

**NATURAL RESOURCES DATA BANK
KOLLAM**

**KERALA STATE LAND USE BOARD
VIKAS BHAVAN THIRUVANANTHAPURAM-33
2014**

P. MARYKUTTY IAS
Commissioner
Kerala State Land Use Board



KERALA STATE LAND USE BOARD

Vikas Bhavan, Thiruvananthapuram 695 033
email : marykuttyissa@gmail.com
Ph : +91 471 2307833 (P), 2302231, 2307830
Fax : +91 471 2307838

PREFACE

Land Use planning is a process of determining future action through systematic evaluation of Land Resources. Through proper study of natural resources like land, water, biomass etc., land use planning can be effectively implemented for various purposes. For NRM basic information on natural resources, both spatial and nonspatial is absolutely essential. Planning reveals the scope of resources and how they can be meaningfully used in future. This publication, "Natural Resources Data Bank" will help in understanding the natural resources of the district especially in the context of decentralized planning. Though many gaps might be there in this publication, I hope it would serve as an effective tool for planning at microlevel.

Thiruvananthapuram
26-02-2014

A handwritten signature in green ink, appearing to read 'P. Marykutty I.A.S.', with a horizontal line underneath.

P. MARYKUTTY I.A.S.
Land Use Commissioner

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GENERAL INFORMATION

Kollam district the South West coast of Kerala State came into existence on 1st July 1949. District has an area of 248788 ha consisting 11 blocks, 3 municipalities and 1 corporation. Being South West coast of India District lies between North latitude 9° 10' and 8° 45' and East longitude 76° 25' and 77° 15'. Based on physiographical features district consist four micro regions viz Kollam coast, Adoor Rolling plain, Kottarakkara undulating upland and Kulathupuzha forested hills. Forest is classified into six different regions and covers an area of 81438 ha. Large forest reserves favourably affect the climate and induce more rain in the district. With vast stretches of evergreen forest Kollam is blessed with natural habitat for variety of plants and animals. Mineral resources are immensely rich and endowed with large deposits of beach sand containing Ilmenite, Monazite, Clay, Bauxite, Graphite and Laterite. Sandy, Alluvial, Laterite and Forest soil are the four types of soil cover the whole area. Main river systems are Achenkovil, Kallada, Ithikkara, Ayoor. Besides the conventional sources of irrigation like tanks, wells and private canals, Kollam has major and minor irrigation schemes. Kallada irrigation project which is the largest irrigation project in Kerala State situated in this district. Watershed has become an acceptable unit of planning for optimum use and conservation of soil and water resources. Agriculture plays a vital role and total cropped area is 157343 ha during 2011-12 report. District stands 1st position in tapioca cultivation and plantation crops are also grown here. Kollam is an important maritime district and coastal area extends 37 km consisting 53 fishing villages. Major fishing port in south Kerala, Neendakara is located on the banks of Ashtamudi lake. District has one of the largest cattle stock population and there were 255773 live stock population and 766412 poultry population during 2010-11 Animal husbandry reports. Land use categories observed in this district are builtup land, waterbodies, forest, agriculture land, wet land and waste land. Major categories of wasteland are Land with dense scrub, Land with open scrub and Miscellaneous polygon. Wetland has a vital role in maintaining the fragile environmental balance. Sasthamkotta which is the largest fresh water lake in Kerala State is situated in this district. With its rich history and cultural heritage Kollam is known as 'God's Own Capital'. District provides famous industries including traditional industries and mills. Kollam is rich with beautiful tourist spots, backwaters and pilgrim centres.

HISTORY

Quilon, an old seaport town on the Arabian coast, is flanked by the Lakshadweep Sea on the West and the South and the Ashtamudi lake on the North. The district is named after this headquarters town. The word 'Quilon' is an anglicized form of the Malayalam word 'Kollam'. After February 1990, the names of the district and its headquarters town had been changed to Malayalam version 'Kollam'. The district is bounded on the North by Mavelikkara and Karthikappally taluks of Alappuzha district and on the North-East by Adoor and Kozhencherry taluks of Pathanamthitta district, on the East by Thirunelveli district of Tamil Nadu, on the South by Nedumangad and Chirayinkeezhu taluks of Thiruvananthapuram district and on the West by the Lakshadweep Sea.

This district was formerly a part of Travancore State. Travancore State was bifurcated into Northern and Southern Revenue divisions in 1835 A.D., with headquarters at Kottayam and Quilon respectively. Hence, Quilon was the headquarters of the Southern division. But Travancore and Cochin States were integrated on the 1st July, 1949. Then Quilon was one of the three Revenue divisions in the State. These three Revenue divisions were later on converted into three districts. There were 12 taluks in Quilon district, which were Quilon, Kottarakkara, Pathanapuram, Chencottah, Kunnathur, Pathanamthitta, Karthikappally, Karunagappally, Mavelikkara, Thiruvalla, Ambalappuzha and Chertallai. When the States were re-organised on the 1st November, 1956, Chencottah taluk was transferred to Tamil Nadu State. Thiruvalla taluk was bifurcated and a new taluk named Chengannur was created. A new district Alleppey was carved out on the 17th August, 1957 with six taluks, viz., Chertallai, Ambalappuzha, Karthikappally, Mavelikkara, Chengannur and Thiruvalla from the erstwhile Quilon district. Thus, Quilon district was left with six taluks, namely, Karunagappally, Kunnathur, Pathanamthitta, Pathanapuram, Kottarakkara and Quilon. The district almost remained undisturbed till 1981, except the transfer of Srayikkad and Azheekkal-Thura Karas of Puthuppally village of Karthikappally taluk of Alleppey district to Perinad village of Karunagappally taluk of Quilon district.

The rulers of Quilon (Desinganadu) and China exchanged embassies. There was a flourishing Chinese settlement at Quilon. Merchant Sulaiman of Siraf in Persia (9th Century), on his way from Canton to Persian Gulf, found Quilon to be the only Port in India touched by the huge Chinese junks. Marco Polo, the Great Venecian

Traveller who was in the Chinese Service under Kublaikhan, in 1275 visited Quilon and other towns on the West coast in his capacity as Chinese mandarin.

Quilon was a great centre of learning and culture as the capital of Venad. It attracted distinguished scholars from all parts of South India. "Leelathilakam" and "unnuneelisandesam", two outstanding literary works of historical importance are contributions of Quilon in the 14th Century. The dance form of Kathakali in its new version of "Ramanattam" was the creation of Kottarakkara Thampuran, who also improved "Krishnattam" by substituting Malayalam for Sanskrit. Quilon also gave Kerala leaders like T.M.Varughese, C.Kesavan, Kumbalathu Sanku Pillai, N.Sreekantan Nair and R.Shankar who played prominent roles in shaping the socio-political destiny of the State.

KERALA AT A GLANCE

Location	: North Latitude between 8 ⁰ 18' and 12 ⁰ 48' East Longitude between 74 ⁰ 52' and 77 ⁰ 22'
Area	: 38863 sq.km.
Forests	: 11309.42 sq.km.
Wetlands	: 1941 sq.km.
Percentage of area to the area of Indian Union	: 1.18
Length of Coastal Line	: 590 km.
Highest Peak	: Anamudi (2694 metres)
Longest River	: Periyar (244 km.)

Rivers

West flowing	: 41 Nos.
East flowing	: 3 Nos.

Administration

Districts	: 14 Nos.
Taluks	: 63 Nos.
Revenue Villages	: 1478 Nos.
Village Panchayats	: 978 Nos.
Corporations	: 5 Nos.
Municipalities	: 60 Nos.
Cantonments	: 1 No.
Community Development Blocks	: 152 Nos.
Average Annual Rainfall	: 2900 m.m.
Cultivated Area	: 2.292 m.ha.
Per capita land	: 0.13 ha.
Per capita cultivated land	: 0.10 ha.
Per capita production food grain	: 37 kg/annum

Members in State Legislature

Elected	: 140 Nos.
Nominated	: 1 No.

Members of Parliament from the State

Lok Sabha	: 20 Nos.
Rajya Sabha	: 9 Nos.

Table: 1.1

Population	1991 Census	2001 Census	2011 Census
Total population (lakhs)	290.99	318.41	333.88
Male population (lakhs)	142.89	154.69	160.21
Female Population (lakhs)	148.10	163.73	173.66
Density per sq.km.	749	819	859
Sex ratio (Females per 1000 males)	1036	1058	1084
Literacy (%)	89.81	90.86	93.91
Male Literacy	93.62	94.24	96.02
Female Literacy	86.17	87.72	91.98
Rural population (lakhs)	214.18	235.75	174.56
Urban population (lakhs)	78.80	82.67	159.32
Increase of population (%)	13.88	9.43	4.86
Life Expectancy (Years)	68		74
Infant Mortality (per 1000)	22	16	12
Birth Rate (per 1000)	19.8	18.3	14.7

KOLLAM AT A GLANCE

Table: 1.2

ADMINISTRATIVE SET UP

SI. No.	Particulars	Kollam	State
1	No. of Revenue Divisions	1	21
2	No. of Taluks	5	63
3	No. of Revenue Villages	104	1478
4	No. of Corporations	1	5
5	No. of Municipalities	3	60
6	No. of Municipality Wards	102	2216
7	No. of Block Panchayat	11	152
8	No. of Block Panchayat Wards	153	2095
9	No. of Grama Panchayat	70	978
10	No. of Grama Panchayat Wards	1274	16680
11	No. of Assembly Constituencies	11	140
12	No. of Parliament Constituencies	1	20
13	No. of District Panchayat Wards	26	332

Table: 1.3

DEMOGRAPHY

SI.No.	Particulars	Kollam	State
1	Total Population	2629703	33387677
2	No. of Literates	2242757	28234227
3	No. of Migrant	126346	1625653

Table: 1.4

GEOGRAPHICAL PARTICULARS

SI. No.	Area Categorization	Kollam	State
1	Total Area (Ha)	248788	3886287
2	Forest Area (Ha)	81438	1081509
3	Length of Coastal Line (Kms)	37	590

Table: 1.5

AGRICULTURE

Sl. No.	Land Utilization Pattern	Kollam	State
1	Total geographical area	248788	3886287
2	Forest area	81438	1081509
3	Land put to non agricultural use	26567	399924
4	Barren & uncultivable land	222	17552
5	Permanent pastures and other grazing land	2	85
6	Land under misc. tree crops	64	3366
7	Cultivable waste	1583	95437
8	Fallow other than current fallow	1804	57670
9	Current fallow	4457	77056
10	Net area sown	124779	2040132
11	Area sown more than once	32564	621625
12	Total cropped area	157343	2661757

