows is maintained by hills. Most of the sacred grooves are in hill slopes. The sacred groves also add to the biodiversity of hills. The hillocks in the district are at present in a phase of disaster caused by soil mining from the hills. The transformation of hillocks into plain land has become a speedy affair. The large scale laterite stone mining is followed by soil extraction. To prevent the collapse of the eco systems of hillocks, some drastic action is urgently needed. New law has to be enacted for this awareness program is another effective measure to conserve the hillocks. The proposal is suggested in all the LSGIs.

Controlling Land Pollution

The significant land area identified in the district as affected due to pollution is that around the factory of M/s. Kerala Minerals and Metals Ltd, Chavara.

Hence a proposal is made here for bringing back the soil and water quality of the affected area. The suggested locations are at Chavara and Panmana Grama panchayats. The main activities to be undertaken are

- The southern canal from the National Highway side up to the TS Canal to be

made leak proof by cement construction.

- Provide more efficient treatment plant in the factory of KMML.
- Undertake recuperation works in the affected area after testing the soil and water.

Waste Management

● Municipal Solid Waste Management in Kollam Corporation:

As in any other part of Kerala, Kollam district is also faced with problems related to improper handling, transportation, disposal and storage of municipal solid wastes. The key issues related to the different activities of the solid waste management system of Kollam Corporation are the following.

- Segregation of waste at source is not started.
- No notified places of primary collection points. So waste is dumped almost every where.
- No proper collection / removal by transport vehicles arranged. Leachate at primary collection areas creates pollution problems.
- Existing waste dumping yard at Kureepuzha is unscientifically managed. Leachate pollutes the nearby drinking water sources and finally reaches Ashtamudi Lake.
- Crude dumping creates breeding ground for mosquitoes, pests and rodents.

The system proposed is a decentralized treatment and disposal facility for the municipal solid waste generated in Kollam Corporation. This proposal is intended to improve the entire system by 2011.

The scenario with regard to the management and handling of Municipal Solid Waste is

- Segregation of waste at source is not started.
- No proper collection / removal are arranged.
- Leachates from dumping areas create pollution problems.



Sea side waste disposing - Kollam

Hence centralized treatment and disposal systems for the waste generated in Kollam Corporation, are proposed.

● Municipal Solid waste management in other LSGIs:

Centralized treatment and disposal systems for the waste generated in all other LSGIs except Kollam Corporation, Sasthamkotta, Mynagappally and West Kallada LSGIs are proposed.

● Management of waste generated based on the proposals of other sectors:

As per animal husbandry sector there is a proposal for slaughter houses and an abattoir. For these inbuilt treatment facilities shall be provided for the waste generated here. Also as per agriculture sector there are proposals for primary and secondary agriculture markets which are also linked with fisheries and animal husbandry. The waste generated in the primary markets may be managed by the concerned LSGI. For the waste generated in the secondary market at Kottamkara inbuilt treatment facilities shall be provided for the waste generated.

With the implementation of the above said proposals, it is envisaged that the people of Kollam district will be able to have a better environment by 2021 in all respects. The air they breathe will be cleaner and water pollution problems can be contained effectively. The Ashtamudi Lake will regain its glory and attract more tourists. Sasthamkotta Lake will serve more people with drinking water without its water level getting depleted so fast as of today.

1.12. Mining and Geology

According to the district Mining policy, by 2021 Kollam has to optimally utilise the mineral resources of the District with due regard to environmental, economical and social impacts.

As identified in the sectoral analysis, mineral sand, china clay and ordinary sand are the three major mineral resources which can be commercially utilized in the district. Thus the proposals include the extraction of the same in a phased manner.

Proposal for Extraction of Mineral sand

The potential areas for mining include Alappad, Panmana, Chavara and Neendakara. The heavy mineral deposit of Kollam, one of the best of its kind in the world, is a strategic mineral which needs to be exploited without adverse environmental impact.

The area is having no overburden and hence no developmental work is required. The area is demarcated into different blocks. Deposits from the surface to about 7.5 meter can be tapped. Mean time the beach wash deposits can be wiped away giving chance for further deposition by the waves. Alternate blocks have to be mined. To remove the mineral sand up to its fullest depth mechanized mining methods are suggested in a block whereas in the neighboring blocks manual methods are used for the collection of beach washings.

It is proposed to dredge around 400000 tons in a single block for the first five years. In the meantime by manual methods around 150000 tons of beach washings can be collected also. Mineral recovery plant by suction dredge is suggestive for the opencast mining in the existing area.

However, in the other potential areas in Alappad, Panmana, Chavara and Neendakara Grama panchayats where mining is not being done, special rehabilitation programme will have to be implemented. As mentioned in the population studies, the coastal belt is having high population density the issue of rehabilitation would be a sensitive one and have to be specially considered.

Rehabilitation may be done in a phased manner and two alternatives are suggested.

Alternative 1 : Complete rehabilitation programme

Phase 1 – Prevent land transaction

Phase 2 – Alternate livelihood for the people (Inland fishing, Industrial work etc.)

Phase 3 – Alternate housing for the people (near by LSGIs)

Note: Heritage sites etc. may be exempted

Alternative 2: Make shift arrangement programme

The mineral resource area is made settlement free by shifting the people to neighbouring LSGIs followed by mining and reclamation of the land and reshifting of the people to their own lands.

Presently the mining area use strip mining methodology. Considering the environmental impact, rehabilitation of the mined areas including intensive re-vegetation with ecologically similar species and re-contouring of land to its original shape, including dunes, management of groundwater resources etc. are proposed.

Rutile, Zircon, leucoxene, Sillimanite and Monazite are the major co-products from the mineral processing of beach sand deposit.

The minerals can give value addition also. The mineral processing facility provides a multiple product mix of relatively high purity and value viz. Ilmenite, Rutile, Zircon, Sillimanite, Monazite etc. Each mineral product caters as feedstock to a chain of products of higher value added products and finds specific applications. Most of the products separated from the beach placer deposits are in increasing demand and are feed stock for value added products. The value addition of ilmenite (US\$80 per MT) to synthetic Rutile is nearly 6 times (US\$480 per MT) and to Titanium Dioxide pigment is more than 20 times (US\$1700-1800 per MT). Titanium sponge and metal produced from Titanium Tetrachloride is of strategic importance with very high value addition (US\$12000-14000 per Ton).

Production of Synthetic Rutile is now-a-days considered as an intermediate stage of value addition with huge quantities of waste rejection. The production capacity of TiO₂ pigment in the country is very small when compared to other countries, although India has rich resources where as other developed countries with large TiO₂ plants have relative negligible resources.

A new Synthetic Rutile plant of capacity 135,000 TPY will be set up to meet the demand. Synthetic Rutile production process will be environment friendly with neutral iron oxide as by-product. Company is also exploring the possibility of value addition from the by product iron oxide to convert it as pig iron or iron pellets so as to transform the industry to a zero effluent company. The mining activities and mineral processing capacities also will be correspondingly increased with dredge mining so as to exploit the mineral wealth of Chavara deposits.

KMML is also considering to set up a 1000 TPY Titanium sponge plant thereby the country will become one among the 5 countries who manufacture this strategic metal. KMML aims at an overall expansion of the mineral industry with focus on sustainable development without environmental degradation. Atomic Mineral Division is the major agency to be linked here.

Proposal for Extraction of China Clay

As mentioned in the Sectoral analysis, the China clay deposits in Kollam is part of the tertiary sedimentary formations of Kerala, which includes

- Kundara: (exploited by M/s. Kerala Ceramic Ltd.) the Department of Mining and Geology had proved a reserve of 0.75 million tons
- Mulavana: a reserve of 1.6 million tons was proved
- Velichikala: a reserve of china clay of 4 million tons was proved.

The deposits of china clay are available at Perayam (in Sub Zone 4 of Special Development Zone) and Nedumpana (in Agro allied Development Zone).

The best varieties are useful in paper and textile industries and the other ones can be used in rubber, plastic, insecticide, paints, medicines, ceramics, etc.

Mining will be carried out by open cast mechanized means. It is proposed to split the mining area into different blocks. Mining has to be carried out in each block by forming different benches. The overburden will be suitably developed to avoid contamination of the clay. The topsoil and laterite overburden generated will be stocked and will be utilized for back filling the mined out areas.

Proposal for Ordinary Sand

The Kallada river is supplied with sediments in the upstream by the tributaries present. The Thenmala dam in the river course blocks these sediments. The rejuvenating tributaries increase sediment yield to the reservoir. This creates siltation of sand in the reservoir area. The balance of the components of the tidal sedimentary load depends on the distribution of appropriate source area within the catchment and on the hydrological process that transports sediments and solutes to the streams. These areas are thus rich resource area for sand/clay. These resources if quantified and exploited may not result in serious ecological imbalance whereas it will help to increase the storage capacity of the reservoir also. Thus the proposal aims at sediment budgeting in various areas of the reservoir.

It is obvious that though there are only a few types of mineral deposits in the district which can be extracted for commercial purposes, the revenue generated from



Clay mining - Kundara

some of these would be so huge to attain interest in national level. The utilization of existing potential of ordinary sand etc. which are under utilized can also satisfy the immediate needs of the district to certain extent. Thus it is expected that, the under-utilized potentials can be optimally utilized by the district by 2021.

1.13 Education

As per the sectoral analysis, there are certain areas of concern in the education sector in Kollam. Based on the sectoral analysis and district development concept the district education policy has been carved out. As per the policy Kollam has to increase the coverage and quality of education and preclude spatial disparity in the distribution of higher educational institutes and establish technical institutes to support the economic activities of the district. In tune with the policy a series of proposals are drafted for the education sector.



Government Model Boys HSS - Kollam

Proposals for increasing coverage of Education

● New Educational Institutions in the educationally back ward areas

New educational institutions should be started in the educationally back ward areas (Eastern part of the District) under the special schemes of central Govt. to start new educational institutions specifically for socially and economically back ward society. The suggested locations are at Aryankavu, Kulathupuzha, Yeroor, Alayamon, Ittiva and Karavaloor.

- **Arts and Science Colleges in the Central and Eastern parts**

More Arts and Science Colleges are proposed in the central and eastern parts of the district. Government Arts and Science Colleges with Post Graduate studies are proposed at Kottarakkara Grama Panchayat and Punalur Municipality. Other proposals are (1) a Junior College at Kulathupuzha Grama Panchayat and (2) a Government College at Oachira.

- **Literacy Mission Programme**

Immediate steps to identify illiterates and to organize massive drives to educate them are proposed at Alappad, Thenmala, identified problem areas. Non-formal education should be provided in coastal areas and hilly regions of the District (especially coastal areas such as Azheekal, Cheriyaazheekkal and tribal area of Achankovil) through local reading rooms and through service of unemployed educated youth. Non-formal education centres can be opened in every Panchayat. **Proposals for Increasing Quality of Education:**

The percentage of drop out in all levels of education, beginning from Pre-Primary to Higher Education can be reduced if quality education is imparted to the students. The problem of drop out is not too much in Kollam District. However it is noticed as per analyses that drop-out is higher in the case of SC/ST pupils. Interventions such as lump-sum grant and monthly stipends are not giving full results. So it is suggested to give special counseling to the parents of SC/ST students. This will help decrease the percentage of drop out of SC/ST pupils.

- **Independent Pre-primary Education**

Pre-Primary institutions are to be made independent. Then only it can be made effective. The attitude of starting Pre-primary schools attached to the existing institutions is to be discouraged. Anganwadies are to be started at every ward preferably under centrally sponsored schemes. The areas in the eastern part of the district, which are comparatively backward, need Pre-Primary institutions to educate poor children meanwhile keeping them healthy through nutrition programmes. For materialising these Pre-Primary schools have to be started (where there is no Anganvady) at all Grama Panchayats/ Municipalities.

- **Training Programmes to Teachers**

The Training Programmes at present are not effective. The DIET (of Kottarakkara) sponsored Training Programme can be improved systematically. Institutions like Institute of Management in Government (IMG) / Kerala Institute of Local Administration (KILA) can be taken as model for restructuring DIET.

- **Incentives to Students and Parent Counseling**

As per analysis the percentage of children enrolled in Standard I that completes higher education is less than 10 in Kollam district. Improving quality of education through effective means is suggested as a remedy.

- **Continuing Education through Local Libraries**

Education is a continuous process. There should be opportunities for the dropouts at various levels to continue their studies. Even though there are many schemes for continuing education through Universities only a few make use of them.

Therefore, providing facilities for continuing education through local libraries in each village is proposed.

- **Parallel Colleges**

As per analysis it is found that there are no rules at present to restrict or regulate parallel educational institutions. It is proposed to provide adequate legal framework for the functioning of these institutions. 25% of the pupils in the district are getting education through parallel institutions. A special scheme can be developed in favour of these institutions by utilizing them to give quality education among economically backward children.

- **Proposals to preclude spatial disparity in the distribution of higher educational institutions:**

- **Government Nursing College**

Proposal is to start Nursing Colleges and Para-medical institutes in Kollam district. A Government Nursing College is suggested in the campus of High School for Girls at Kottarakkara.

- **Medical college in Government Sector**

People from the eastern regions of the district and majority of people in the Pathanamthitta District do not have sufficient facilities for higher order health care. To address this issue a medical college need

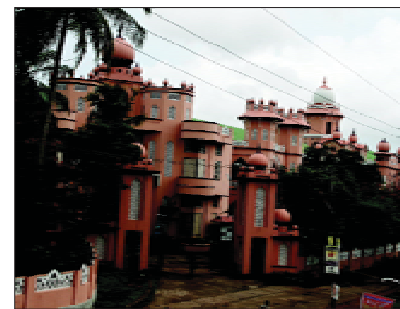
to be started preferably at Punalur or Kottarakkara.

- **Law College in Government sector**

As per sectoral analysis there is a need for starting a Law College in the district. So it is proposed to start a law college, at Kollam Corporation.

- **Engineering Colleges in Government sector**

Analysis reveals that there is urgency of starting some institutions for higher studies in Kollam. Hence establishing Engineering Colleges in the govt. sector are proposed preferably at Kottarakkara and Punalur.



TKM Engineering College - Kollam

- **Proposals to establish technical institutes to support the economic activities:**

- A Fisheries Research institute is proposed in coastal region at Valiyazheekkal / Cheriyaazheekkal.
- A tourism study centre may be started integrating tourist centres of Thenmala, Achenkovil, Manalar etc.
- A Forest Research Institute is proposed at Thenmala, to pave way for conservation of forest with optimum utilisation of the forest resources.

- **Proposals for Skill Development:**

- **Improvement in Vocational Higher Secondary Education**

The proposal is for improvement of Vocational HSS Education. More number of Vocational Higher Secondary Schools are proposed in the district at Kottarakkara and Punalur regions. Around 10 VHSE Schools and 20 ITI/ITC can be established. Vocational Institutions are to be started at all Panchayats in the eastern region so as to address the growing unemployment problem.

- **Others:**

- **Global level Education**

In this age of globalization, education has become a vast area. Each educational institution has to improve to the world level.

There are a few institutions which maintain international standards in Kerala. But such institutions are not reachable to the majority of our population. It is time to have educational institutions of international standards in Kollam district also with provisions for ensuring free education for economically backward but bright students

● Specific Proposals for LSGIs:

As mentioned in the sectoral analysis of education sector, there are a number of activities which can be taken up by the LSGIs using both their Plan fund and own fund. Detailed surveys may have to be conducted by the concerned LSGIs in this regard.

- Facilities to provide drinking water in all educational institutions are to be undertaken by the LSGI. In this case, the institutions have to be fixed as per the sectoral analysis of drinking water sector.
- Electrification of all educational institutions may be entrusted to LSGI. Here also the institutions have to be fixed as per the sectoral analysis of power sector.
- A chain of libraries in Primary Schools for the benefit of students is to be established by the LSGI. A mini theatre attached to it, exclusively for exhibiting children's films, educational films, science films and other good films is to be established by the LSGI.
- Conveyance facilities for the students can be arranged by the Panchayat for all the educational institutions inside a panchayat. This could overcome shortage of pupils in schools which are located in remote areas in villages. Facilities for commuting physically handicapped pupils to schools are to be arranged by the LSGI. In many villages there are no motorable approach roads to schools. Panchayats can undertake constructing approach roads.
- Distribution of uniforms to at least BPL pupils.
- Semi permanent shed for eating noon-meals can be constructed.
- In costal areas a number of school days are lost due to flood, sea-erosion etc. The Panchayat in costal areas can construct permanent camp to help the children continue their studies during such times.
- In the eastern part of the district the teaching and non-teaching staff posted in remote areas has to face a lot of problems for accommodation. Panchayat can construct quarters for them in those places. Also unemployed youth can be trained to take classes in primary and high schools in the eastern area if a teaching staff is on long leave. For this, a panel of trained personnels may be prepared by each LSGI and a mere phone call can save a number of school days.
- Panchayat can construct garbage plants in every school to keep the school surroundings clean. A social forestry scheme can be implemented by the Panchayat in every school.
- Panchayat can deploy primary health centre staff including doctor in every month for consulting the pupils in the schools.
- Counselling centers can be established for the benefit of students in every panchayat.
- Note book manufacturing center can be established along with a text book depot based on the priority fixed as per the sectoral analysis of Industries sector.
- Places of worship like temples, churches and mosques can be renovated with Panchayat fund and pupils can be taken there to study the historical and cultural importance of such places. (This can be done once in every year as an excursion). Here also the priority has to be fixed as per the sectoral analysis of tourism sector.
- Scholarship schemes for the top rankers in every class can be instituted.
- Annual literacy, sports, games and arts competitions can be conducted by the Panchayat. Mini stadium can be constructed in every Panchayat for the benefit of sports and games.
- Special allowance schemes to pupils who join N.C.C / N.S.S / Scout and Guide etc. can be introduced.
- A student's insurance scheme covering all students in the LSGI can be instituted.
- Scheme of educational loans for higher studies can be introduced.
- LSGIs can adopt poor and orphan children till they complete the +2 course.
- In the eastern areas of the district, there are a lot of Tamil laborers in the plantations. They do not send their children to schools. Such children can be given special classes and night classes by the Panchayat.

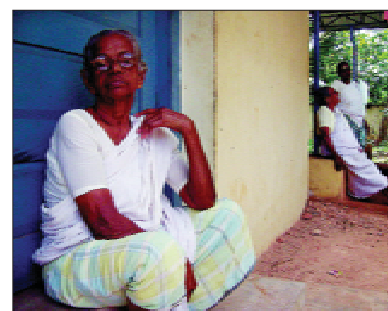
One among the major proposals is for starting more institutions including technical education facilities in the eastern part of the District that are educationally backward. An important aspect of education status in the District is that almost 70% of the institutions are located in the Kollam Corporation area or along to the National Highways. So, all kinds of institutions are required in Kottarakkara, Kunnathur and Punalur Taluks. The second aspect is improvement in quality of education. In order to raise the quality of education in the District more effective training to the teachers is needed and thus the proposal to start a training institute like IMG/KILA. Third point is the opening of various higher education centres in the disciplines of medicine, engineering, law, mining technology, forest research, fisheries research etc.

Satellite linked education programmes like Edusat and UGC channels can be made available to all the schools and colleges in the District with help of NCERT/SSA etc. NCC, Scouts and Guides and National Service Scheme can be implemented in all schools and colleges for imparting discipline among students.

1.14. Social Welfare, Women and Child Development

According to the district social development policy, by 2021 Kollam district has to provide better health, social status and security to women and children, adolescent girls, mentally and physically challenged and aged. A network of proposals are drafted in tune with the policy which include proposals for welfare of women, children, adolescent girls, the birds with broken wings and the old aged.

The gist of policy level intervention required to maintain resource equality between men and women through spatial plans is that 'inclusiveness of should cater to the needs of all vulnerable sections of



Oldage home - Anchalumoodu

the society including disabled, old and infirm, children both school going and toddlers, women.'

The linking those who have the resources with those who will provide the services for the vulnerable needs to be specified as under:

- Each local development plan must have the provision of women owned property for the productive woman population of the area. The Plans shall earmark spaces where services, livelihoods and housing units should be subsidized for ownership of women. Contracts for buildings, public toilets, work sheds, parking spaces or vending areas given under women management / lease / commercial use / ownership in such areas should necessarily be transferred to another women group only.
- Environment regeneration like water harvesting mechanism, horticulture and other programmes offered should be monitored for equal distribution between men and women for livelihood. Special projects should be awarded to women groups for management and restoration of water sheds, forest and backwater/ coastal areas resource regeneration. Project ideas in this respect may include the following.
- Gender disaggregated data collection to ascertain gap and consultation to develop charter for how to make ownership equal between men and women through government grants under 10% women component and planning 10% of newly built infrastructure to be used and controlled by women alone.
- Re-development of an area to set aside built infrastructure for proportionate percentage of productive women in the area
- Shelters would be the integral/ central part of such plans which will take care of housing for disabled, old and women workers who need transit accommodation. Separate spaces should be earmarked/ created for migrant women, women in distress, deserted or widowed, old-age citizens, disabled, etc. Needs of women entrepreneurs, working women, and disable friendly road and transport system wherein the issue of insecurity will not arise etc shall also be addressed.
- Design for needs of women and men for

work life balance: Areas need to be redesigned to make current residential spaces and new residential areas for work that can be done near or within home spaces. Women worker in shrimp or fish packaging units need differently designed change rooms to drape sarees or bathe or for lactation. Construction and other workers need crèches near work or near schools so that they can combine care of different age children while going or coming back from work.

- Design aspects to cater safety issues: Design of lanes, lighting and planning areas with more foot fall ensures many public eyes to prevent secluded condition that foster violence.
- Women owned/ use right/ only spaces: Special spaces need to be set aside for use rights in commercial areas for women workers groups or women entrepreneurs. Commercial and residential buildings need to set specific plots and built infrastructure offered at a subsidy for being sold or leased or given for use rights of women only.
- Increased role of women in neighborhood care and workers placements.
- Build infrastructure for working class and neighborhood services managed by women groups such as women resource centres, safe migration centres, homes for the distressed, deserted like the widowed / old-age citizens / disabled, etc. An area specific approach is needed. For example panchayats like Alapad and Karunagappally could have specific programmes for women workers in coir and cashew industry.
- Public utilities building and maintenance contracts and care services near work and residential areas can be managed by women and other local groups.

Proposals for the Welfare of Women Mothers

● Welfare Schemes

- Health and Nutrition, Education – Strengthening mother component of ICDS: The components of the scheme include:

○ Pregnant mother

Special care is needed to a woman when conception is confirmed. Medical care and advice will be got from the nearest PHC and from the PHN's house visit. Nutritious supplementary feeding is given

to them through Anganwadi centers to improve nutritional status.

The following diet practices and habits should be adhered to during pregnancy viz.

- Include leafy vegetables in daily diet
- Consume food containing micro nutrient and iodized salt
- Ensure personal hygiene and regular exercise

Also education on awareness of AIDS, STD and other contagious diseases is required.

○ Lactating mother

- Nursing mother should be given nutritional supplementation with energy rich food which contains vitamins and minerals and counseled on the importance of breast feeding through anganwadies.
- Supplementary feeding (double ration) should be given to them for six months from anganwadis
- Propagate the importance of breast feeding through audio visual media regularly
- Creating awareness about personal hygiene and creating healthy family atmosphere

● Women headed families (Widows, Deserted):

○ Welfare Schemes:

Health, Education - Strengthening Widows/Deserted component of ICDS: Widows and women deserted by their husbands are often ignored by society or forced to live a shadowed life due to prejudice and social customs. It is the responsibility of a cultured and refined society to bring them to the main stream of life and consider them as dignified human beings. The ICDS Services envisage the over all development of women through:

- Involvement in social activities through anganwadies.
- Giving access to Medicare with the help of Anganwadi workers.
- Organising mothers meetings, in which various health and nutrition subjects are discussed.
- Teaching them to use locally available leafy vegetables, fruits to check anemia.
- Organising literary classes handled by Angawadi workers or "Preraks" to make them understand their rights.

○ Social Development Schemes:

The women empowerment

programme seeks to create a general awareness in women through ensuring information specific to equality of social status, legal rights, like those to property and inheritance, constitutional safe guards and on different development programmes / issues of concern to women.