Table: 1.6

ANIMAL HUSBANDRY

Sl. No.	Livestock Population	Kollam	State
1	Cattle	124390	1740117
2	Buffaloes	4475	58145
3	Goats	125905	1729127
4	Pigs	1976	109480
5	Sheep	0	965
6	Ducks	71019	865331

Table: 1.7

FISHERIES

Sl. No.	Particulars	Kollam	State
1	Length of Coastal line	37	590
2	No. of Fishing Villages		
a)	Marine	27	222
b)	Inland	26	113
3	Fisher folk population		
a)	Marine	108584	957929
b)	Inland	43372	282344

Table: 1.8

INDUSTRIES

Sl. No.	Industrial Units	Kollam	State
1	Number of Factories	1825	18525
2	Number of SSI Units Registered	13705	205987
3	Number of Women SSI Units	5185	52294
4	Number of Industrial Co-operative Societies	161	1113

Table: 1.9

COMMUNICATION

Sl. No.	Communication Divisions	Kollam	State
1	Total Number of Post offices	362	5054
a)	Number of Head office	3	51
b)	Number of Sub Office	91	1455
c)	Number of ED Branch office	151	3560
d)	Number of ED Sub office	0	2
2	Total Number of Telephone exchanges	86	1245

Table: 1.10

EDUCATION

Sl. No.	Institutions	Kollam	State
1	Government Lower Primary Schools	278	2607
2	Government Upper Primary Schools	65	924
3	Government High Schools	84	1089
4	Government Higher Secondary Schools	56	769
5	Government Vocational Higher Secondary Schools	20	261
6	Teachers Training Institute	29	222
7	Kendriya Vidyalaya	1	27
8	Jawahar Navodaya Vidyalaya	1	14
9	CBSE School	60	797
10	ICSE School	14	108
11	Government Engineering Colleges	3	9
12	Government Medical Colleges	0	5
13	Government Polytechnic Colleges	3	49

Table: 1.11

DRINKING WATER FACILITIES

Sl.No.	Water Supply Connections	Kollam	State
1	Number of Public Canals	1220	85825
2	Number of Public Wells	12	603
3	Number of Public Tanks	18	1777
4	Number of Tube Wells	24	19716
5	Number of Dug Wells	25	423

Table: 1.12

HEALTH

Sl. No.	Institutions	Kollam	State
1	General Hospital	0	11
2	Women & Children Hospital	1	8
3	District Hospital	1	15
4	Taluk Hospital	8	80
5	Primary Health Centre	48	660
6	Leprosy Control Unit/Hospitals	0	3
7	TB Centre/Clinic	2	17
8	Mental Health Centre	0	3
9	Number of Ayurvedic Hospitals	9	119
10	Number of Govt. Homeopathic Hospitals	3	30

Table: 1.13

POWER

Sl.No.	Particulars	State
1	No. of pump sets energised	524568
2	No. of streetlight energised	1202988
3	No. of transformers	58104

Table: 1.14

WATER RESOURCES

River	Achenkovil
	Pallickal
	Kallada
	Ithikkara
	Ayoor
Brackish Water	Paravoor
	Ashtamudi
	Kayamkulam
	Sasthamkotta

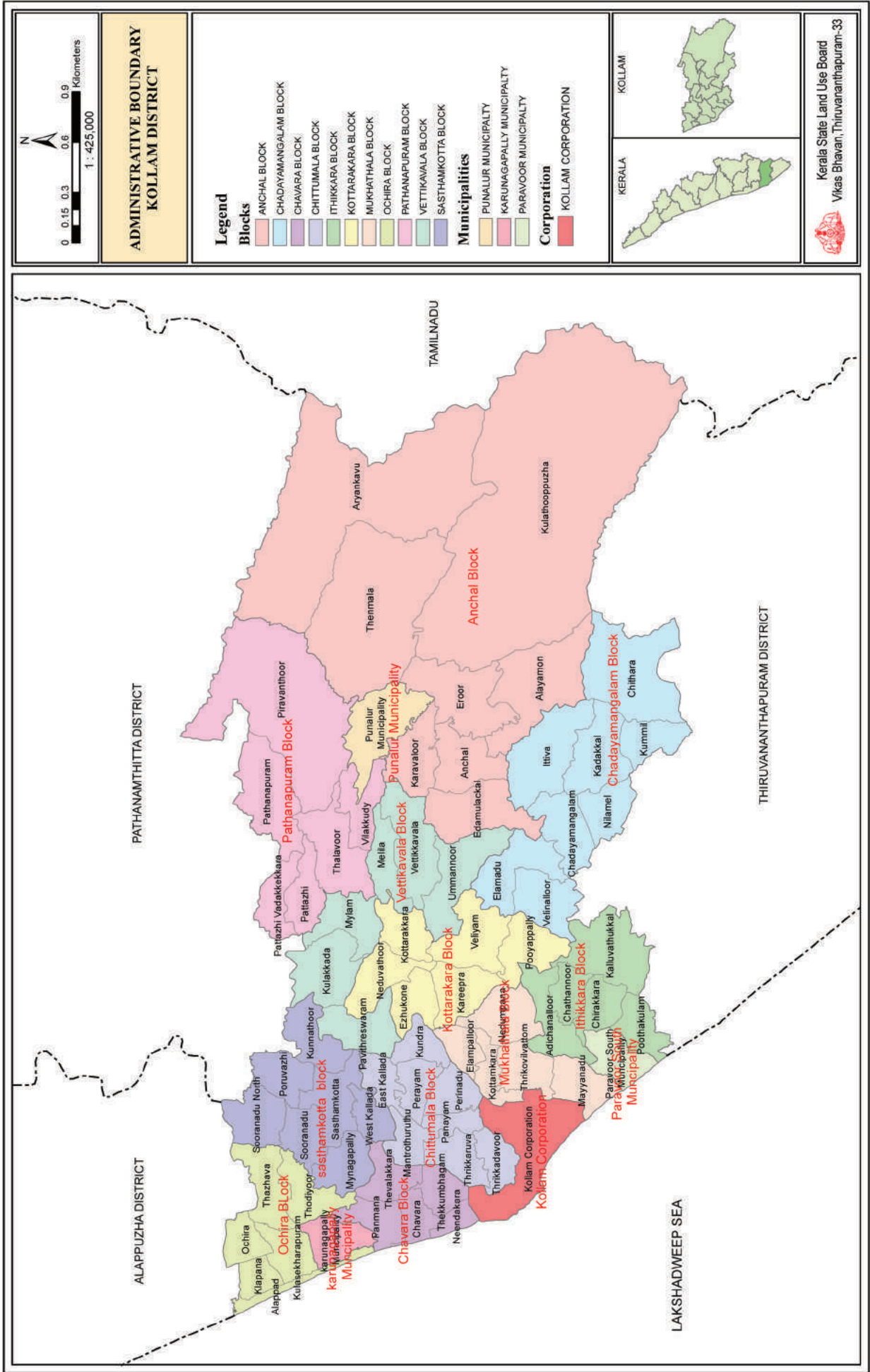
Table: 1.15

MAJOR TOURIST SPOTS

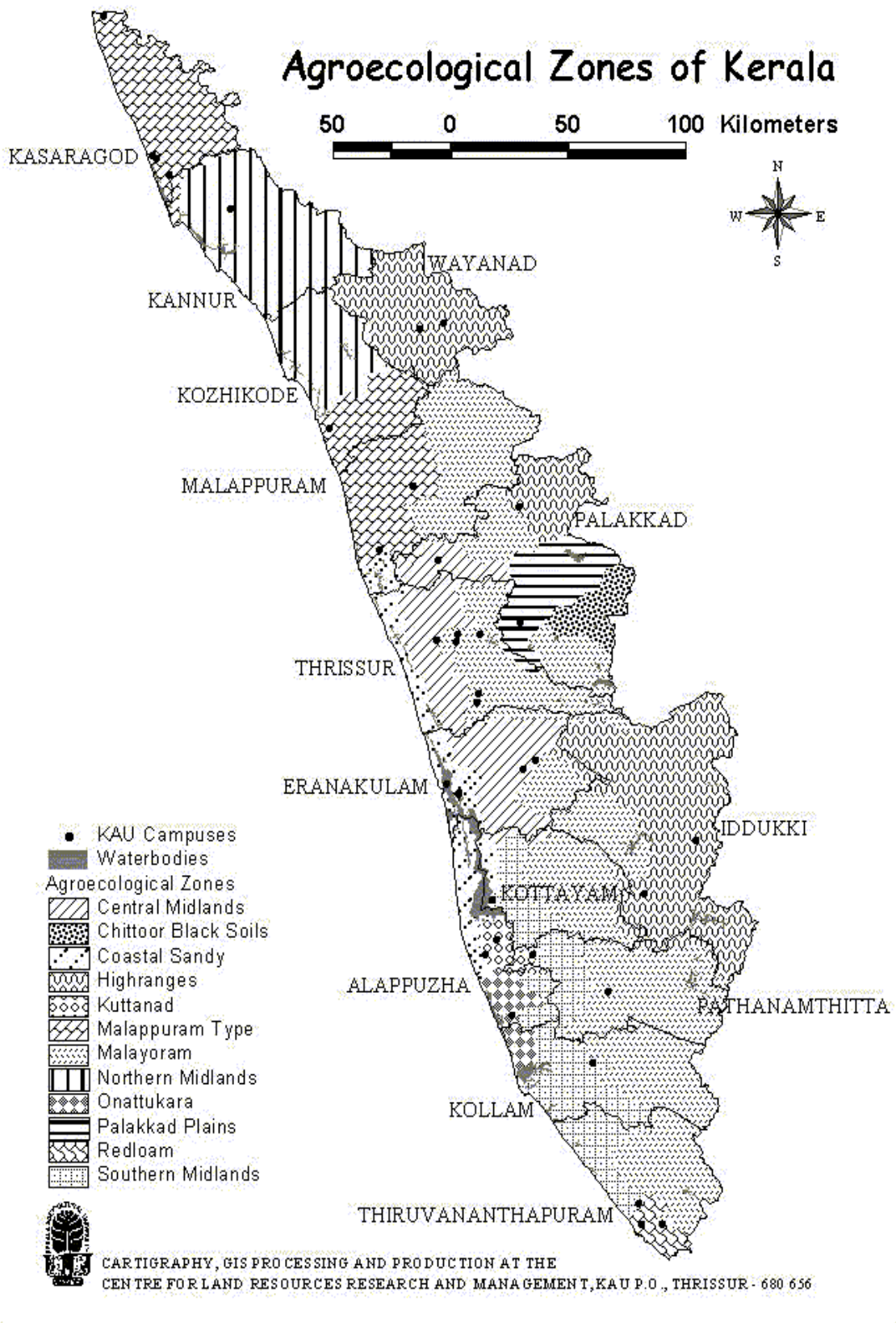
Sl.No.	Tourist Centre	Focus
1	Thenmala	Eco tourism
2	Palaruvi	Water fall
3	Kunnicode	Hillock
4	Jetayupara	Rock hill
5	Agastyarmalai	Biosphere Reserve
6	Ashtamudi	Back Waters
7	Munroe Island	
8	Alumkadavu	
9	Paravoor	
10	Sasthamkotta	Freshwater
11	Shendurney	Wild life sanctuary