The proposals include,

- Activities of Group- for Development
- Cultural activities
- Awareness creation against alcoholism, money lenders
- Providing of Safe drinking water
- Providing of Sanitation
- Providing of Adult education
- Developing laws and safeguards for women
- Traditional Social practices
- Providing access to savings and credit
- Regular health check up for women cashew workers.
- Providing creche facilities for NREGA women workers.



NREGA women workers - Kundara

● **Uneducated/ Unemployed Women:**

Education and economic development will help women emerge from their cocoons and shed all shackles of slavery. Even today women are trying to tread her own path and establish herself as an individual in her own right.

○ **Welfare Schemes:**

Health-Strengthening uneducated / unemployed women component of ICDS: poverty and illiteracy pose the greatest hazards to public health. Malnutrition and lack of hygiene, sanitation, safe drinking water and civic consciousness render the vast majority of the masses disease-prone. 80% of the rural women receive no medical aid. The health strategies of ICDS services look at preventive and curative care to women.

The proposals include,

- Access to modern medicine to under privileged
- Intensify the house visit of health

personnels and Anganwadi workers.

- Conduct health and nutrition education in anganwadi periodically.
- Give awareness about AIDS/ Tuberculosis and other epidemics.
- Introduce Self Help Programme, which is cheap and effective
- Intensify source reduction (Mosquito) activities to check dengue, Chickun guinea, Malaria. Etc.

○ **Social Development Schemes:**

Improving the quality of people's life is the signal function of the government. Though health is a state subject, the central government too initiated several schemes relating to various aspects of health care as part of its national planning process.

The proposals include,

- Provide opportunity to continue education
- Introduce them to the field of I.T.
- Challenge traditions and social taboos
- Create link between community and national arena
- Integrated Child Development Schemes
- Women Empowerment Programme
- Convergent Services
- Gender, Development and empowerment
- Skill Development.

● **Employment Schemes:**

In spite of the considerable improvement in the status of women, they still comprise of largest section of deprived population. It is widely recognized that women as a group and poor women in particular have been adversely affected by the process of growth, economic transformation and development. Lack of capital is a serious constraint to the development of women in rural areas who find little or no access to credit.

The proposals include,

- Self employment, economic activities and training through IRDP, TRYSEM, DWCRS.
- Credit linkage to women's groups through NABARD, RMK.
- Strengthening women's participation in agricultural development, dairy development, agro services and small scale business sector.
- Employment generation for women through JRY and EAS.

● **Specific Proposals:**

As per the sectoral analysis, women in the eastern belt are having low literacy

rate. It is suggested that a total literacy campaign and Anganwadi based literacy programmes or functional literacy programmes have to be started in Aryankavu, Elamadu Kulathupuzha, Thenmala, Chithara, Nilamel, Clapppana, Kulasekharapuram, Thazhava, Thodiur, Thevalakkara, Poruvazhy, Nedumpna, Poothakkulam, Velinallur Thrikkadavur, Kottamakara, Throkkovilvattom Grama Panchayats by 2015 and other LSGIs by 2021.

As per the sectoral analysis, the atrocities against women are more in Kundara police circle area. It is suggested that functioning of 'Jagratha Samithy' (Chairman – LSGI President, Convener – ICDS Supervisor, Members-Circle Inspector of Police, Social workers etc.) in these areas are to be made effective. Legal literacy to women in this area to make them aware of their rights shall also be given through Anganwadis. Functioning of women grievance redressal cell has to be made effective in this area. Training for Self Help Groups for intervention against atrocities at home etc. shall also be given. In such events SHG members can directly intervene in the matter meeting at a third party's home by restricting the person who is creating issues. Strict enforcement of special rules for women has to be done.

As per the sectoral analysis, the suicide by women is more in Punalur police circle area (Pathanapuram, Punalur Municipality, Piravanthur(part), Pattazhy, Pattazhy Vadakkekkara, Karavalur, Thalavur, Vilakkudy) and Kadakkal police circle area.

This area has to be made free from illicit liquor. Special intensive programmes have to be conducted to remove the backwardness and improve family welfare so as to reduce emotional instability and personality disorder. This can be done through Anganwadis. Presently this is being coordinated by Excise Dept. and the linked agencies are LSGIs, Education Dept., Dept of Collegiate Education and Kudumbasree.

Another major issue among women is health related. As per the sectoral analysis, more cases of anemia are reported in Multi Functional Zones, which could be due to fast food culture. Wide propagation to include leafy vegetables having iron content, in the diet is the major suggested solution. Awareness programmes through

Anganwadis, audio visual media etc., are phased as follows.

The proposals can be integrated to the proposals of Health sector.

Proposals for the Welfare of Children Welfare Schemes:

- Health and Nutrition, Education - Strengthening Children component of ICDS including nutritional and health education (NHED): ICDS provides a package of services for the development of Children.

Proposals on Health Service include;

- Periodical health check-up of Anganwadi children by health personnels.
 - Effective referred service
 - Hundred percentage coverage for immunization with the help of community
 - Implement strictly early detection of childhood disabilities and community based rehabilitation programme through ICDS.
 - Special care for primary complex.
- Proposals on Nutrition include;
- Supplementary nutrition and ready to eat food through anganwadis
 - Food containing micronutrients, vitamins and minerals.

- Usage of iodized and iron fortified salts for cooking food in anganwadis.

Proposals on Education (Non-formal Pre-School) include

- Non formal pre school education should be made scientific and systematic suitable to developing countries.
- Use of audio visual media.
- Improvement of infrastructure facilities of anganwadies.
- Harnessing the service of well trained pre-primary teachers.

- Pleasant and clean atmosphere in anganwadi.

● **Social Development Schemes**

Victims of molestation, natural calamities, riots etc., and orphans including Security: Rape is the only crime which man can commit against women and not vice versa. The ultimate victims of riots or natural calamities are women and children.

Proposals include

- Moral support and protection from community
- Rehabilitation
- Counseling services
- Adoption, intervention programme

Proposals for the Welfare of Adolescent Girls

Welfare Schemes:

- Health and Nutrition, Education, Counseling - Strengthening Adolescent Girls Component of ICDS including Nutritional and Health Education (NHED): Adolescent population constitutes around 20% of Kerala's population while it is 16% in Kollam.

Millions of girls in India are denied the right to be born and if they are born, denied the right to lead a life of dignity. Hence intervention are required for the welfare of Adolescent girls. The proposals in this respect include:

Proposals include,

- The right to be born - Sex determination
- The right to live – in a healthy family atmosphere.
- The right to Nutrition - Anganwadi Supplementary feeding.
- The right to health - Access to health Service
- The right to learn – Free and compulsory education
- Counseling service-through Adolescent Girls clubs attached to Anganwadi centers.

● **Social Development Schemes**

This scheme is for victims of Molestation, Natural Calamities, Riots etc., and Orphans including Security:

Proposals include

- Moral support and protection from community
- Rehabilitation
- Counseling services
- Adoption, intervention programme

Proposals for the birds with broken wing (Mentally and physically challenged)

Welfare Schemes:

- Strengthening birds with broken wing component of ICDS and Asraya: Mental retardation (Synonyms-Mental deficiency, Mental handicap, sub normality, amentia) is a state of arrested development of the mind existing from birth or from an early age.

It has been estimated that about 5% of all babies born are retarded to some degree.

Proposals include,

- Provide supplementary nutrition from nearest anganwadi centers.
- Periodical visit to the patients (Mentally retarded or handicapped) home by health staff anganwadi worker and provide the medical and moral support.
- A small pension to the family.

- Awareness to parents of mentally/ physically handicap's through anganwadi.
- Counseling service.

Social Development Schemes:

Proposals include,

- Early detection of child-hood disabilities and community based rehabilitation
- Social acceptance sympathy/empathy
- Protection from exploitation / abuse
- Starting of special schools for educating mentally retarded
- Counseling to the parents.

Employment Schemes:

Support for establishing small enterprises for

- Making paper bags / cover
- Toys making for physically handicapped:
- Painting works
- Paper bags / cover
- Cycle repairing
- Running small shops

Old Aged

Welfare Schemes:

As per analysis increasing proportion of old aged in the population is another major problem identified by Human Resource Sector. Increased longevity, health facilities, falling birth rates and other contributing factors have increased the share of aged in the population. All the developed and developing countries are witnessing this phenomenon. This is very much visible in India, particularly in Kerala State as well as in Kollam District. Due to the limited employment opportunities, people are induced to leave their native places in search of job to far off places leaving their parents. Consequently these aged parents are left lonely in the fag end of their life. Therefore it is essential that specific welfare scheme for the old aged are implemented.

● **Strengthening old age homes**

Old age homes provide care and protection to neglected aged people.

Proposals include

- Good respite service
- Geriatric care
- Counseling service
- Entertainment (music/games)
- Spiritual awareness
- Horticulture
- If healthy, encouraging donation of eye

As per proposals of health sector, bed strength of the pain and palliative clinic at district hospital is to be raised from 6 to 15 which will strengthen this proposal.

● Health care

The well being of the older persons is the goal of the national policy, on older persons which will be achieved by securing them their place in society so that they live this phase of life with purpose, dignity and peace.

The proposals include

- Constitute geriatric clinic in all hospitals
- Constant health care
- Physiotherapy
- Counseling service

To help the elderly, offer them protection from abuse and exploitation and create opportunities for them to improve the quality of their lives.

Other Social Challenges

Other social challenges include antisocial activities, suicides, dowry, accidents, drug addiction, female feticide, hiv positive children and white slavery.

● The antisocial activities can be reduced by

- Strict enforcement of law
- Timely information to police
- Crime alert system – Public and community

● Suicides could be checked by

- Social Justice
- Employment, education facilities and economic growth.

- Sustainable development in all sectors
- Intervention programmes – e.g. Identification of at-risk families/persons, depression patients, alcoholism, psychiatric illness, terminal illness

● In case of dowry, the consultative committee constituted by Parliament in 1980 has suggested the creation of dowry prohibition officer's post in each district to be assisted by a team of five social workers and with police forces. But it took more than 25 years to implement the suggestion. Thus dowry can be reduced by

- Continuous awareness creation through media
- Service of dowry prohibition officers
- Refusal of bridegrooms who insists dowry by brides
- Timely information to police
- This should be included as a part of legal literacy

● Accidents can be reduced by

- Education at school level on good driving practices
- Better road facilities

- Strict enforcement of law against road rule violators

- Making available Emergency Medical Service System (EMS) covering Ambulance service, Emergency medical technicians service, Good Samaritan laws etc

- Speedy and effective communication

● Cyber crimes can be checked by

- Strengthening the provisions of I.T Act
- Constituting State Cyber Rules and Regulations (including control of cyber cafes and internet service providers etc.)
- Strengthening the existing High Tech Crime Enquiry Cell of the Police Dept.

- Up-grading status of High Tech Crime Enquiry Cell and District Crime Enquiry Cell through giving powers for case registration and investigation

- Providing adequate qualified manpower and infrastructure facilities including building, updated software, hardware etc.

- Through imparting regular International/National/State level trainings to the law enforcing officials in particular by incorporating private internet service agencies like Yahoo, Google, Microsoft etc. and Social community site providers

- Facilities for ensuring international cooperation including that of Police Depts. and service providers of other countries

- Awareness programmes at Schools, Colleges and also for the public etc.

- Control measures at institutions including Line Depts. , LSGIs etc. having link to cyber space through monitoring facilities, adequate security measures etc.

- Restricting improper usage of mobile phones through proper verification of address by mobile service providers, State level coordination of mobile service providers with law enforcing agencies etc.

Betterment of Services through Anganwadis

● Provision of Infrastructure facilities:

Based on the analysis of cumulative index of facilities in Anganwadis conducted in the sectoral analysis, the LSGIs has been classified into those where there is High Development Thrust (Thrust 1 A: Multi Functional Zone and Thrust 1B: CI Range 146-178), Medium Development Thrust (Thrust 2: CI Range 112-145), and

Low Development Thrust (Thrust 3: CI Range 58-111). Accordingly these anganwadis may be provided with facilities in a phased manner. The required land, can be purchased by the concerned LSGI or obtained as donations etc. The Buildings and Services can be provided by the LSGI utilising State/Central Fund or by NGOs.

● Training Programmes for Functionaries:

The functionaries include Anganwadi worker / helper, Anganwadi supervisor and child development project officer. Following training programmes are suggested:

- Anganwadi worker / helper level:

- Pre school training
- Health and nutrition
- Organization skills
- First aid

- Anganwadi supervisor level:

- Pre school training
- Health and nutrition
- Hygiene and sanitation
- Training for resource persons
- Capacity building

- Child development project officer level

- Developmental activities
- Health and nutrition
- Women empowerment
- Capacity building
- Management skill
- Disaster / crisis management

The trainings presently given once in 2 years should be given every year.

● Participatory Intervention:



Anganwadi - Asramam, Kollam

Presently awareness on various subjects to the beneficiaries are given in the Anganwadi centres. But these programmes are not fruitful as only a few are able to attend the programmes. So, participatory interventions is the best solution to tackle the issue i.e. to conduct the programmes at the work places, schools etc. of beneficiaries.

The proposals include,

- Conducting awareness programmes in industries.

- Forcing the owners of industries/ Commercial establishments/ Government offices etc. to send the beneficiaries for major programmes conducted.
- The Industries Dept. shall insist this to entrepreneurs while re-registration.
- The district administration, including the Jilla Panchayat President, District Collector and Mayor, Kollam Corporation shall conduct continuous dialogue with the management of concerned factories, companies, commercial establishments etc.
- LSGIs shall insist Commercial establishments insist to participate in such ventures while remitting building taxes during license renewals.
- Facilitating orders of Government.
- Awareness through visual media at the time of festivals/ Melas etc organised at tourism centers as mentioned in Article 2.5.6 of Chapter 49; Tourism.

Proposals for Fire and Safety

As far as fire and rescue services are considered two proposals are given.

● Modernisation of Existing Fire Stations:

As mentioned in analysis all the 7 fire stations existing in the district require urgent modernization including own buildings, recovery vehicle etc.

● New Fire Stations:

At least 8 more fire stations will be required in the district by 2017. The suggested locations for the fire stations are as follows. Here the Multi functional zones are also given priority.

1. Sasthamcotta
2. Velinallur (Oyur)
3. Kottamkara
4. Chathannur
5. Kottarakkara
6. Anchal
7. Kollam Corporation (Eravipuram)
8. Anchalommodu (Thrikkadavur)

The period of implementation is 2009 – 2017.

● Proposal for Hydrants:

It is also proposed to provide fire hydrants in Multi Functional Zones (Zone 1 - Kollam Corporation, Kottamkara, Thrikkovilvattom, Elampallur, Panayam, Mayyanadu and Zone 2 - Punalur Municipality, Karunagapally, Chathannur, Kottarakkara, Neendakara, Anchal) and

Special Development Zones (Paravur Municipality, Mayyanadu, Chathannur, Kalluvathukkal, Kunadara, West Kallada, East Kallada, Perayam, Elampallur, Ochira, Clappana, Kulasekharapuram, Alappadu, Panmana, Chavara, Thevalakkara, Mynagapally, Sasthamcotta, Neendakara and Karunagapally) with the support of the Kerala Water Authority. As per Article 3 of Chapter 41; Drinking Water, specials such as flanges, reducers etc. for providing hydrants are proposed to be installed in these LSGIs.

The development proposals in the social sector envisage the well being of women, children, adolescent girls, old aged and the birds with broken wings by providing timely health and nutritional services, and by organizing educational programmes, awareness programmes and self help group activities. There is a lot of victimization, fear and exploitation in our society. The frightened need assurance, the harassed need protection and the deprived and less fortunate fellow beings need someone who will listen to them. A "Cry out for help" should be heard.

1.15 Poverty Reduction

As per the District Development Policy, the present BPL population has to be brought above the poverty line whereby the BPL population has access to better employment opportunities and infrastructure facilities both in rural and urban areas by 2021.

The strategies for the same include

- Reducing absolute poverty to less than 5% in the district through eliminating the deprivations and incapability of the poor with respect to
 - Food and Employment
 - Land and house
 - Drinking water and Sanitation
 - Knowledge and Skill etc.

This can be achieved only if the ongoing and committed projects and programmes on poverty reduction and rural development are integrated to the development proposals of production and service sectors suggested in other chapters of this report. Following interventions are suggested in this respect.

Proposals for Food and Employment

● Intervention in Agriculture sector:

The revival of paddy cultivation has been identified as the major area of intervention for supporting the BPL

population. The BPL population receives the opportunity to get wage employment and to engage in lease land farming activity by forming groups (both men and women).

The paddy processing centres are intended at Kadakkal, Sasthamcotta, Kottarakkara areas which are nearer to major paddy areas. There are possibilities for setting up such centres in cluster approach by BPL SHGs with the support of LSGIs.

The BPL population can be organized and motivated to engage in this field of vegetable cultivation supported with in a large scale, provided marketing facilities as mentioned in Agriculture sector proposals. Areas for intensive vegetable cultivation for improving productivity are mentioned in Agriculture sector proposals.

Also small scale industrial units are to be promoted for processed tapioca production including starch, chips manufacturing etc. in traditional areas with special thrust to Kadakkal, Kulathupuzha, Kalluvathukkal, Anchal and Poothakulam. This proposal is helpful for ensuring income generation activities for BPL in this field.

Sesamum cultivation can be taken up by the BPL groups as an intercrop in lease land farming areas in Onattukara region viz. Clappana, Oachira, Kulasekharapuram, Thazhava, Mynagapally, Thodiyur, Thevalakkara, Chavara, Panmana, Sooranad South, Sooranad North, West Kallada, Sasthamcotta, Kunnathur and Poruvazhy Panchayats.

Apiculture activity can be undertaken by BPL families (Both individual and groups) as a promising income generating activity. Apiculture is to be implemented in 39 Panchayats of Zone A, B and C referred 7.1. Processing of Honey into various edible items can be encouraged and such small and medium enterprises also can be initiated in the area.

The areas identified for coconut cultivation and rehabilitation includes Sub Zone 4 of Special Development Zone including Panmana, Chavara, Neendakara, Thevalakkara, Clappana, Kulasekharapuram, Oachira, Mynagapally and Sasthamkotta and Sub Zone 1 of Special Development Zone including Poothakulam, Kalluvathukkal, Paravoor Municipality and the selected areas from Zone B and C. When the production of coconut increases, there will

be an increase in the opportunity of developing coir producing units. The revival of once popular traditional coir production in these areas will benefit the poor. Further there is scope for poor families to enter into enterprises undertaking value addition of coconut oil and products. If a mechanism for proper collection of the husk is developed in these areas facilitated by the community based social net work of the poor, there is another possibility of revitalizing the coir co-operative societies and it will provide new employment opportunities for the poor.

Banana can be cultivated as lease land farming by the poor in the areas mentioned in Agriculture sector proposals, provided the inputs and crop insurance support are extended from Govt. side.

The forward and backward linkages including general trainings, skill trainings, entrepreneurship trainings, bank loans, procurement measures for raw materials, marketing support and business counseling supports have to be ensured through the development departments such as Rural Development, Agriculture, Industries, LSGIs, Kudumbasree, other agencies such as Development Corporations for the Backward population, banks, training institutes etc.

● **Intervention in Animal Husbandry sector:**

As per Animal husbandry sector proposal, there is scope for development of large scale dairy farms in the Grama Panchayats of Kunnathoor, Poruvazhy, Sasthamcotta, Kulakkada, Kalluvathukkal, Nedumpana, Pavithreswaram, Mynagappally, Ezhukone, Kareepra and Adichanallur of Agro-allied Development Zone and medium scale dairy farms in the Grama Panchayats of Thazhava, Sooranad north, Sooranad south, Elampalloor and Thodiyoor of Agro-allied Development Zone. Dairy development is a remunerative activity which can be taken up by poor families either individually or in group.

Necessary measures to make the dairy development activity sustainable, such as ensuring the availability of feeder at affordable cost etc is required.

Another area of intervention is backyard poultry development. There is opportunity for setting up 1000 numbers of small scale poultry units of 10 hens each in

a unit. In the areas mentioned in Animal husbandry sector proposal, the units can be established by individual beneficiaries as subsidiary source of income. The BPL families shall be given preference in such ventures. Similarly backyard duck units, homestead quail units, goat rearing units and piggery units etc can be started by the poor in the areas mentioned in respective articles of Animal husbandry sector proposal.

● **Intervention in Industries sector:**

As per Industries sector proposal, it is proposed to set up 12 micro food processing units, 7 in Agro Development Zone and 5 in Agro-allied Development Zone.

Also there is ample scope for starting micro enterprises in Multi Functional Zones.

In the sectoral analysis it was found that there is scope for starting curry powder units and flour mills. SHG members who have capabilities of entrepreneurship can be organized to activity groups in this area. The success of such the venture depends upon the standardisation and branding of the products in the district. All the units may be motivated to work as part of a consortium which take care of the activities from raw material procurement to marketing.

In the new era of fashion, there is scope for setting up of garment making units for ready made apparels such as shirts, ladies garments, baby garments, under garments etc. in a cluster based approach. Ithikkara, Mughathala and Kottarakkara Blocks areas are ideal for setting up of such units in the context that these areas were once famous for traditional handloom industries. This intervention may open up new opportunities for the revival of traditional handloom industries as well as direct employment for atleast 2000 BPL families during the next decade.

In the industries sector it was found that, there is scope for Manufacturing of Bamboo Based Products and Handicrafts items in Pirvanthoor, Kulathuppuzha, Thenmala and Aryankavu Grama Panchayats located in the eastern part of the District. But the BPL family members traditionally engaged in these activities and the artisans who possess the skill have to be capacitated by imparting know how of new machine based processing and skills for producing value added products which ensures quality even for export. The

cashing in on such products is directly attached to the emotions that evokes in the customer. In other words the products whether they are utility products or other items they should have some unique features which attract demanding customers. Therefore production units which cater such market can be set up.

It was found that there is ample scope for starting a BIO Medical Equipment Manufacturing unit at Chathanoor Panchayat. In the context of emerging private hospitals in Kollam, it is possible to organize activity groups which could render service support as well as production of various materials for the use of hospitals, for, e.g. Power laundry, Cleaning services, production of surgical cloths, cleaning materials etc. This can give direct employment to 100 BPL families.

Another avenue of employment generation for the poor is starting some enterprises for looking after the regular health check ups and administering of medicines, provided that the entrepreneurs are properly trained such ventures will be effective only if there is support from NGOs, health sector and the LSGIs.

As per analysis, there is scope and demand for value added coir products. It is proposed to set up mechanized coir yarn manufacturing units in strategic locations at Chavara, Clappana, Karunagappally, Kulasekharapuram, Munroe Island, Oachira, Panayam, Panmana, Perinadu, Thekkumbhagam, Thevalakkara, Thrikkaruva and Thrikkadavoor Grama Panchayat of Kollam District. If continuous supply of raw material can be assured, 1000 BPL members can be assisted with financial support by the LSGIs, Govt. and financial institutions for setting up such units.

As per analysis, it is proposed to set up two separate units for the manufacture of Screw Pine and Straw picture products in Thazhava and Thrikkadavur Panchayats respectively. Novel and unique utility products have to be developed with high dexterity and skill in order to attract both domestic and export market and BPL members can be organized as clusters to work in this sector. Appropriate and modern training has to be imparted to the prospective entrepreneurs. Sufficient R and D has to be carried out by concerned institutions for product development. Here the availability of screw pine has become

a threat. Hence LSGIs has to take up activities for the cultivation of screw pine in private as well as public land utilizing the opportunities of watershed development programmes and NREGP. Similarly Straw picture making enterprises can also be developed in household cluster based approach in Thrikkadavur and adjoining areas.

● Intervention in Fisheries sector:

In the fisheries sector there is a proposal for Carp Seed Rearing Units in small ponds/tanks in SGHs among BPL can be motivated to take up these activities in their own/ leased land. As per Fisheries sector proposals, there is a proposal for fresh water fish culture where also SGHS can be motivated to take up activities. Another area of intervention is ornamental fish culture.

Also as per studies there is ample scope for value added fish products. SHGs in coastal belt covering mainly Kollam Corporation, Chavara, Neendakara, Alappad and Karunagappally Grama Panchayats can be organized to take up such micro enterprise activities. Ensuring marketing strategies facilitated by fisheries Dept. and MATSYAFED is also a pre requisite for the success of such ventures.