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



Agroecological Zones of Kerala



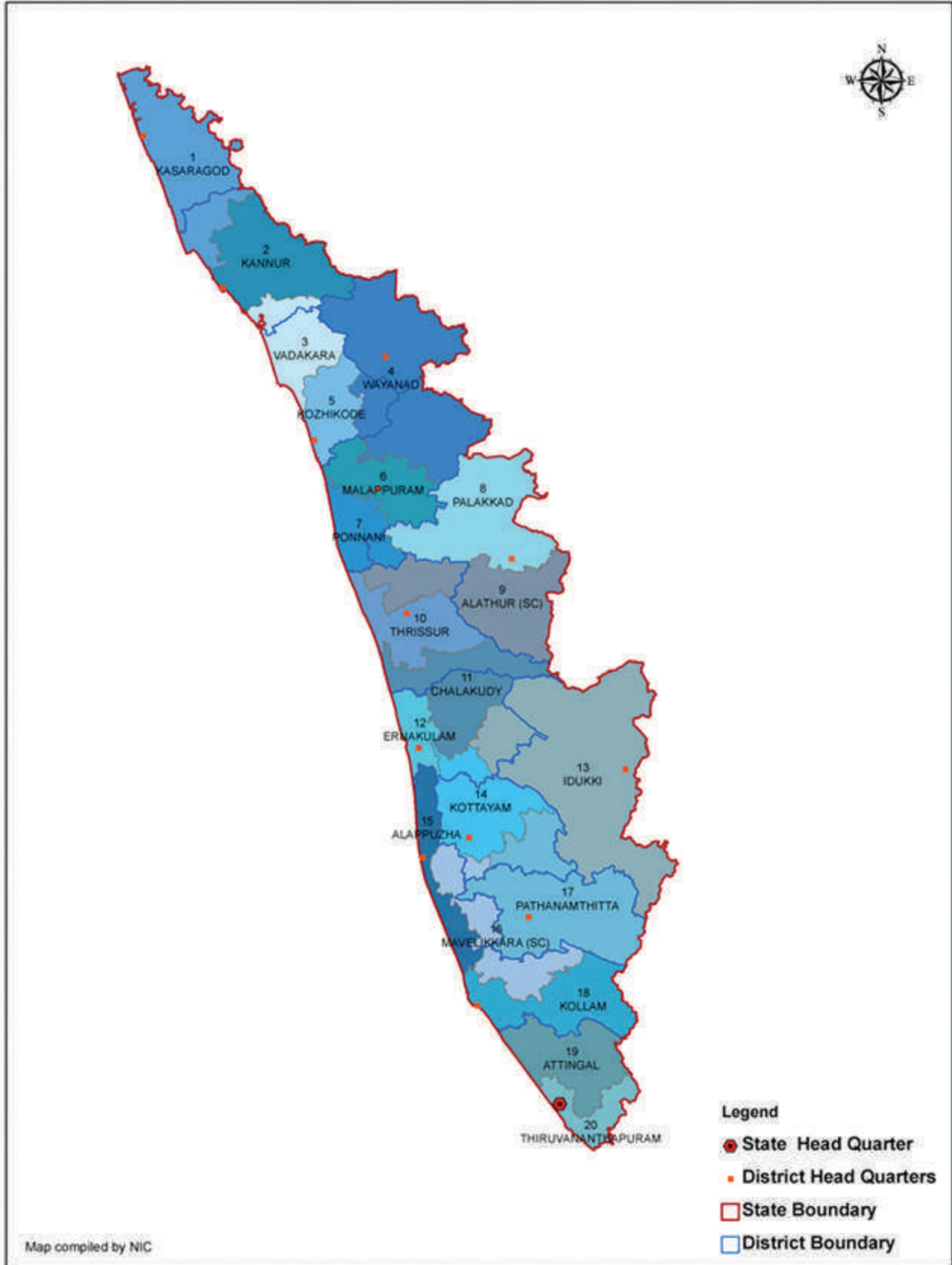
LEGISLATIVE ASSEMBLY

KOLLAM DISTRICT

NO. OF ACS =11



Parliamentary Constituencies Kerala



DEMOGRAPHY

INDIA'S POPULATION – CENSUS 2011

Table: 4.1

Current Population of India in 2011	1,210,193,422 (1.21 billion)
Total Male Population in India	623,700,000 (623.7 million)
Total Female Population in India	586,500,000 (586.5 million)
Sex Ratio	940 females per 1,000 males
Age structure	
0 to 25 years	50% of India's current population
Currently, there are about 51 births in India in a minute.	
India's Population in 2001	1.02 billion
Population of India in 1947	350 million

KEY FINDINGS OF THE CENSUS

- Population grows to 1.21 billion
- 181 million people added during 2001-11
- Growth declines to 17.64% from 21.15% during 1991-2001
- There are 623.7 million males and 586.5 million females
- India accounts for 17.5% of the world's population, China 19.4%
- First decade (with exception of 1911-1921) which saw addition of lesser people than the previous decade.
- Child sex ratio — 914 females against 1,000 males — lowest since independence
- Overall sex ratio rises by seven points — 940 females per 1,000 males
- Literacy rate goes up from 64.83% to 74.04%
- 74% people aged seven and above are literate
- 82.14% male literacy, 65.46% female literacy
- In 2001, male literacy was 75.26%, female literacy was 53.67%
- Delhi (11,297 people per square km) has the highest population density, followed by Chandigarh (9,252)
- Uttar Pradesh is the most populous state with 199 million people while Lakshadweep is the least populated at 64,429

Source: Census Report 2011

Table:- 4.2

CENSUS OF INDIA 2011-PROVISIONAL POPULATION TOTALS INDIA, KERALA STATE AND DISTRICTS

India/State/ District	Area in sq.km.	Total Population						Population in age group 0-6						Number of Literates					
		Persons		Males		Females		Persons		Males		Females		Persons		Males		Females	
		3	4	5	6	7	8	9	10	11									
1	2	3	4	5	6	7	8	9	10	11									
INDIA	31,66,285	1,21,01,93,422	62,37,24,248	58,64,69,174	15,87,89,287	8,29,52,135	7,58,37,152	77,84,54,120	444,203,762	334,250,358									
KERALA	38,863	3,33,87,677	1,60,21,290	1,73,66,387	33,22,247	16,95,935	16,26,312	2,82,34,227	1,37,55,888	1,44,78,339									
Kasaragod	1,992	13,02,600	6,26,617	6,75,983	1,49,280	76,149	73,131	10,36,289	5,17,031	5,19,258									
Kannur	2,966	25,25,637	11,84,012	13,41,625	2,65,276	1,35,189	1,30,087	21,56,575	10,22,972	11,33,603									
Wayanad	2,131	8,16,558	4,01,314	4,15,244	89,720	45,776	43,944	6,49,186	3,30,093	3,19,093									
Kozhikode	2,344	30,89,543	14,73,028	16,16,515	3,23,511	1,64,800	1,58,711	26,34,493	12,76,384	13,58,109									
Malappuram	3,550	41,10,956	19,61,014	21,49,942	5,52,771	2,81,958	2,70,813	33,28,658	16,08,229	17,20,429									
Palakkad	4,480	28,10,892	13,60,067	14,50,825	2,88,366	1,46,947	1,41,419	22,32,190	11,19,360	11,12,830									
Thrissur	3,032	31,10,327	14,74,665	16,35,562	2,89,126	1,48,428	1,40,698	26,89,229	12,86,141	14,03,088									
Ernakulam	3,068	32,79,860	16,17,602	16,62,258	2,89,281	1,48,047	1,41,234	28,61,509	14,27,572	14,33,937									
Idukki	4,358	11,07,453	5,51,944	5,55,509	1,00,107	51,132	48,975	9,28,774	4,74,988	4,53,786									
Kottayam	2,208	19,79,384	9,70,140	10,09,244	1,68,563	86,113	82,450	17,45,694	8,59,038	8,86,656									
Alappuzha	1,414	21,21,943	10,10,252	11,11,691	1,86,022	95,565	90,466	18,63,558	8,95,476	9,68,082									
Pathanam thitta	2,637	11,95,537	5,61,620	6,33,917	91,501	46,582	44,919	10,70,120	5,03,171	5,66,949									
Kollam	2,491	26,29,703	12,44,815	13,84,888	2,38,062	1,21,484	1,16,581	22,42,757	10,76,509	11,66,248									
Thiruvanan thapuram	2,192	33,07,284	15,84,200	17,23,084	2,90,661	1,47,777	1,42,884	27,95,195	13,58,924	14,36,271									

India/State/ District	Literacy rate (in Percentage)		Percentage decadal growth rate of population 2001-11	Sex Ratio (Number of Females per 1000 Males) 2011	Sex Ratio 0-6 population 2011
	Persons	Males			
1	12	13	14	16	17
INDIA	74.04	82.14	65.46	940	914
KERALA	93.91	96.02	91.98	1084	959
Kasaragod	89.95	93.93	86.13	1079	960
Kannur	95.41	97.54	93.57	1133	962
Wayanad	89.32	92.84	85.94	1035	960
Kozhikode	95.24	97.57	93.16	1097	963
Malappuram	93.55	95.78	91.55	1096	960
Palakkad	88.49	92.27	84.99	1067	962
Thrissur	95.32	96.98	9385	1109	948
Ernakulam	95.68	97.14	94.27	1028	954
Idukki	92.2	94.84	89.59	1006	958
Kottayam	96.4	97.14	95.67	1040	957
Alappuzha	96.26	97.9	94.8	1100	947
Pathanam thitta	96.93	97.7	96.26	1129	964
Kollam	93.77	95.83	91.95	1113	960
Thiruvanan thapuram	92.66	94.6	90.89	1088	967

Source : Census Report 2011

Table: 4.3

Population - 2011 Census

SI. No.	Category	Kollam			Kerala		
		Total	Male	Female	Total	Male	Female
1	Total	2635375	1246968	1388407	33406061	16027412	17378649
	Rural	1448217	680687	767530	17471135	8408054	9063081
	Urban	1187158	566281	620877	15934926	7619358	8315568
2	Total	254260	128899	125361	3472955	1768244	1704711
	Rural	137559	69705	67854	1823664	927888	895776
	Urban	116701	59194	57507	1649291	840356	808935
3	Total	328263	157801	170462	3039573	1477808	1561765
	Rural	208474	99761	108713	1818281	883819	934462
	Urban	119789	58040	61749	1221292	593989	627303
4	Total	10761	5195	5566	484839	238203	246636
	Rural	7886	3821	4065	433092	213208	219884
	Urban	2875	1374	1501	51747	24995	26752
5	Total	2240273	1074345	1165928	28135824	13704903	14430921
	Rural	1233362	587387	645975	14549320	7132430	7416890
	Urban	1006911	486958	519953	13586504	6572473	7014031
6	Total	395102	172623	222479	5270237	2322509	2947728
	Rural	214855	93300	121555	2921815	1275624	1646191
	Urban	180247	79323	100924	2348422	1046885	1301537

Table: 4.3 Continued.....