As per analysis, there is potential for dried fish product making units in Paravoor, Mayyanad, Kollam, Neendakara, Thekkumbhagam, Thikkadavoor, Thrikkaruva, Panayam, Chavara, Alappadu and Karunagappally. Modernised enterprises can be setup by activity groups formed by poor families in the said area.

As per analysis, fish vending, retail outlet for fresh and processed fish, processing groups, fish booth, ready to eat/ ready to cook fish product making units etc. are some areas which can employ considerable woman labour. There is potential for ready to cook / ready to eat fish product making units in Karunagappally, Kollam, Paravoor, Thrikkadavoor, Neendakara, Alappadu and Mayyanad. The enterprise can be setup by activity groups formed by capable and interested members of poor families of the said area, after obtaining appropriate skills through trainings.

As per analysis, the coastal seas, extensive net work of brackish water area and the rivers and inland water bodies

offer immense potential for Capture fisheries in the District. Hence there is a remunerative opportunity by setting up in Net Mending Units by fisher women SHGs this area.

Proposals for Accessibility to Land and House

In the perspective of poverty reduction non accessibility to land and house are considered as two important risks. By 2010 all the poor who do not have land and house has to be covered. Providing land to the landless should be a time bound agenda for all LSGIs, especially for Chavara, Thekkumbhagam, Thazhava, Pathanapuram and Thrikovilvattom Grama Panchayats, where the issue is critical as per analysis.

As part of EMS housing programme, all the LSGIs have to provide houses for the houseless poor by 2010. Providing houses for the houseless poor should also be a time bound agenda for all LSGIs, especially for Oachira, Thazhava, Thevalakkara, Alayamon and Aryankavu Grama Panchayats where the issue is critical as per analysis.

While implementing these schemes SC/ ST families, destitutes, and families with differently-abled members, women headed families etc should be given priority in the LSGIs having concentrations of such families as mentioned as per analysis.

Proposals for Infrastructure and Service facilities

As part of poverty reduction the critical intervention required is that infrastructure and service facilities has to be provided to those areas where BPL families and BPL SC/ST families live in groups and in urban slums. As per Infrastructure sector proposal, around 65% of the SC population are settled in colonies. ST people are also settled in colonies known as 'Oorukottams' which are located in the eastern part of the district especially in Kulathupuzha, Aryankavu and Thenmala Grama Panchayats. As mentioned in Infrastructure sector analysis, there are 71 listed slums in the district. By dovetailing the Central and State funds with LSGI funds the issue has to be addressed fully by 2013.

Proposals for Social Development

As per analysis of social welfare sector, the importance of including leafy vegetables in diet of pregnant and lactating women is

highlighted. This has to be propagated among the women of poor families through discussions in neighborhood groups of Kudumbasree. Service of trained health volunteers of Kudumbasree NHGs can also be utilized for the same. The members of NHGs can cultivate leafy vegetables in their homesteads.

The women empowerment programme seeks to create awareness in women through IEC and capacity building in various subjects such as legal protection, legal literacy, skill development, danger of alcoholism, gender development etc. The best platform for educating the women especially poor women on such matters is Kudumbasree. Regular classes of legal literacy can be imparted to the volunteers of Kudumbasree, in association with District Legal Services Authority (KELSA). The gap in various skills of the women has to be assessed at LSGI level as part of their Local Development Plan and systematic and effective trainings has to be arranged in association with training institutions which have good track record. The proposal for 'strengthening birds with broken wing' component of ICDS and Asraya can also be linked here.

As per analysis, the employability among the educated youth, especially the poor and marginalized, is below the required standard. It is fact that the soft skills of educated youths of the poor and marginalized families are below the required standards insisted by employers now. In order to overcome this handicap quality assured employability enhancement trainings has to be imparted by LSGIs.

Proposals for empowerment activities through Kudumbasree

Kudumbasree has entered into a new phase of reduction of poverty through various initiatives under the three paths viz social empowerment, economic empowerment and women empowerment. Govt. has prescribed a new by-law for Kudumbasree and the newly elected system is put in place. This has strengthened the CBOs of women and provided sufficient freedom for a leap ahead. New evaluation and monitoring mechanism is also derived under the aegis of LSGIs which ensures objective based development. In view of developing the managerial capabilities of women, new

initiatives on participatory gender self learning is being piloted. In the coming years this will be extended all over the state and which will tangibly enhance the capabilities of women for interacting with the societies, advocating by themselves for their rights, and even bargain for their eligible stake in governance. The prevailing social security issues can be tackled through this organizational set up. For e.g. the implementation of Rastriya Swasth Bheema Yojana (RSBY), the insurance scheme is being coordinated through Kudumbasree network.

In the area of economic development, new initiatives of enterprise development have been started. SAMAGRA – comprehensive enterprise development based on the natural, human and financial resources has already been piloted all over the state. In Kollam district such enterprise development initiatives have been started at Nedumpana, Poothakualm, Perinadu and Sooranadu South Grama Panchayats and in Mukathala Block Panchayat under the leadership of Panchayat Raj Institutions. Here, the threats in the areas of product development and marketing are addressed in order to ensure sustainability and economic feasibility of enterprise. In the area of marketing, new avenues are provided to entrepreneurs by Kudumbasree. Monthly markets provide opportunity to entrepreneurs to sell their products. In the coming years, such markets will be opened in all Block centres. Kudumbasree facilitates entrepreneurs to exhibit and sell their products in various fairs. Tie up with dept. stores is made for providing visibility to the products of the poor. Govt. has provided sufficient funds to open designer shops in all LSGIs which will materialize by 2011. Some products have been identified for branding and packing so that the entrepreneurs can increase their stake in the emerging global market. It is expected that at least 20 products will be branded and marketed by Kudumbasree Kollam by 2011.

These initiatives will ultimately add to the various sectoral development proposals and in turn generate better results for efforts of poverty reduction in the district.

Reducing the incidence of poverty in the district is not at all an easy job. It can

be achieved by the interventions made in all sectors of development. The schemes and programmes which are chalked out for socio-economic development should therefore get some space for the economically weak and challenged families in the society. We have to give voice to the voiceless through specially planned programmes. A pro-poor approach has to be developed in the society, especially among those who lead the systems and activities. To conclude, the efforts of Poverty reduction should be initiated come jointly by the Govt. Departments, LSGIs and various other agencies in a dedicated, time bound, mission mode so that tangible results are manifested by 2021.

1.16 Power

According to the district power policy, Kollam has to be equipped to provide quality power for the existing and proposed economic activities of the district by 2021 and has to give more emphasis on non conventional energy sources in the domestic and commercial sector. The proposals of power sector are briefed here under.

Non Conventional Energy Resources

● Energy from Bio-Mass:

Solid waste disposal is a problem being faced by all the growing local bodies. Hence bio gas plants of capacity to consume approximately 10tons out of solid waste are proposed in the urban areas (including proposed urban areas) of the District. Bio-gas plants are proposed in and around the Kollam Corporation, Punalur Municipality and the Grama Panchayats of Karunagappally, Kottarakkara and Chathanoor. These plants shall serve the immediate surrounding local bodies also, with respect to disposal of solid waste.

● Others:

There is a proposal for electrification of un-electrified houses. It is suggested that wherever there is no possibility of extending electric lines or cables such as in deep forest areas, solar energy shall be provided.

Table.3.2. : Proposals for strengthening distribution side

Year	Consumption (mu)	HT line (km)	LT line (km)	Transformers (Nos.)	Addl. Investment (Rs. in lakhs)required
2006	719.12	2637	18782	2672	
2011	844.4	3097	22054	3137	8205
2021	1226.1	4496	32023	4556	26413

Strengthening of Distribution Side to cope up with Future Power Requirements

To meet the future requirements of power, following are the proposals in distribution side.

In the year-2011, 844.40 Mu consumption is expected. To meet this, 3097 Km HT line, 22054 Km LT line, 3137 transformers etc. are required. The additional expenditure expected in this regard is Rs 8205 lakhs.

For the year 2021, 1226.10 Mu power consumption is expected in this District. To meet this requirement, 4496 Km HT line, 32023 Km LT line and 4556 transformers are required additionally during the period 2011-2021 at an investment of Rs 26413 lakhs (Table 3.2).

So a proposal of 11 KV (2009-2011), 100KV transformer (2009-2011), LT 3 phase (2009-2011), LT single phase (2009-2012) and conversion (2009-2011) are suggested in Kollam District. The cost requirement for the proposals would be Rs.902.9, 935, 73.03, 513.62 and 707.55 lakhs respectively.

Proposals on Transmission Side

To meet the above future requirement of power, there are various proposals on transmission side in addition to the ongoing and committed works. The future development proposals are listed below.

During 2009-2010, 110KV substations are proposed at Enathu, Pathanapuram and Kollam Corporation. The proposal of upgradation of substation at Karunagapally is to be implemented during 2010-2011. Kundara-Sasthamcotta 110 KV Double Circuit feeder is to be implemented during 2010-2011. The proposals of upgradation of Edamon 220 KV substation to 440 KV during 2011-2012 and upgradation of Edamon Ayoor 66 KV line to 110 KV during 2009-2010. The proposal of evacuation of power from Achankovil New Hydro Electric Project by constructing 110 KV line (2009-2010) will cost around Rs 10.5 crores.

The Figure 3.5 gives the proposals on transmission side.

Panchayats of Oachira, Thevalakkara, Kollam Corporation, Thrikkadavoor, East Kallada, Elampalloor, Kalluvathukkal, Kulathupuzha, Kadakkal and West Kallada.

At least one nursery school need to be started, in those blocks where there is no such schools under SC Development Department, so as to minimize scarcity of schools for SC children.

○ Setting up of new Nursery Schools

It is proposed to set up of new pre-primary Schools are in Oachira, Karunagappally, Chavara, Anchalumoodu, Chittumala, Mukhathala, Ithikkara, Sasthamcottah, Anchal Blocks and in Kollam Corporation. Besides it is suggested that the pre-primary schools run by the General Education Department can be expanded to include all the Scheduled Caste and Scheduled Tribe pupils with out separate fund.

● Pre-metric Studies:

○ Primary Schools

As far as SC/ST students are concerned, primary schools are available at walkable distance making the enrollment of SC and ST Children in Primary Schools almost 100%. Regular provision of lumpsum grant and monthly stipend are proposed.

○ High Schools

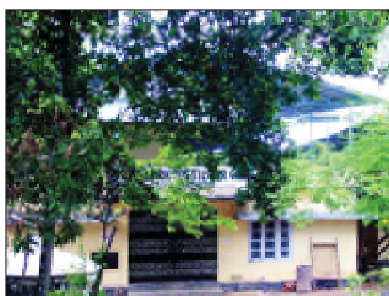
In Kollam district 12274 SC students are studying in 230 HS's. Almost all the Gramapanchayats have at least one high school. So, SC students may have a high school with in a radius of 6 Kms. Here also regular provision of lump-sum-grant and monthly stipend are proposed.

● Post - Matric Studies:

On completion of S.S.L.C students are offered different courses according to their choices. Majority of them go to HSS or VHS courses. In almost all the Post - matric courses seats are reserved for SC and ST students in Government and aided institutions.

For Plus 1 course, 20% of the total seats are reserved for these two communities; (15% for SC and 5% for ST), in VHS course total reservation is 12% with respective reservation of 8% and 4% for SCs and STs. So almost all the SC/ST students who seek for admission to these courses will get admission.

Majority of SC/ST students who joins Plus I or VHSC fail at the final examination because of the following reasons.



Pre-matric hostel - Kunnathoor

- General Intellectual Backwardness
- Inadequate facilities in their households
- Lack of parental attention
- Lack of special consideration at the school

These problems are to be properly addressed at the first year itself so as to equip them to pass the course. The students, especially from poor families shall be given proper guidance to equip them to get admission to professional courses.

○ Degree and Post Graduate Courses

As part of general education around, 30% of those who pass Higher Secondary course join for degree course in various subjects. Now a days, various new courses have been introduced which are job oriented. But most of the SC/ST students are not aware of such courses because of lack of information or guidance. A special centre, needs to be set up to give information and guidance to them regarding various modern courses.

○ Vocational and Professional Courses

SC and ST students are entitled to 10% reservation in all vocational and professional courses. Most of the SC/ST students undergoing vocational and professional courses got admissions in reservation seats. Those who get admission on merit are very negligible. So to improve their competitive efficiency, it is proposed to set up three coaching centers for entrance examination with an average in take of 150 students. Moreover, one nursing college exclusively for SC students is also proposed, since new career avenues are opening up in nursing field.

Post-Matric Hostels and other facilities

Because of the diversification of professional and vocational courses, a large number of SC/ST students are coming from distant locations. They are compelled to reside in private hostels where the hostel charges are high.

Hence two more Post matric hostels,

for boys and for girls, are proposed in the central and eastern part of the district.

Drinking water Programme

In certain parts of the District, drinking water is not available round the year. People have to spend more time to fetch water from distant places. The affected areas are mainly located in the eastern and hilly parts of the District, where large water supply schemes are not feasible. Mini water schemes are advisable in such location. Interventions are required at all the LSGIs in eastern part of the District and the Coastal LSGIs.

Electrification of Un-electrified Houses

Consumption pattern of electricity is considered as a yard stick of development or backwardness. Quite a large no of SC and ST houses are still not electrified, though electricity has reached their door steps. So the thrust should be for a shift from electrification of colony to electrification of individual houses, as most of the colonies are electrified, but a large no of individual houses are not electrified.

SC and ST Development Departments and KSEB together have taken a board initiative to electrify individual houses for which data of unelectrified houses are being collected with the help of SC promoters and local bodies. A clear picture would be available only after compilation of such data. The goal is to provide electricity to all SC and ST Households by 2010.

The electrification of unelectrified SC/ST houses is given high priority by the Power sector also. Wherever there is no possibility of extending electric lines or cables, as in the case of deep forest areas, solar energy shall be provided.

Reduction of unemployment

Unemployment among SCs and STs is proportionately very high when compared to their counterparts in non SC/ST category.

In Kollam district around 25000 educated SC and ST youth got their names registered in employment exchange.

Following three pronged approach is required to mitigate the problem:

- Improving competitive efficiency and thereby exploiting the opportunity available in the employment market. Modern era is the era of competition and survival of the fittest is the slogan. So without competitive efficiency none can get employment

- Posts reserved for SC/ST should be filled up at the right time itself and reservation should also be provided in private sector.
- Imparting entrepreneurial ability to setup self employment ventures on their own.

Bringing down SC and ST BPL families to Zero Level

BPL SC/ST families are to be assisted so as to raise them APL. This is a very gigantic task and an integrated effort of LSGIs, Rural Development/Agriculture/Animal Husbandry/Fisheries/Industry/SC and ST Development Departments is required.

Besides, the self employment schemes implemented by LSGIs, Rural Development/ Industries/SC Development Departments have a very novel self employment scheme which gives the largest subsidy for individual enterprises in the State. Individual projects costing up to Rs 3 lakhs shall be considered for assistance and maximum subsidy of Rs.1 lakh shall be given. Joint venture projects costing up to Rs.10.50 lakhs can be considered and maximum subsidy of Rs.3.50 lakhs can be given. Intensive campaign is to be conducted to propagate various self employment schemes and to induce SC and ST youths to undertake self employment ventures.

Providing Healthy and Hygienic living Environment

Around 60% of the SC population is living in colonies which are located in urban slums, coastal areas and other neglected areas where the environment is unhygienic and unhealthy. Because of these they are more vulnerable to contagious and infectious diseases. So their living environment should be made hygienic, otherwise it would pose a great threat not only to their health but also to other groups.

The following suggestions are made in this regard:

- Provision for latrines to all SC and ST families.
- Provision for supplying safe drinking water (without contamination of waste and other disposals)
- Provision for proper disposal of waste water and other hazardous waste materials.
- Intensive awareness campaign on maintenance of hygiene in their surroundings.

Organising Awareness Camps

One of the major hurdles which development departments face is ignorance among the scheduled caste population on schemes for their development. Hence awareness camps, distribution of pamphlets etc. is to be arranged.

Scheduled Caste and Scheduled Tribe people are facing so many developmental as well as educational problems. It is the duty of the state to address these problems in a phased manner. The sectoral analysis report has pointed out certain specific problems for which urgent action is needed. Accordingly certain concrete suggestion has been stemmed up and appropriate proposals have been crafted as part of preparation of IDDP.

The sectoral and spatial analysis of SC and ST sector reveals that substantial progress has been made in their life through various Govt. programmes. However, there are serious distortions in some developmental areas such as education, engagement in business and industry and possession of land and other assets. These are to be properly addressed, for which certain concrete proposals have been included. Major thrust has been given to education sector. At the same time providing land and constructing dwelling houses also is given much importance. To inculcate entrepreneurial ability in these vulnerable groups, starting of self employment ventures has been proposed. In order to improve the quality of life of SC/ST people, co-ordinated efforts of different departments and integration of various schemes are inevitable.

1.17 Tourism

According to the district Tourism Policy, by 2021 Kollam has to optimally utilise its natural resources, art, culture and heritage and showcase the district as a slice of Kerala- God's own Country and as a model responsible tourism destination for all seasons. A net work of proposals (Figure 3.6) covering all tourist attractions of the district is found.

Proposals based on Type of Tourism

- **Back Water Tourism Proposals:**
- **Ashtamudi Backwater Tourism Terminal Complex at boat jetty Kollam**

As identified in the analysis, Ashtamudi is one of the major backwater tourism destinations in the State. The project envisages setting up of a state-of-the-art Houseboat terminal complex at Kollam Boat jetty, the major transit point in the backwater, to serve it as a facilitation complex with international standard and features. The suggested location is at Kollam Corporation.

- **Beautification of Kollam Canal – Ashtamudi to Eravipuram (Phase-1)**

As mentioned in the sectoral analysis, in order to develop Kollam Canal not just as a waterway but as a tourism corridor, as well beautification measures have to be taken to make it more tourist attractive. The core purpose of the project is to revitalize the grassroots on the shores from Ashtamudi Lake to Eravipuram. The project aims to landscape both sides of the canal banks into a tourist attraction besides promoting organic cultivation of high yielding variety of all common trees and plants viz Pinapple, Pappaya, Mango, Cashew, Vegetables and other fruit bearing plants by utilizing the entire vacant land



Fig. 3.6 : Proposed tourism network

along the canal bank.

○ **Beautification of Kollam Canal – The Proposal for setting up of Kaayaloram-Responsible Tourism project for Ashtamudi and Paravur Backwaters (Phase - 2)**

'Kaayaloram' – A chain of lakeside huts to encompass multipurpose facilities to receive tourists under the franchise of Kerala Tourism to reconnect the life and landscape of Backwaters. Proposal is for setting up of Kaayaloram-Responsible Tourism Project- for Ashtamudi and Paravur Backwaters. The suggested locations are at Kollam Corporation and Paravur Municipality.

The core purpose of the project is to revitalize the grassroots on the shores and islands of Ashtamudi lake and Paravur lake by linking them to offer some activity based tourism so as to help them to earn an additional income out of it, thereby reconnecting the life and landscape of our backwaters. The project aims to set up lakeside huts attached to their residential plot for providing facilities for angling, dining, resting and recreation. Replacing the existing toilet units with bio-toilet unit with quality sanitary wares to ensure minimum standard forms part of the project. Promoting organic cultivation of high yielding variety of all common trees and plants viz Pineapple, Pappaya, Mango, Cashew, Vegetables by utilizing the entire vacant land within the compound is also aimed at. The project aims to ensure economic, social and environment responsibility through tourism.

○ **"Palthrikatheeram"-Preservation of natural and cultural heritage on the shores of backwaters and beaches of Kollam**

The objective of the proposal is the preservation of natural as well as cultural heritage on the shores of backwaters and beaches from Kannettil to Ayiramthengu. As the shores are part of the Kollam – Alappuzha backwater cruise channel, it has tremendous potential in developing tourism by setting up all the basic amenities, without compromising the preservation of natural as well as cultural heritage. The main components are renovation of boat jetties, signage, road development and lighting and landscaping, parks, tourist facilitation centres, pavilion for boat races, introduction of pleasure boats/water sports

complex etc.

○ **Smart waterway terminal cum Water sports Centre**

The project aims at activity based tourism to explore the potential of growing demand for backwater based tourism, rivers etc. It also aims to develop the potential of unseen backwater / river locations which have connectivity to the villages, highways, historical places etc. Water sports centers are proposed at Thanni, Mukkam, Vattakayal, Edava, Nadayara, Kallada and Kennetti.

This project is basically meant for the development of infrastructure facilities to suit the requirements for the promotion of various water sports, pleasure boating, adventure aqua sports etc. As part of the proposal, water pavilions are proposed in certain locations to promote boat races conducted by various organizations. Introduction of variety Pleasure Boats, Floating Boat jetties, Floating restaurants, Aqua-Adventure facilities, Water pavilions etc are also envisaged.

● **Beach Tourism Proposals:**

As mentioned in the sectoral analysis, there are a number of potential beaches in the district including Kollam, Thangassery, Thirumullavaram, Mundakkal Paravur and Pozhikkara. In order to make the coastal belt more attractive following proposals are suggested.

○ **Development and Beautification of Kollam Beach**

The project aims at developing one of the major domestic tourism hubs of Kollam district, the Kollam beach. The objective is to develop facilities and services and to add more attractions to suit the requirements of growing domestic tourism demand. The location of Kollam beach is most ideal because of its close proximity to Kollam town. The excellent road connectivity and sufficient area for future development are major features of the Beach. Most importantly, the Beach is ideally located at the opposite side of the upcoming Water Sports Centre at Kochupilamoodu enroute the proposed Coastal Road connecting Kollam Paravur. The water sports center is one of the key attractions along the T.S Canal passing parallel to the Beach. Considering all the key developmental aspects it is proposed to develop the Kollam Beach as a key attraction of Kollam.

○ **Development and beautification of Thangassery Break water Beach**

The project aims at developing Thangassery as a Heritage beach of Kollam. The century old lighthouse and the historical links associated with Thangassery are still untouched in the tourism scenario. The breakwater could be a major attraction. A journey through the breakwater is interesting. Visit to the lighthouse and the panoramic view from there is much enchanting and has become a source of attraction among the tourists. The Fort of Thangassery which is now taken over by the ASI has a strong historic connection. In order to tap the historical as well heritage potential of Thangassery, the development of Beach is the need of the hour.

○ **Development of Thirumullavaram and Mundakkal Beach**

The proposal envisages the development of basic amenities at Thirumullavaram and Mundakkal Beaches. The components are basically landscaping, lighting, beach umbrella, life saving equipments, Pay and Use toilets, seating, Tourism Information Centre etc.

Thirumullavaram and Mundakkal are the two prominent beaches having potential for pilgrim tourism promotion. Basic amenities are much lacking at both the places. Lot of pilgrim tourists (domestic) are visiting these two beaches during the month of July / August. Accessibility is very good because both the beaches are located in the Corporation area. The beach at Thirumullavaram is a picturesque one and unique in nature.

○ **Under water Marine Aquarium**

The project envisages setting up of an under water Marine Aquarium to experience under water marine life. The suggested location is at Kollam Corporation.

The technical know how in connection with the setting up of the aquarium has to be availed in consultation with the Fisheries Department and Central Marine Research Organizations etc. The idea is to ensure free movement through an artificial glass chamber which provides visual life of the sea – marine life- to a certain extent. The land based terminal, attached to the coastal area, can act as entry point cum facilitation centre.

○ **Beautification of Paravur Beach**

This project aims at the development

of beach tourism. Beautification of Paravur Beach and introducing Eco-friendly floating cottages in the backwaters is proposed.

The scenic coastal line and the close proximity of backwaters along with the National Waterway channel passing through Paravur, make the location an ideal spot for the development of tourism. As part of Tsunami Rehabilitation Plan, it has been decided in principle to develop and beautify beach from Kappil to Paravur. Once the beach is developed under the above scheme, it will be attracted by more people. Moreover, the project for the construction of coastal road connecting Paravur – Thangassery is in pipeline. All these infrastructure interventions will definitely add the need of tourism facilities. Accommodation facilities have to be improved in tune with the future requirements.

○ Development of Pozhikkara Beach

The project envisages landscaping and developing of Pozhikkara Beach as a tourist attraction. A Beach Facilitation Centre cum Children's Park may also be set up at Pozhikkara.