7	Total Workers		Total	912025	644362	267663	11619063	8451569	3167494
	Rural		Rural	512817	354505	158312	6341957	4507501	1834456
	Urban		Urban	399208	289857	109351	5277106	3944068	1333038
Main Workers									
8	Workers		Total	695299	509909	185390	9329747	7179828	2149919
	Rural		Rural	373800	269660	104140	4930191	3743078	1187113
	Urban		Urban	321499	240249	81250	4399556	3436750	962806
9	Cultivators		Total	41467	37441	4026	544932	465546	79386
	Rural		Rural	36867	33350	3517	481651	410532	71119
	Urban		Urban	4600	4091	509	63281	55014	8267
10	Agricultural Labourers		Total	56640	47716	8924	919136	629092	290044
	Rural		Rural	45472	38219	7253	760632	510300	250332
	Urban		Urban	11168	9497	1671	158504	118792	39712
11	House hold Industry Workers		Total	13851	9778	4073	198281	132111	66170
	Rural		Rural	7599	5490	2109	104642	68889	35753
	Urban		Urban	6252	4288	1964	93639	63222	30417
12	Other Workers		Total	583341	414974	168367	7667398	5953079	1714319
	Rural		Rural	283862	192601	91261	3583266	2753357	829909
	Urban		Urban	299479	222373	77106	4084132	3199722	884410

Table: 4.3 Continued.....

Marginal Workers									
13	Workers	Total	216726	134453	82273	2289316	1271741	1017575	
		Rural	139017	84845	54172	1411766	764423	647343	
		Urban	77709	49608	28101	877550	507318	370232	
14	Cultivators	Total	15226	12035	3191	125321	81360	43961	
		Rural	13046	10348	2698	105378	68349	37029	
		Urban	2180	1687	493	19943	13011	6932	
15	Agricultural Labourers	Total	35553	27085	8468	403714	228903	174811	
		Rural	28418	21491	6927	322371	179994	142377	
		Urban	7135	5594	1541	81343	48909	32434	
16	Household Industry Workers	Total	7660	4364	3296	74741	32504	42237	
		Rural	4873	2809	2064	46285	20508	25777	
		Urban	2787	1555	1232	28456	11996	16460	
17	Other Workers	Total	158287	90969	67318	1685540	928974	756566	
		Rural	92680	50197	42483	937732	495572	442160	
		Urban	65607	40772	24835	747808	433402	314406	
18	Non Workers	Total	1723350	602606	1120744	21786998	7575843	14211155	
		Rural	935400	326182	609218	11129178	3900553	7228625	
		Urban	787950	276424	511526	10657820	3675290	6982530	

Source: Panchayat Statistics, 2011

CENSUS OF INDIA 2011-PROVISIONAL POPULATION TOTALS- RURAL AND URBAN DISTRIBUTION (INDIA, KERALA, DISTRICTS)

ADMINISTRATIVE UNITS-KERALA

No. of Districts	14	14
No. of Sub-Districts (Tables)	63	63
No. of Towns	189	520
No. of Villages	1,364	1,618

Percentage of urban population: 2001 (25.96), 2011 (47.72)

Census Year	No. of towns	Urban population
1901	21	4,54,499
1911	27	5,24,661
1921	44	6,80,900
1931	53	9,16,330
1941	62	11,95,550
1951	94	18,25,832
1961	92	25,54,141
1971	88	34,66,449
1981	106	47,71,275
1991	197	76,80,294
2001	159	82,66,925
2011	520	1,59,32,171

Towns	2001	2011	% Growth (Rounded to next digit)
STs	60	59	-2%
CTs	99	461	366%
Total	159	520	227%

INDIA/ STATE/ DISTRICT	Total / Rural/ Urban	Population			Percentage of child population in the age group 0-6			Literacy Rate			Sex ratio of population in the age-group 7+			Percent share of urban population
		Persons	Males [#]	Females	Persons	Males [#]	Females	Persons	Males [#]	Females	Persons	Males [#]	Females	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
INDIA	T	1,21,01,93,422	62,37,24,248	58,64,69,174	17.64	13.12	13.30	42.93	74.04	82.14	65.46	940	914	31.16
R	83,30,87,662	42,79,17,052	40,51,70,610	17.19	14.11	14.32	13.90	68.91	78.57	68.75	947	919		
U	37,71,05,760	19,58,07,196	18,12,98,564	18.12	10.93	11.07	10.78	84.98	89.67	79.92	926	902		
KERALA	T	3,33,87,677	1,60,21,290	1,73,66,387	4.86	9.95	10.59	9.36	93.91	96.02	91.98	1084	959	47.72
R	1,74,55,606	84,03,706	90,51,800	-25.96	10.01	10.61	9.45	92.92	95.29	90.74	1077	960		
U	1,59,32,171	76,17,584	83,14,587	92.72	9.88	10.56	9.27	94.99	96.83	93.33	1091	958		
Kasaragod District	T	13,02,600	6,26,617	6,75,983	8.18	11.46	12.16	10.82	89.85	93.93	86.13	1079	960	36.78
R	7,97,424	3,87,324	4,10,100	-17.82	11.07	11.61	10.56	88.71	93.11	84.61	1059	964		
U	5,05,176	2,39,293	2,65,883	116.16	12.07	13.03	11.21	91.67	95.27	89.49	1111	956		
Kannur District	T	25,25,637	11,84,012	13,41,625	4.84	10.50	11.42	9.70	95.41	97.54	93.57	1133	962	65.05
R	8,82,745	4,26,243	4,56,502	-25.20	10.46	11.07	9.89	93.88	96.50	91.48	1071	956		
U	16,42,892	7,57,769	8,85,123	35.45	10.53	11.61	9.60	96.23	98.12	94.64	1168	965		
Wayanad District	T	8,16,558	4,01,314	4,15,244	4.50	10.99	11.41	10.58	89.32	92.84	85.94	1035	960	3.87
R	7,84,981	3,95,922	3,99,059	4.52	10.99	11.40	10.59	89.22	92.77	85.82	1034	960		
U	31,577	15,392	16,185	6.84	11.03	11.58	10.52	91.63	94.58	88.87	1052	955		
Kozhikode District	T	30,89,543	14,73,028	16,16,515	7.31	10.47	11.19	9.82	95.24	97.57	93.16	1097	963	67.15
R	10,14,765	4,85,654	5,29,111	-42.93	10.91	11.63	10.25	94.79	97.42	92.41	1089	961		
U	20,74,778	9,87,374	10,87,404	88.42	10.26	10.97	9.61	95.47	97.64	93.52	1101	964		
Malappuram District	T	41,10,956	19,61,014	21,49,942	13.39	13.45	14.38	12.60	93.55	95.78	91.55	1096	960	44.19
R	22,94,473	10,95,465	11,99,008	-29.82	13.40	14.31	12.56	92.67	94.97	90.61	1095	961		
U	18,16,483	8,65,549	9,50,934	410.00	13.51	14.47	12.64	94.66	96.81	92.74	1099	959		
Palakkad District	T	28,10,892	13,60,067	14,50,825	7.39	10.26	10.80	9.75	88.49	92.27	84.99	1067	962	24.09
R	21,33,699	10,31,940	11,01,759	-5.63	10.39	10.94	9.88	87.23	91.27	83.49	1068	964		
U	6,77,193	3,28,127	3,49,066	89.92	9.84	10.37	9.34	92.45	95.41	89.70	1064	958		
Thrissur District	T	31,10,327	14,74,665	16,35,662	4.58	9.30	10.07	8.60	95.32	96.98	93.85	1109	948	67.19
R	10,20,537	4,85,875	5,34,662	-52.20	9.43	10.13	8.79	93.99	96.09	92.11	1100	955		
U	20,89,790	9,88,790	11,01,000	148.95	9.23	10.03	8.51	95.97	97.41	94.70	1113	944		
Ernakulam District	T	32,79,860	16,17,602	16,82,268	5.60	8.82	9.15	8.50	95.68	97.14	94.27	1028	954	68.07
R	10,47,296	5,18,040	5,29,256	-35.70	8.44	8.74	8.16	94.34	95.96	92.76	1022	954		
U	22,32,564	10,99,562	11,33,002	51.15	9.00	9.38	8.65	96.32	97.70	94.98	1030	954		
Idukki District	T	10,55,428	5,26,420	5,29,008	-1.93	9.04	9.26	8.82	92.20	94.84	89.59	1006	958	4.70
R	52,025	25,524	26,501	-1.51	9.02	9.24	8.80	92.03	94.73	89.34	1005	957		
U	19,79,384	9,70,140	10,09,244	1.32	8.52	8.88	8.17	96.74	97.10	94.45	1038	968		
Kottayam District	T	14,13,773	6,94,308	7,19,465	-14.52	8.56	8.91	8.23	97.17	97.97	96.40	1036	957	28.58
U	5,65,611	2,75,832	2,89,779	86.66	8.41	8.80	8.03	94.49	95.16	93.86	1051	958		
Alappuzha District	T	21,21,943	10,10,252	11,11,691	-34.47	9.06	9.82	8.42	96.26	97.90	94.80	1100	947	54.06
R	9,74,916	4,62,571	5,12,345	-34.47	9.06	9.82	8.42	96.72	98.24	95.38	1108	950		
U	11,47,027	5,47,681	5,99,346	84.57	8.50	9.16	7.90	95.87	97.62	94.30	1094	944		
Pathanamthitta District	T	11,95,537	5,61,620	6,33,917	-3.12	7.65	8.29	7.09	96.93	97.70	96.26	1129	964	11.00
R	1,31,461	69,596	71,945	-4.16	7.65	8.29	7.08	96.87	97.64	96.19	1129	964		
U	26,28,703	12,44,815	13,84,888	6.19	7.70	8.32	7.15	97.42	98.15	96.79	1125	967		
Kollam District	T	14,43,363	7,64,394	8,34,888	1.72	9.05	9.76	8.42	93.77	95.83	91.95	1113	960	45.11
R	11,86,340	5,65,846	6,20,494	-31.89	9.02	9.78	8.35	94.10	96.15	92.30	1126	961		
U	33,07,284	15,94,200	17,23,064	164.59	9.09	9.73	8.50	93.38	95.46	91.52	1097	958		
Thiruvananthapuram District	T	15,28,030	7,25,230	8,02,800	-28.69	9.15	9.82	8.55	91.98	94.27	89.95	1107	963	53.80
U	17,79,254	8,58,970	9,20,284	62.99	8.48	8.91	8.07	93.24	94.89	91.71	1071	970		