The components of the proposals are landscaping, lighting, seating, walkway, kiosks, basic amenities etc. The dilapidated building owned by the PWD buildings may be converted as the Beach Facilitation Centre. As Pozhikara is one of the most scenic location, the proposed components will bring more attraction, thereby more tourists, especially domestic tourists will visit the place.

○ Deep sea fishing cruise terminal complex at Neendakara

The project envisages setting up of a terminal complex for deep sea fishing cruise with all basic amenities. The suggested location is at Sakthikulangara. The proposal can be linked with deep sea fishing tour proposal of fisheries sector.

The components of the proposals are state-of-the-art facilities for boarding fishing boats, Information center, Sea-food Restaurant, Marine Aquarium, Route map and other basic amenities for the tourists as well as crews. The basic amenities like Dormitory, Pay and Use toilets, Kiosks for ATM, Travel Agency, Money change, Souvenir shops etc. will also be included under the project.

● Eco Tourism Proposals:

This project aims at conservation and

preservation of our rich natural resources, which are diverse in nature. The ponds, high-ranges, mangroves are a few. In order to augment the tourism attractions in sustainable manner and scale, preservation of such natural resources are most important and inevitable. Eco-tourism is planned at Chittumala chira, Muttara Maruthimala and Ayiramthengu which are the potential precincts identified in the Sectoral analysis.

● Destination Development Proposals:

These are specific tourism destinations identified for converting the district from a mere transit tourism destination to a responsible tourism destination.

○ Development of Tourism hub at Perinad – Village Tourism Facilitation complex

A major tourism hub identified in the District Development Concept is at Perinad. The project envisages setting up of a Village Tourism Facilitation Complex to promote village tourism. The center will act as Gateway of Village tourism.

The components of the proposal are state-of-the-art Village Tourism Facilitation Complex to showcase the attractions of backwater villages, village festivals, culture, traditional crafts, etc. The basic amenities like Dormitory, Pay and Use toilets, Kiosks for ATM, Travel Agency, Tour Operation, Souvenir shops etc. will also be included under the project.

○ Destination Paravur

The tourism sector in Paravoor is depending on the sea coast and back waters. Paravoor is included in the coastal tourism circuit of Kovalam–Varkala-Kollam -Alappuzha. Therefore the concentration of tourism activities will be in the coastal area and Paravoor- Nadayara back water area of Paravoor. Being an environmentally sensitive area, environment friendly tourism is the policy suitable to the tourism sector of Paravoor. Hence large scale tourist complexes are not suitable. Local level infrastructure development, giving importance to the natural beauty, should be promoted for tourism development. Apart from proposals in Articles 2.2.5 and 2.2.6, adequate advertisements regarding tourism potential, road and rail facilities to reach Paravoor and facilities for staying in are to be provided. Construction of road signs,

widening and protection of the T.S canal, construction of boat jetty/boat service for tourists, home stay facilities, back water/ canal bank roads development, tourist information centre, developing Website, look out area near Malappuram mosque, heritage museum near Puttingal temple, Elephant rides, Angling platforms at Paravoor and Nadayara back waters, Way side traditional restaurants etc. are suggested.

○ Destination Ashramam

The project envisages preservation of Ashramam and Ashtamudi area by revamping and landscaping the entire area comprising the Adventure Park and Children's Park at Ashramam.

The components are mainly beautification and landscaping of the Ashramam area with due importance to preserve the natural attractions. Major revamping of Children's Park is envisaged. The Adventure Park will be revived as a eco-tourism zone with more adventure activities in association with National Adventure Foundation. The vacant land surrounded by the Guest House and Parks will be converted as a Green Exhibition Ground.

○ Destination Sasthamkotta

The proposal is to preserve the natural attraction of the lake and to promote its heritage value as a tourist attraction.

The proposal envisages the preservation of lake with landscaping and beautification in eco-friendly manner. The components consist of walkway, organic cultivation, solar lighting, bio toilets / treatment plants for waste disposal, mandapams, kiosks for organic fruit/ refreshment parlour, boat jetty, fishing pavilion etc.

○ Poothakulam village tourism

The project aims to exploit the potential of village tourism with the participation of Poothakulam Grama Panchayat. The objective is to develop village tourism considering the pond as the center of attraction.

The project envisages the preservation of the pond and to incorporate some basic amenities and services viz. beautification and landscaping of pond, setting up a park, introduction of pleasure Boating, Angling, lighting, signage, Children's playing equipments, Boat Jetty etc. The total project cost is expected to be

Rs. 20 lakhs and out of this Rs 10 lakhs will be supported by the Department of Tourism under the scheme – 'My village-Tourism friendly village'.

● Cultural and Traditional Tourism

○ Museum at Thevally palace

The project aims to have a Museum of Heritage and History of Kollam to showcase our rich past in a most appropriate manner and scale. It is proposed to house the museum at the Thevally Palace, due to its in-depth linkage with the formation of Kollam. The project is to convert the Thevally palace as a museum of History and Heritage of Kollam with due importance to the History of Kerala.

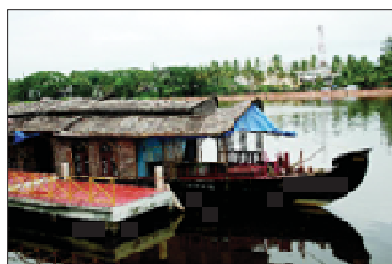
At present the NCC wing occupies the Palace. The location of the Palace is strategic, as it lies on the shore of Ashtamudi Lake. The Archeology Department of Kerala may be entrusted to prepare a detailed project on the subject matter. The restoration of the palace building has to be incorporated in the project report.

○ Houseboat Construction yard cum Museum of Traditional crafts at Alumnkadavu

The proposal envisages setting up of a 'Houseboat Construction Yard cum Museum of Traditional Crafts' at Alumnkadavu. The objective is to showcase the traditional houseboat making practices as a tourism product and make it a centre for tourist attraction. A houseboat terminal complex is also proposed under this project. A demonstration centre for exhibiting the art of making kettuvallams and a design centre for making of variety souvenirs are also planned under this project. The village – Alumnkadavu – will also be form part of the project and a village route map will be prepared connecting all the houses of traditional artisans and their work place to ensure tourist visits.

○ Handicraft villages

The proposal envisages promotion of unique handicrafts of Kollam – Screw pine craft and straw picture craft at Thazhava



House boat - Kollam

and Kadavur. Model facilitation cum exhibition centre may be set up at the above locations to showcase the unique craft form and to facilitate sales and marketing of products to the tourists. The centre will provide authentic demonstrations of various processes involved in the craft making and will contribute in raising the economic status of the local people involved in that industry. The suggested locations are at Thazhava and Kadavur.

The components of the project include setting up of a facilitation centre having facilities for demonstration of the process, display of articles, sales room, accommodation for craft workers, basic amenities like toilets, ATM, Communication/ Courier centre, Packing unit, etc. In addition, it is proposed to improve the basic infrastructure facilities required for the promotion of the craft workers in their respective locations. Walkways connecting houses engaged in craft making, lighting, renovation of work shed for the craftsmen, signage, route map, branding support, promotion and publicity etc are also planned as part of the proposal.

○ Interpretation center for History and Literature

The project envisages showcasing the rich historical heritage of the place Mayyanad. An interpretation center cum facilitation unit will serve its purpose to reconnect the past of Mayyanad. State of the art audio-visual aids could be set up to ensure effective dissemination of information and interaction. Mayyanad may be projected as a center for history and literature of Kollam where one gets complete information on about the eminent personalities of Mayyanad.

The components of the proposal will be state-of-the-art facilities for the display/ documentation of history/literature/archives etc. A facilitation complex for rest and reading has also to be included. Audio/ video facilities also are to be set up at the center. Proper study for the documentation is also inevitable before setting up the center.

○ Development of Heritage Precincts

The proposal envisages proper documentation of all the natural and cultural heritage precincts in Kollam and to initiate restoration and preservation activities along with minimum interventions for creating basic amenities – lighting,

walkway, signages, road, etc so as to explore its tourism potential. Development of such a circuit will certainly contribute a premium tourism product of Kollam. Conservation, preservation and adaptive reuse are the major strategies. All the listed heritage precincts in the district are to be conserved.

○ Special Cultural Activities

In order to revive the traditional art forms, folk arts, classical arts etc. of Kerala, a traditional cultural festival is planned under the title-Utsavam-. A calendar of variety traditional art forms has been charted out for each district and it will be conducted in two venues near to a tourist destination. The department of tourism and DTPC in tie up with the private sector, line departments etc. and under the guidance of Local Governments shall organize the festival.

○ Health Tourism

Health tourism facilities can be established in both public and private sectors. The tourism hub at Perinad will be a major hub for health tourism facilities as well. As mentioned in Health sector, Ayurveda can be effectively marketed through the fast growing health tourism concept. Also as mentioned in analysis, it is suggested that the Directorate of ISM shall have licensing control over the approval of such facilities.

● Pilgrim Tourism:

○ Pilgrim Centre Infrastructure Development

The project envisages the creation of basic amenities for tourists by way of setting up of Pilgrim Facilitation Centers. Cultural heritage is having strong sense in tourism promotion. The diverse festivals and temple rituals are having tremendous potential in marketing tourism. However basic amenities are lacking at many such locations. In order to manage the crowd, of both local and out station pilgrims, it is inevitable to have some quality basic amenities at such centres, to meet the requirements of pilgrims. Pilgrim Facilitation Centres are planned in association with the office bearers of the concerned temple/ church/mosque.

○ Proposal for the Promotion of Festivals of Kollam

The proposal aims at complete documentation of festivals of Kollam to showcase the cultural contributions of

Kollam. A festival calendar comprising of all relevant data and schedule of events will be prepared in this regard. A festival facilitation center will also be launched to ensure proper facilitation to the visiting tourists at each festival venue.

The components of the proposal include documentation of festivals, preparation and compilation of data, printing of brochures etc. It is planned to create a website exclusively for the festival calendar/highlights, souvenirs, CDs of festivals etc.

The locations are as follows. Gateway 1: KSRTC Jetty- Gateway 2: Thoppilkadavu Jetty- Sambranikodi Jetty- Veerabhadra Temple- Pattam Thuruth Church- Monroe Island- Palliam Thuruth Island. The Vellimon area in the Tourism hub as mentioned in previous chapter will be linked to this circuit.

Palliam Thuruth Island is proposed to be developed as a hub of this lake cruise tourism circuit as shown in Figure 3.7.

The Fisheries sector proposes a base station with kadal patrolling facilities is proposed for the Marine Bio Reserve area. This facility will also be included in the Palliam Thuruth Island along with the hub. Though the circuit bypasses the Reserve area, tourism activity will be totally prohibited in the marine bio reserve area. Further, the boats used in this particular circuit will be only those having in-boat engine facilities and kerosene powered engines will be prohibited.

Proposals for Marketing and Promotion

The essence of every industry is its Marketing and Promotion. As a service industry and being an intangible product, the survival of tourism is possible only through aggressive marketing and promotion. The campaign of God's Own Country is the marketing campaign being used by the Kerala Tourism to position Kerala among the Tourism world. Similarly each district has to concentrate on identifying its unique selling proposition (USP) in tune with the state marketing campaign. Kollam is blessed with Backwaters, Hill stations and Beaches. The diverse festivals, Art, cultural/historical resources of Kollam make it a real slice of Kerala. The logo –Kollam-God's Own Capital is one of the most deserving captions to market its tourism potential. In order to ensure effective marketing of a

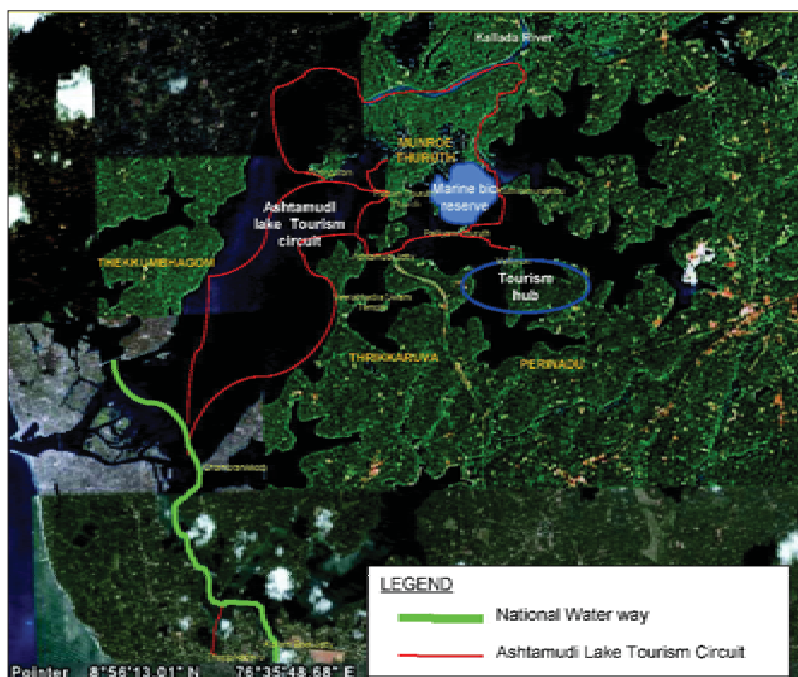


Fig. 3.7 : Ashtamudi lake tourism circuit

destination private-public partnership is a must. The private sector occupies major role in marketing and promotion of a tourist destination.