Males include both males and others

Some Concepts and Definitions

What is census?

Population census is the total process of collecting, compiling, analyzing or otherwise disseminating demographic, economic and social data pertaining, at a specific time, to all persons in a country or a well defined part of a country. As such, the census provides a snapshot of the country's population and housing at a given point of time.

Classification of Area:

For Census purposes total geographical area is broadly classified into Rural and Urban.

Urban: Constituents of urban areas are Statutory Towns, Census Towns and Outgrowths.

Statutory Town (ST): All places with a municipality, corporation, cantonment board or notified town area committee etc. No. of STs in Kerala: 59*

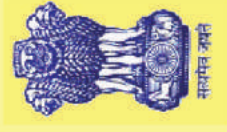
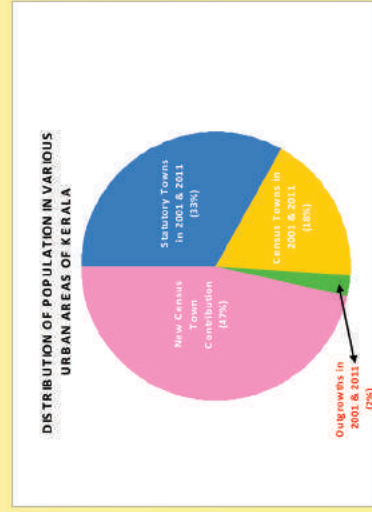
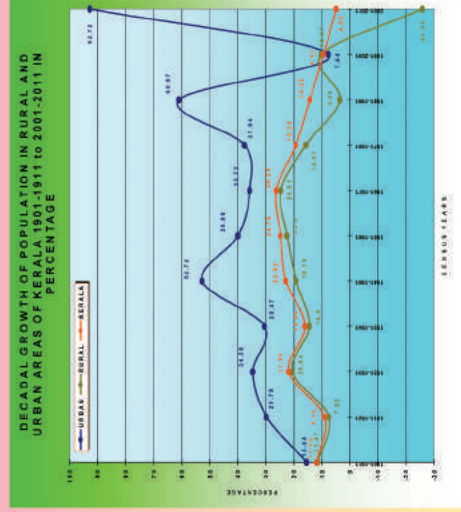
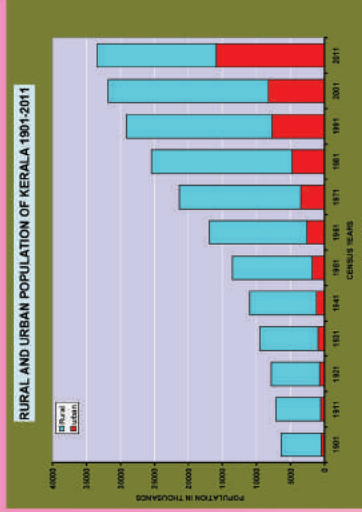
Census Town (CT): Places that satisfy the following criteria are termed as Census Towns (CTs). (a) A minimum population of 5000 (b) At least 75% of the male main working population engaged in non-agricultural pursuits (c) A density of population of at least 400 per sq.km No. of CTs in Kerala: 461 *

Out Growth (OG): Out Growth should be a viable unit such as a village or part of a village contiguous to a statutory town and possess the urban features in terms of infrastructure and amenities such as pucca roads, electricity, taps, drainage system, education institutions, post offices, medical facilities, banks, etc. Examples of OGs are Railway colonies, University campuses, Port areas, that may come up near a city or statutory towns outside its statutory limits but within the revenue limit of a village or villages contiguous to the town or city. No. of OGs in Kerala: 16 *

Urban Agglomeration (UA): It is a continuous urban spread constituting a town and its adjoining urban outgrowths (OGs) or two or more physically contiguous towns together and any adjoining urban out-growths of such towns. No. of UAs in Kerala: 19 *

Rural: All areas other than urban are rural. The basic unit for rural areas is the revenue village. No. of Villages in Kerala: 1018 *

* All administrative units are as on 31.12.2009, the date of freezing of administrative boundaries for Census.



CENSUS OF INDIA 2011

SUMMARY OF PROVISIONAL POPULATION FIGURES KERALA

RURAL – URBAN DISTRIBUTION

Census of India, 2011 is the second Census of the 21st century and 7th Census after Independence. The provisional results of 2011 show that Population of Kerala as on 1st March 2011 is 3,33,87,677 with 1,74,55,506 in Rural and 1,59,32,171 in Urban.



Our Census, Our Future

Directorate of Census Operations, Kerala
C.G.O. Complex, Poonkulam, Vellayani(P.O)
Thiruvananthapuram-695 522

Phone: 0471-2481859, 2481861 Fax: 0471 2481860

E-mail: dco-ker.rgi@censusindia.gov.in

METEOROLOGY

Meteorology is the interdisciplinary scientific study of the atmosphere. Meteorology, climatology, atmospheric physics and atmospheric chemistry are sub-disciplines of the atmospheric sciences. Meteorology and hydrology compose the interdisciplinary field of hydrometeorology. Interactions between Earth's atmosphere and the oceans are part of coupled ocean-atmosphere studies. Weather information and forecasts are of vital importance to many activities like agriculture, aviation, shipping, fisheries, tourism, defense, industrial projects, water management and disaster mitigation. Kerala's climatic condition is divided into four seasons viz Winter, Summer, South-West monsoon and North-East monsoon.

Kollam district has a tropical humid climate with an oppressive summer and plentiful seasonal rainfall. Summer season is from March to end of May. The temperature is almost steady through out the year and temperature in the coastal regions are somewhat less than in the interior. Punalur taluk in Kollam district is the hottest place in Kerala. The average temperature varies between 32⁰ to 33⁰ c in the coastal region and 35⁰ to 36⁰c in the interior areas. The average annual rainfall is 2272 mm. Second rainy season is North East monsoon (Thulavarsham) starts from October to November. December, January, February is the coolest months of the year.

Table: 5.1

RAINFALL DISTRIBUTION 2011-12

(Rainfall in m.m)

2011						
District/State	Jul	Aug	Sep	Oct	Nov	Dec
Kollam	283.0	219.6	242.2	233.7	268.4	100.9
Kerala	539.3	496.9	389.7	232.3	168.1	49.9

2012						
District/State	Jan	Feb	Mar	Apr	May	June
Kollam	13.7	20.9	77.0	228.6	145.8	167.5
Kerala	7.3	9.1	29.5	197.5	83.5	444.9

2011-12			
District/State	Actual	Normal	Departure
Kollam	2001.3	2491.5	-19.7
Kerala	2639.4	2939.75	-10.2

Source: Agricultural Statistics, 2012 (DES)

Table: 5.2

NORTH EAST & SOUTH WEST MONSOON RAINFALL

1 Oct - 31 Dec 2012 (N.E)			
Kollam	Actual Rainfall	Normal Rainfall	% Departure
		368.7	638.9

1 Jun – 30 Sep 2013 (S.W)			
Kollam	Actual Rainfall	Normal Rainfall	% Departure
		1777.2	1332.1

Source: IMD

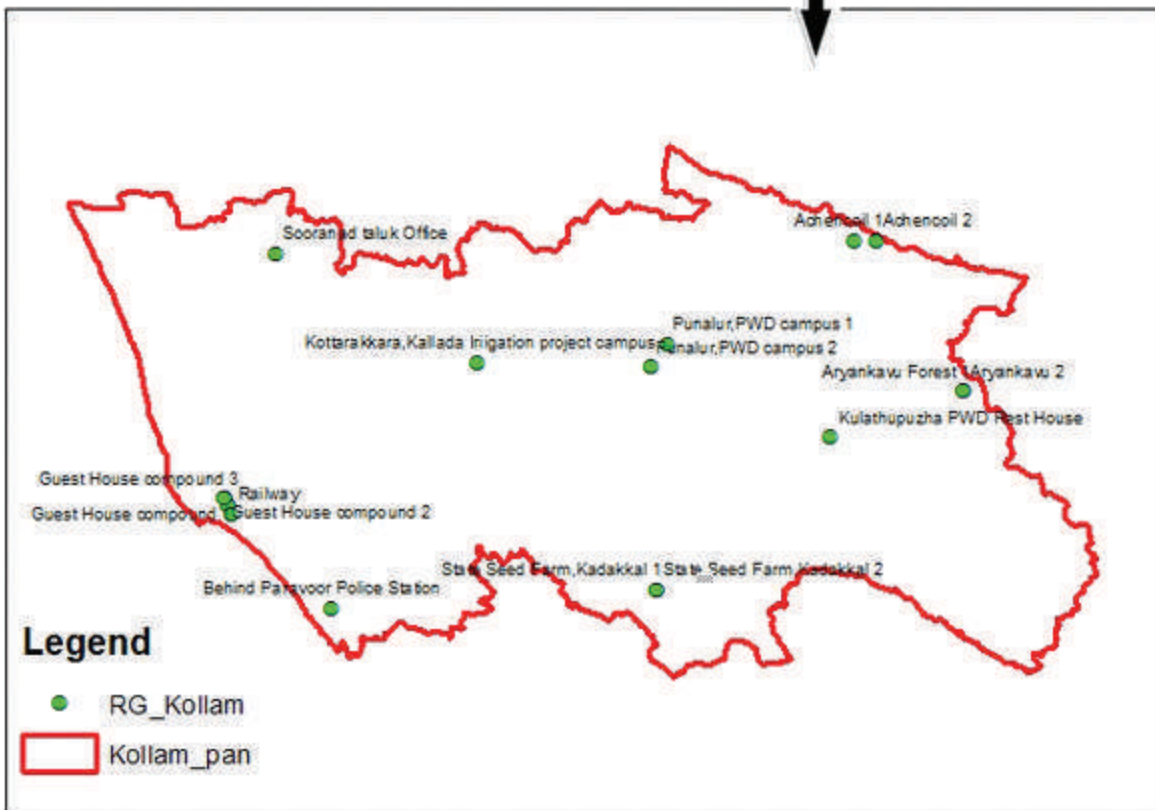
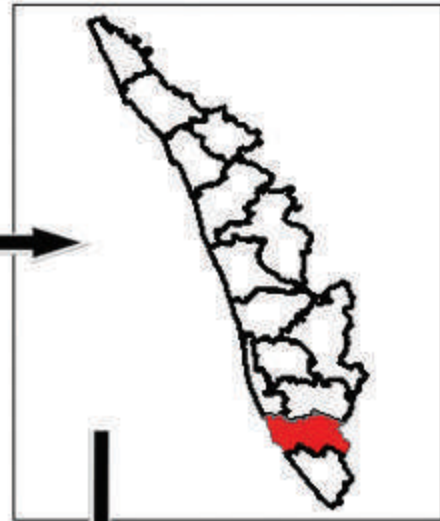
Table: 5.3