As suggested in Article 3.2 of Chapter 26, a Calendar of major tourism events shall be prepared. The primary objective is to make awareness among the stake holders as well as clients about the destinations. Brochures, leaflets, Travel Marts, Road shows, Publications, Advertisements in print/visual medias, Farm trips, Shopping Festivals, Events, Pilgrimage, CDs, website, Portals etc are the various sources of tourism marketing. Aggressive marketing with the participation of all stake holders are to be carried out in a time bound manner so as to attain optimum and comprehensive growth. Here the role of Dept. of Tourism is to conceive marketing strategies in tune with the international trends and focus. Priorities will be fixed by the Dept. of Tourism in promoting destinations /regions etc. At present, the thrust is being given to promote Malabar in the tourism map. Aggressive Marketing campaigns of Kerala Tourism consist of all tourism products irrespective of district boundaries. The role of DTTC is to identify new destinations / new concepts/ new products/ indigenous festivals/art forms etc and collect authentic details and proposals. Festivals and events may be organized by DTTC so as to promote the

destination (For e.g. Paarampariya festival, Boat race at Ashtamudi, Folk art festival, etc) Department of tourism will provide fund for marketing such events within the national boundary. The LSGIs can take part in marketing by bringing all relevant details from grass root level including documentation of the assets / resources both natural/cultural etc. The same may be brought to the notice of DTTC and local level promotion shows/festivals may be chalked out and later this will become a part of state level ad campaigns.

Proposals for Private Investors

The major part of the development of tourism lies in the private sector. The role of Government is to act as a catalyst for the development of tourism with the active participation of host community. The schemes, strategies and action plans for the development of tourism are planned with an objective to encourage private investment in tourism. There is extensive network of private sector ranging from Tour Guide/Tourist Taxi Driver to Star Category Hotel/entertainment firms. The Government is giving assistance to the prospective investors in terms of financial subsidy, tax exemption, concessions, single window clearance, marketing support, classification, certification, basic infrastructure facilities etc. The following are the on going schemes of Kerala tourism to attract investors and unemployed youth

towards tourism which can be improved.

1. Home stay classification scheme
2. Tourism investment subsidy for Hospitality / tour / travel / houseboat / entertainment / handicrafts / Restaurant etc.
3. Classification scheme for Ayurveda Centre
4. Green Farms Scheme
5. Grihasthali scheme
6. Vazhiyoram – Way side amenity Centre
7. 'My Village Tourism Friendly Village' scheme – for LSGIs only
8. Town square development scheme – for Corporation/Municipality
9. Pilgrim Facilitation Centre scheme

As far as private investment is concerned Dept. of Tourism is occupying lead role in sanctioning incentives/ concessions/single window clearances/tax holidays etc as per the state policy guidelines.

The DTPC is doing district level liaison works in tune with the guidelines of the Dept. of Tourism. The role of DTPC may be redefined in two ways. Consultancy assistance may be provided on the scope/ feasibility of a tourism product/property development etc. The second thing is preparation of a Land Bank concept. Such a land bank would be ideal and easy for potential investors to locate the land required for the development. The complete details of potential sites along with owner's details, extent, survey and maps may be prepared made available for presentation before the prospective clients. DTPC can act as a facilitator between the client and the land owner. Consultancy assistance may also be provided with relevant projections and figures regarding the trend of tourism in district/state/national scenario. The LSGIs can co-ordinate in materializing the land bank concept in association with DTPC. Local level clearance for various issues relating to the investment may also be streamlined by LSGIs in association with DTPC.

It is expected that the proposals will indeed bring up the tourism industry in the district. It may be noted that all the proposals are carved giving due consideration to the ecological aspects. This makes Kollam district a model responsible tourism destination. Through the implementation of these proposals in a time bound manner by 2021 better service and infrastructure facilities will be given to

the visitors to the Gods Own Capital by making Kollam a complete destination for all seasons.

1.18 Finance

The Development Proposals of Finance Sector discusses mainly the sources of funds for the various development sectors for implementing the proposals suggested. Based on sectoral analysis, settlement analysis, spatial analysis and the district development concept, all the development sectors have carved proposals in a 20 year perspective. The finance sector attempts to identify the financial resources to implement these schemes.

Sources of Fund for Sectoral Proposals

There are different sources to raise funds required for infrastructure development. Capital structure is financed by long term sources which consist of debt and equity. Long term debt consists of loans from term lending institutions and commercial banks. Debt also consists of funds raised through issue of debentures. While it is difficult to raise equity capital, it is fairly cheap compared to cost of borrowed funds from financial institutions (long term) and the commercial banks (short term) for working capital purposes.

To meet long term requirements of funds, securities are issued to public (issue of capital) by firms in the corporate sector and public sector. Securities represent claims on a stream of income or particular assets. Long term debts can be raised from development financial institutions (DFI) like SFC, SIDBI, IDBI, TFCI etc. NABARD also supports infra developmental schemes under RIDF.

Applicants can raise external commercial loans from any internationally, recognized source including CBs, export credit agencies and suppliers of equipment, foreign collaborators, foreign equity holders and international capital markets subject to the rules of SEBI issued from time to time.

Lease finance is a cheap and flexible means of financing as compared to term loans from financial institutions. Here the lender books to the cash flow from the specific assets or collection of assets in which their funds are invested. Co financing with NABARD is another source.

Under Rashtriya Krishi Vikas Yojana, the GOI will provide substantial amount if

state government contributes matching contribution on the basis of size of agri GDP of the state and the potential yield gap.

A new urban governance culture is required. Attempts are made to develop a municipal bond market and FIs are creating a pool of money to fund this bond. JNNURM, is also providing subsidies/ grants ranging from 35 to 60% of project cost to municipal bodies by levying user charges.

Venture proposals of technocrats with high technology which are new and high risk are financed by venture capital funds.

Developing a long term debt market is a crucial element in infrastructure finance. A qualitative change in the entire financial environment is required.

Any financial institution, while considering proposals of infrastructure finance, looks into whether the work would lead to desired objectives, appraises for technical feasibility, financial viability and economic benefit done. Total costs and total benefits are weighed. For bridges etc, the data on actual vehicular traffic will be collected and converted into standard passenger per unit based on a table. Travel time saved can be converted into man days and value arrived. Saving on vehicle operating cost can also be worked out. Then there are players like IL and FS to support infrastructure development. IL and FS (Infrastructure leasing and financial services Ltd) is one of India's leading infrastructure development and finance Companies. This company is promoted by CBI, HDFC, UTI with broad based share holding including of SBI, LIC, Abu Dhabi Investment Authority etc. IL and FS provide the complete array of services including development, finance, management, technology and execution.

Other independent source of funds:

- Grant funds from International Agencies.
- Loans from ADB, World Bank etc.
- Raising loans from LIC/ HUDCO/ IDBI/ ICICI
- Municipal Bonds

There is a need for financial intermediary to pool the projects of various departments.

The Bond Bank can be formed at national level as a SPV or as subsidiary of the Financial Institutions.

FDI could be permitted through Financial Collaborations, Joint Ventures,

Table 3.3 : Different Proposals submitted by the departments and the sources identified

Major Department	Proposals	Sources
Education Loan Dept.	Education Institutions, literacy Programmes, Teachers Training programmes, Education through Libraries etc.	Budgetary allocation, RIDF of NABARD & Jilla / Grama Panchayat fund.
Minor Irrigation	Watershed development and land use	Fund allocation from Jilla Panchayat/ Grama Panchayat. RIDF from NABARD
Roads	National/ State High Way developmental Work.	Budgetary fund of GOI/ State RIDF & Jilla Panchayat/ Grama Panchayat Budget.
Industries	Various industrial Development sectors like fishery products, dairy, Flour mills, Coir sector, Clay industries, Handloom Industries, Bamboo based Industries etc.	Bank loans for Individual entrepreneurs & NABARD schemes for common facility and Government Grants under Budgetary Allocation
Dept. of Medicine	Construction of hospitals and para medical institutions	Support of budget fund MP / MLAs fund, RIDF etc.
Agriculture Dept.	Food Processing centres Intensive cultivations, Productivity improvement Programmes, service centres Govt/etc. Promotion of high tech. Cultivation etc.	Bank loan, RIDF support, Budgetary fund of Govt/etc.

Capital markets, Private placements or preferential allotments.

Enabling public - private – partnerships and government citizen partnership.

Institutions in Kerala supporting infrastructural development:

- KURDFC (Kerala Urban and Rural Development Finance Corporation Ltd). Incorporated in 1970 as a private Ltd. Co. subsequently converted into public Ltd. Co.
- Kerala Sustainable Urban Development Project.
- Kerala State Transport Development Corporation.

Jawaharlal Nehru Urban Renewal Mission schemes like UIDSSMT, BSUP etc. are encouraging States to innovate new funding mechanisms, which may prove beneficial in turning around urban infrastructure. Pooled finance development fund (PFDF) and credit rating of local bodies by the urban development ministry – have put the states to serious task. PFDF would help even smaller urban local bodies leverage market funds for improving infrastructure without the need of state

guarantee.

Focus under JNNURM schemes has clearly shifted to implementation of projects and reforms, which include revamping of procurement/ contracting, tendering procedures, standardization of pre-qualification criteria etc.

Pooled finance mechanism has the objective of helping urban local bodies to reduce the cost of borrowings and restructuring of costly debt. Bonds issued under the pooled finance development fund scheme will be eligible for tax breaks. This facility can well be structured to satisfy both infrastructure funding needs of local governments and the investment criteria of investors.

Pooled financing can facilitate decentralization by providing financing mechanism to local governments so as to decrease reliance on state level guarantees and subsidies. The facility would also stabilize revenue streams and create an opportunity to tap the local capital market for infrastructure financing.

Cross Industry benchmarking:

Cross-industry benchmarking holds

the potential to provide ‘innovative’ and adoptable ideas from players across the industries. It can expose an organization to novel ideas if practices and data across industries are understood with meaningful insights and contextual inferences.

Public Private Partnerships:

The key to make PPP acceptable is to create an environment where PPPs are seen to be a way of attracting private money into public projects and not putting public resources into private projects.

Suggestions on Sources of Fund:

The different proposals submitted by the departments and the sources identified are given below (Table 3.3).

As the Indian economy embarks on the process of globalization, it has become all the more important that our financial markets remain healthy, strong and efficient. The financial sector reforms have provided a solid platform to launch the next phase of reforms after learning lessons from the past. The different sources of finance described here can be utilized by the various agencies to suit to their requirements, to successfully implement their proposals by 2021 ■

**Manual for Integrated District Planning,
Planning Commission, Government of India**

*"The Kollam experience, particularly
the methodologies developed
by it can be easily upscaled to
other districts too."*

**The Committee for Evaluation of
Decentralised Planning and Development,
Government of Kerala**

*"This was like a demonstration
mission.Creating it is only
honouring the Constitutional mandate
enshrined in Article 243ZD in letter and in spirit."*

**The 57th National Town and Country
Planners' Congress 2009**

*" Based on the experience gained from the
Kollam Model of Development Plan, an
exercise for designing a fast track district
development plan along with its handbook, manuals,
toolkit etc. may be prepared."*

[<< previous](#)

[<< VOL-I pers](#)

[cover >>](#)