District wise Actual Rainfall, Normal Rainfall and Percentage of Departure for the year 2012

Sl. No.	Districts/ Sub division	Pre-Monsoon Rainfall (Mar to May)			South West Monsoon Rainfall (Jun to Sep)			North East Monsoon Rainfall (Oct to Dec)		
		Actual Rainfall (mm)	Normal Rainfall (mm)	Percentage departure (%)	Actual Rainfall (mm)	Normal Rainfall (mm)	Percentage departure (%)	Actual Rainfall (mm)	Normal Rainfall (mm)	Percentage departure (%)
1	Alappuzha	430.2	477.3	-10	1089.7	1745.9	-38	261.7	571.7	-54.0
2	Kannur	95.9	300.4	-68	2317.9	2669.0	-13	247.3	344.8	-28.0
3	Ernakulam	544	443.7	23	1554.3	2065.0	-25	485.1	489.1	-1.0
4	Idukki	432.1	426.6	1	1804.1	2276.3	-21	355.4	564.5	-37.0
5	Kasaragod	134.6	272.5	-51	2739.3	3007.1	-9	172.5	337.4	-49.0
6	Kollam	452.0	469.3	-4	800.5	1332.1	-40	368.7	638.9	-42.0
7	Kottayam	429.8	460.1	-7	1397.7	1897.9	-26	423.7	535.4	-21.0
8	Kozhikode	155.6	352.9	-56	2359.5	2602.8	-8	374.1	422.1	-11.0
9	Malappuram	203.3	320.6	-37	1558.8	2060.7	-24	221.8	448.2	-51.0
10	Palakkad	212.4	279.5	-24	1223.1	1572.0	-22	262.6	427.5	-39.0
11	Pathanamthitta	450.6	553.3	-19	1040.1	1715.0	-39	305.0	623.7	-51.0
12	Thiruvananthapuram	279.5	368.8	-24	492.7	871.4	-43	332.7	522.6	-36.0
13	Thrissur	315.0	385.2	-18	1739.6	2197.5	-21	295.4	469.5	-37.0
14	Wayanad	225.0	275.1	-18	1354.8	2631.9	-49	254.6	331.5	-23.0
15	Lakshadweep	308.5	232.4	-57	1147.1	998.5	15	167.3	333.6	-50.0
	Kerala	308.5	379.7	-19	1551.3	2039.6	-24	310.8	480.7	-35

Source: Economic Review, 2012

Kollam Raingauge Map



Source by :

KERALA STATE REMOTE SENSING & ENVIRONMENT CENTRE
VIKAS BHAVAN, THIRUVANANTHAPURAM



GEOLOGY & GEOMORPHOLOGY

Kollam district covers an area of 2491 km² in the Southern most part of Kerala. It is situated on the South West coast of India between North latitudes 9° 10' and 8° 45' and East longitudes 76° 25' and 77° 15'. The district is bounded by the Lakshadweep Sea on the West and Tamilnadu State in the East. Along the Northern boundary lie Alappuzha and Pathanamthitta district, while to the South lies Thiruvananthapuram district. It has a maximum length of 75 kms in the E-W direction and maximum width of 45 kms in the N-S direction. The district has three distinct physiographic zones: viz. the coastal plain, the midland and the Western Ghats. The district is mainly drained by Kallada and Ithikkara rivers which has perennial.

GEOLOGY

The district can be broadly divided into three geological provinces the western most Quaternary alluvial deposits followed by a narrow N-S zone of late Tertiary sediments and the eastern most Precambrian metamorphics. The Precambrian metamorphics are represented by Khondalite, Charnockite and Migmatite groups. They are intruded by younger basic dykes and overlain by Tertiary and Quaternary sediments. High grade metamorphic rocks of Khondalite Group include Calc-granulite, Quartzite and Garnet-biotite-sillimanite gneiss with or without graphite. Thin lenticular bands of calc-granulite occur within Charnockite and Migmatite. A few narrow bands of quartzite are seen within migmatite. The Khondalite paragneiss tends to occur as linear bodies towards the middle and western part of the district.

The Charnockite Group consists of Pyroxene granulite, Cordierite gneiss and Hypersthene-hornblende granite-gneiss (Charnockite). It mostly occurs as concordant bands and lenses of varied dimensions in Khondalite and Migmatite with a diffused contact. It grades into gneiss. Generally it is garnet ferrous near the contact with the gneiss. The rock shows granoblastic texture and is mostly intermediate to acidic. Pyroxene granulite occurs as thin, discordant, lenticular patches, within migmatite and is concordant with the para gneiss. Cordierite gneiss is found as impersistent bands and lenses within garnet-biotite gneiss and is confined to the contact with gneiss and Charnockite. It displays xenoblastic gneissose texture and consists of varying

proportions of cordierite plagioclase, microperthite, quartz, biotite, hypersthene, garnet and hornblende. Near Punalur, there is a small body of dunite.

The Migmatite Complex comprising garnet-biotite gneiss and quartzo-feldspathic gneiss are the major rock units of the area and they are traversed by thin pegmatite and aplite veins. The rocks of the Migmatite Complex are widely distributed and interlayered with rocks of Charnockite Group. Garnet-biotite gneiss has a larger area distribution and is characterized by the presence of biotite foliae and concentration of garnet in layers. Bands and lenses of quartzo feldspathic gneiss occur within it. Granite gneiss of Peninsular Gneissic Complex occurs as small isolated bands within migmatite. Granite generally occurs as small lenses towards the east. All the older rocks are intruded by basic intrusives of doleritic composition having a general NW-SE trend.

Towards west, the rocks of Archaen age are unconformably overlain by sedimentary rocks of Mio-Pliocene age. Two distinct sequence of sediments are noticeable. A lower marine sequence (Quilon Formation) represented by fossiliferous limestone and marl and an upper nonmarine sequence of alternating beds of sandstone and clay, with carbonaceous clay and lignite seams towards the bottom (Warkalli Formation). These beds are horizontally disposed and are lateritised at the top. The midland portion representing the tertiary sedimentary terrain and the Western part of the Archaen terrain is extensively lateritised and the laterite is 5 to 10m thick. The coastal plain is covered by Quaternary alluvium mainly of marine origin. Flood plain deposits, an admixture of sand, silt and clay occur along the river banks and valleys. Near the coast and in the vicinity of backwaters, tidal deposits are noticed. The Quaternary sediments have been classified into different morphostratigraphic units based on their environment of formation, lithocontent and morphological character. Guruvayur Formation represents an old marine deposit, while Kadappuram (marine), Periyar (fluvial) and Viyyam (fluviomarine) formations are contemporary.

GEOMORPHOLOGY AND GEOHYDROLOGY

Geomorphologically, the district can be divided into three units from west to east as the coastal plain, the midland and the high hill region. The coastal plain has a maximum width of 90kms in the north and gradually narrows down to less than 0.5kms towards south. It is nearly level to very gently sloping terrain depicting depositional

landforms like strandlines (Paleobeach ridges), flood plain and tidal flats. The coastal plain has a number of backwaters known as kayals in Kerala, the prominent being Ashtramudi Kayal, Paravur Kayal, Panmana Kayal and the Sasthamkotta Kayal. Among these the last one is fresh water lagoon, while the others are brackish. The midland towards east has a rolling topography with elevations ranging from 20m to around 300m. The region is characterized by gently to moderately sloping spurs, moderately to steeply sloping ridges, flat and domal hills with intervening narrow valleys and broad valley floors. The hilly region to the east has a rugged topography. The hills have steep slopes and narrow and small summits. Highest peaks along the eastern boundary are 1200 to 1500m high.

Geohydrologically, the area comprises zones with respect to groundwater potential as low to poor, moderate to low and fairly good respectively. The district is subdivided into Vamanapuram, Ayur, Ithikkara, Kallada, Pallikkal and Achenkovil basins. The coastal areas in this district have been found suitable for sinking filter point and medium capacity tube wells. The Kollam-Aleppey tract is a potential source for groundwater and can be the ideal locate nucleus for heavy industries which may require quantities of water. The ground water in the crystalline rocky terrain can be developed through large diameter open wells.

Table:6.1

GEOLOGY DETAILS
ANCHAL BLOCK

Sl. No.	Rock Type	Alayamon	Anchal	Aryankavu	Edamulackal	Eroor	Karavaloor	Kulathoo ppuzha	Thenmala
1	Metamorphic Rocks	5583.24	2704.25	21475.73	3651.05	4248.88	2615.59	39839.5	12810.09
2	Plutonic Rocks			44.64					47.35
3	Residual Cappings								
4	Semiconsolidated Sediment								
5	Tank/WB/River								
6	Unconsolidated Sediments								23.55
	Panchayath Total	5583.24	2704.25	21520.37	3651.05	4248.88	2615.59	39839.5	12880.99
	Block Total				93043.87				

Table:6.2

CHADAYAMANGALAM BLOCK

Sl. No.	Rock Type	Chadaya mangalam	Chithara	Elamadu	Ittiva	Kadakkal	Kummil	Nilamel	Velinalloor
1	Metamorphic Rocks	2529.79	5936.28	2958.54	4233.25	3125.04	1777.50	1897.80	2523.81
2	Plutonic Rocks								
3	Residual Cappings								
4	Semiconsolidated Sediment								
5	Tank/WB/River								
6	Unconsolidated Sediments								
	Panchayath Total	2529.79	5936.28	2958.54	4233.25	3125.04	1777.50	1897.80	2523.81
	Block Total				24982.01				

Table:6.3

CHAVARA BLOCK

SI.No.	Rock Type	Chavara	Neendakara	Panmana	Thekkumbhagam	Thevalakkara
1	Metamorphic Rocks					
2	Plutonic Rocks					
3	Residual Cappings					
4	Semiconsolidated Sediment			0.2		558.07
5	Tank/WB/River	68.92	253.01		923.95	151.6
6	Unconsolidated Sediments	1143.78	441.25	1676.3	468.04	978.24
	Panchayath Total	1212.70	694.26	1676.50	1391.99	1687.91
	Block Total			6663.36		

(Area in Ha)

Table:6.4

ITHIKKARA BLOCK

SI.No.	Rock Type	Adichanalloor	Chathannoor	Chirakkara	Kalluvathukkal	Poothakulam
1	Metamorphic Rocks	1207.77	746.57	176.21	2885.82	
2	Plutonic Rocks					
3	Residual Cappings					
4	Semiconsolidated Sediment	1102.95	587.34	1417.53	920.05	1416.44
5	Tank/WB/River	53.98				284.89
6	Unconsolidated Sediments					
	Panchayath Total	2364.70	1333.91	1593.74	3805.87	1701.33
	Block Total			10799.55		

(Area in Ha)

Table:6.5

KOTTARAKKARA BLOCK

SI.No.	Rock Type	Ezhukone	Kareepra	Kottarakkara	Neduvathoor	Pooyappally	Veliyam
1	Metamorphic Rocks	1782	2272.30	1750.26	2237.90	2349.16	3069.02
2	Plutonic Rocks						
3	Residual Cappings						
4	Semiconsolidated Sediment						
5	Tank/WB/River						
6	Unconsolidated Sediments			79.52			
	Panchayath Total	1782.00	2272.30	1829.78	2237.90	2349.16	3069.02
	Block Total			13540.16			

(Area in Ha)

Table:6.6

OCHIRA BLOCK

SI.No.	Rock Type	Alappad	Klapana	Kulasekhara puram	Ochira	Thazhava	Thodiyoor
1	Metamorphic Rocks						
2	Plutonic Rocks						
3	Residual Cappings						
4	Semiconsolidated Sediment					455.84	120.67
5	Tank/WB/River	94.83		18.38			
6	Unconsolidated Sediments	793.98	1039.38	1697.13	1326.52	1923.64	1950.81
	Panchayath Total	888.81	1039.38	1715.51	1326.52	2379.48	2071.48
	Block Total			9421.18			

(Area in Ha)

Table:6.7

CHITTUMALA BLOCK

SI.No.	Rock Type	East Kallada	Kundara	Manthrothu ruthu	Panayam	Perayam	Perinadu	Thrikkada voor	Thrikkaruva
1	Metamorphic Rocks	18.47	710.97			2.81			
2	Plutonic Rocks								
3	Residual Cappings								
4	Semiconsolidated Sediment	704.32	594.23	755.30	710.00	667.13	1157.61	35.72	199.81
5	Tank/WB/River	73.36	9.30	559.89	233.58	787.35	422.27	567.67	1065.10
6	Unconsolidated Sediments	507.04				3.12		866.15	536.36
	Panchayath Total	1303.19	1314.50	1315.19	943.58	1460.41	1579.88	1469.54	1801.27
	Block Total					11187.56			

Table:6.8

SASTHAMKOTTA BLOCK

SI.No.	Rock Type	Kunna thoor	Mynaga pally	Poruvazhi	Sastham kotta	Sooranadu South	Sooranadu North	West Kallada
1	Metamorphic Rocks	1603.12		1016.94	72.30		47.22	
2	Plutonic Rocks							
3	Residual Cappings							
4	Semiconsolidated Sediment	511.43	1959.27	846.76	1563.39	1127.14	1870.18	870.06
5	Tank/WB/River							
6	Unconsolidated Sediments	32.94	87.00	27.84	865.64	610.83	364.78	467.66
	Panchayath Total	2147.49	2046.27	1891.54	2501.33	1737.97	2282.18	1337.72
	Block Total				13944.50			

Table:6.9

PATHANAPURAM BLOCK

SI.No.	Rock Type	Pathanapuram	Pattazhi	Pattazhi Vadakkekara	Piravanthoor	Thalavoor	Vilakkudy
1	Metamorphic Rocks	3244.52	1493.61	1654.04	12977.24	2874.48	1740.52
2	Plutonic Rocks	30.35			147.67		
3	Residual Cappings	816.21	248.02	8.17		0.33	
4	Semiconsolidated Sediment						
5	Tank/WB/River						
6	Unconsolidated Sediments	1.11	108.63	35.91	21.25	553.88	273.82
	Panchayath Total	4092.19	1850.26	1698.12	13146.16	3428.69	2014.34
	Block Total			26229.76			

(Area in Ha)

Table:6.10

VETTIKAVALA BLOCK

SI.No.	Rock Type	Kulakkada	Meiila	Mylam	Pavithre swaram	Ummannoor	Vettikkavala
1	Metamorphic Rocks	3112.36	1475.67	1642.98	2278.66	3494.58	3456.17
2	Plutonic Rocks						
3	Residual Cappings						
4	Semiconsolidated Sediment				133.25		
5	Tank/WB/River						
6	Unconsolidated Sediments	41.7	425.52	645.7	22.61		21.57
	Panchayath Total	3154.06	1901.19	2288.68	2434.52	3494.58	3477.74
	Block Total			16750.77			

(Area in Ha)

Table:6.11

MUKHATHALA BLOCK

SI.No.	Rock Type	Elampalloor	Kottankara	Mayyanadu	Nedumpana	Thrikovilvattom
1	Metamorphic Rocks	87.26	36.21		2258.24	18.47
2	Plutonic Rocks					
3	Residual Cappings					
4	Semiconsolidated Sediment	1129.81	1229.37	1221.14	247.58	1833.31
5	Tank/WB/River			205.07		
6	Unconsolidated Sediments			561.4		33.59
	Panchayath Total	1217.07	1265.58	1987.61	2505.82	1885.37
	Block Total		8861.45			

(Area in Ha)

Table:6.12

MUNICIPALITY/CORPORATION

Sl. No.	Rock Type	Karunagappally (M)	Paravoor (M)	Punalur (M)	Kollam (C)
1	Metamorphic Rocks			3620.23	
2	Plutonic Rocks				
3	Residual Cappings				
4	Semiconsolidated Sediment		1529.49		1271.30
5	Tank/WB/River	7.49	389.15		307.09
6	Unconsolidated Sediments	1825.96			4113.68
	Total	1833.45	1918.64	3620.23	5692.07

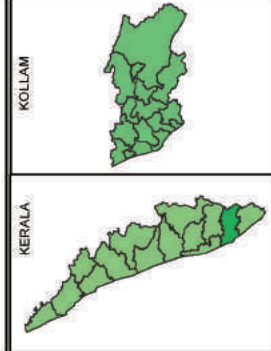
(Area in Ha)



GEOLOGY
KOLLAM DISTRICT

Legend

- Acidic rocks
- Basic Rocks
- Charnockite group of rocks
- Khondalite Group of rocks
- Laterite
- Migmatite Complex
- Peninsular Gneissic Complex
- Sand and Silt
- Sandstone and clay
- Tank/WB/River



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

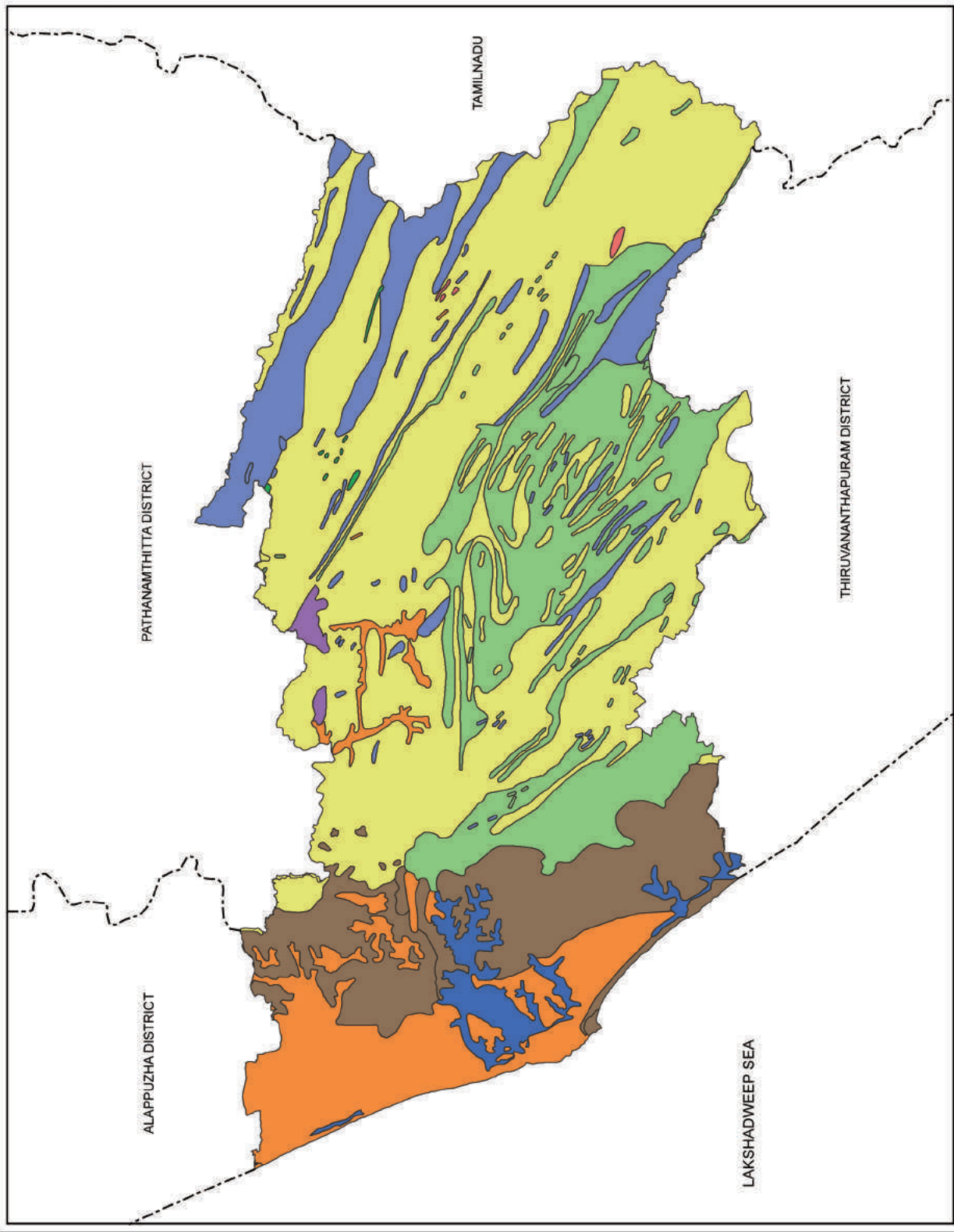


Table:6.13

GEOMORPHOLOGY DETAILS
ANCHAL BLOCK

Sl. No.	Rock Type	Alayamon	Anchal	Aryankavu	Edamulackal	Eroor	Karavaloor	Kulathoo puzha	Thenmala
1	Beach (Coastal Plain)								
2	Coastal Plain								
3	Denudational Hills								
4	Denudational Structural Hills	3383.67		20554.34		1634.65	25.07	31130.98	10501.92
5	Linear Ridge (Lower Plateau)		15.57				18.41	40.99	
6	Linear Ridge (Piedmont Zone)						15.28		40.35
7	Lower Plateau (Lateritic) - Dissected	1125.12	1956.78		2866.84	751.62	1670.5	2548.67	228.85
8	Mud Flat (Coastal Plain)								
9	Piedmont Zone	837.53	8.31	737.45		1425.21	294.49	4431.22	1638.28
10	Point Bar (Flood Plain)								
11	Residual Hill		21.94				99.7	75.61	77.74
12	Residual Mount	11.39	100.27		278.31	97.06	103.65	71.37	15.61
13	Residual Mount (Pediment)								47.07
14	Rock Exposure								
15	Structural Valley			180.51					207.47
16	Swale (Coastal Plain)								
17	Valley							201.74	50.83
18	Valley Fill	225.54	601.37		503.70	325.47	388.48	3.5	
19	Water Body		0.01	48.06	2.21	14.88		1335.42	72.86
	Panchayath Total	5583.25	2704.25	21520.36	3651.06	4248.89	2615.58	39839.50	12880.98
	Block Total				93043.87				

Table:6.14

CHADAYAMANGALAM BLOCK

Sl. No.	Rock Type	Chadaya mangalam	Chithara	Elamadu	Ittiva	Kadakkal	Kummil	Nilamel	Velinalloor
1	Beach (Coastal Plain)								
2	Coastal Plain								
3	Denudational Hills		548.08						
4	Denudational Structural Hills		1137.77		38.92	0.19			
5	Linear Ridge (Lower Plateau)	32.21		86.80	107.54	0.46		11.61	28.04
6	Linear Ridge (Piedmont Zone)			2491.94					
7	Lower Plateau (Lateritic) - Dissected	2094.41	3052.21		3290.82	2842.47	1501.4	1639.38	2193.31
8	Mud Flat (Coastal Plain)								
9	Piedmont Zone		767.33		114.12	28.91			
10	Point Bar (Flood Plain)								
11	Residual Hill	47.39	0.63		99.58		53.46		
12	Residual Mount	65.23	77.29	121.16	101.51	158.57	57.46	132.93	50.93
13	Residual Mount (Pediment)								
14	Rock Exposure								
15	Structural Valley								
16	Swale (Coastal Plain)								
17	Valley								
18	Valley Fill	243.83	352.97	256.67	453.62	94.44	165.18	113.87	216.3
19	Water Body	46.72		1.97	27.15				35.24
	Panchayath Total	2529.79	5936.28	2958.54	4233.26	3125.04	1777.50	1897.79	2523.82
	Block Total					24982.02			

(Area in Ha)

Table:6.15

CHAVARA BLOCK

(Area in Ha)

Sl. No.	Rock Type	Chavara	Neendakara	Panmana	Thekkumbhagam	Thevalakkara
1	Beach (Coastal Plain)					
2	Coastal Plain	922.27	420.80	1218.74	427.51	679.91
3	Denudational Hills					
4	Denudational Structural Hills					
5	Linear Ridge (Lower Plateau)					
6	Linear Ridge (Piedmont Zone)					
7	Lower Plateau (Lateritic) - Dissected				0.06	505.59
8	Mud Flat (Coastal Plain)	89.29	4.73	262.50	49.88	185.37
9	Piedmont Zone					
10	Point Bar (Flood Plain)					
11	Residual Hill					
12	Residual Mount					
13	Residual Mount (Pedirment)					
14	Rock Exposure					
15	Structural Valley					
16	Swale (Coastal Plain)	181.01	7.36	171.00	14.86	30.65
17	Valley					
18	Valley Fill			6.60		181.60
19	Water Body	20.13	261.37	17.67	899.67	104.79
	Panchayath Total	1212.70	694.26	1676.51	1391.98	1687.91
	Block Total			6663.36		

Table:6.16

CHITTUMALA BLOCK

Sl. No.	Rock Type	East Kallada	Kundara	Mantrothuruthu	Panayam	Perayam	Perinadu	Thrikkada voor	Thrikkaruva
1	Beach (Coastal Plain)								
2	Coastal Plain	0.11		245.04		0.04		0.59	
3	Denudational Hills								
4	Denudational Structural Hills								
5	Linear Ridge (Lower Plateau)								
6	Linear Ridge (Piedmont Zone)								
7	Lower Plateau (Lateritic) - Dissected	882.25	1167.94	61.15	455.50	686.72	1046.86	779.23	617.16
8	Mud Flat (Coastal Plain)			315.01	2.39	2.78		0.93	3.59
9	Piedmont Zone								
10	Point Bar (Flood Plain)								
11	Residual Hill								
12	Residual Mount								
13	Residual Mount (Pediment)								
14	Rock Exposure								
15	Structural Valley								
16	Swale (Coastal Plain)								
17	Valley								
18	Valley Fill	350.78	144.76	76.53	219.76	0.17	116.81	78.9	79.86
19	Water Body	70.05	1.81	617.47	265.93	770.69	416.21	609.90	1100.66
	Panchayath Total	1303.19	1314.51	1315.20	943.58	1460.40	1579.88	1469.55	1801.27
	Block Total				11188.27				

Table:6.17

ITHIKKARA BLOCK

Sl. No.	Rock Type	Adichanalloor	Chathannoor	Chirakkara	Kalluvathukkal	Poothakulam
1	Beach (Coastal Plain)					
2	Coastal Plain	138.79		1.25		1.66
3	Denudational Hills					
4	Denudational Structural Hills					
5	Linear Ridge (Lower Plateau)					
6	Linear Ridge (Piedmont Zone)					
7	Lower Plateau (Lateritic) - Dissected	1651.81	1164.45	1179.12	3544.68	1324.66
8	Mud Flat (Coastal Plain)	116.06				
9	Piedmont Zone					
10	Point Bar (Flood Plain)					
11	Residual Hill					
12	Residual Mount	35.77			45.44	
13	Residual Mount (Pediment)					
14	Rock Exposure					
15	Structural Valley					
16	Swale (Coastal Plain)					
17	Valley					
18	Valley Fill	325.93	147.42	385.54	210.57	120.87
19	Water Body	96.34	22.04	27.83	5.18	254.15
	Panchayath Total	2364.70	1333.91	1593.74	3805.87	1701.34
	Block Total			10799.56		

(Area in Ha)

Table:6.18

KOTTARAKKARA BLOCK

Sl. No.	Rock Type	Ezhukone	Kareepra	Kottarakkara	Neduvathoor	Pooyappally	Veliyam
1	Beach (Coastal Plain)						
2	Coastal Plain						
3	Denudational Hills						
4	Denudational Structural Hills						
5	Linear Ridge (Lower Plateau)			10.58			41.37
6	Linear Ridge (Piedmont Zone)						
7	Lower Plateau (Lateritic) - Dissected	1540.44	1878.85	1587.05	2002.61	2181.19	2713.52
8	Mud Flat (Coastal Plain)						
9	Piedmont Zone						
10	Point Bar (Flood Plain)						
11	Residual Hill						
12	Residual Mount	39.76	21.58	9.10	104.06	22.46	62.90
13	Residual Mount (Pediment)						
14	Rock Exposure						
15	Structural Valley						
16	Swale (Coastal Plain)						
17	Valley						
18	Valley Fill	201.79	371.86	223.06	131.23	126.78	251.23
19	Water Body					18.73	
	Panchayath Total	1781.99	2272.29	1829.79	2237.90	2349.16	3069.02
	Block Total			13540.15			

Table:6.19

MUKHATHALA BLOCK

Sl. No.	Rock Type	(Area in Ha)					
		Elampalloor	Kottankara	Mayyanadu	Nedumpana	Thrikovilvattom	
1	Beach (Coastal Plain)						
2	Coastal Plain			367.99			
3	Denudational Hills						
4	Denudational Structural Hills						
5	Linear Ridge (Lower Plateau)						
6	Linear Ridge (Piedmont Zone)						
7	Lower Plateau (Lateritic) - Dissected	969.64	1019.36	1215.57	1993.89	1441.19	
8	Mud Flat (Coastal Plain)			32.17		3.55	
9	Piedmont Zone						
10	Point Bar (Flood Plain)						
11	Residual Hill						
12	Residual Mount				4.23		
13	Residual Mount (Pediment)						
14	Rock Exposure						
15	Structural Valley						
16	Swale (Coastal Plain)						
17	Valley						
18	Valley Fill	244.65	246.22	186.59	490.64	434.60	
19	Water Body	2.78		185.29	17.06	6.02	
	Panchayath Total	1217.07	1265.58	1987.61	2505.82	1885.36	
	Block Total			8861.44			

Table:6.20

OCHIRA BLOCK

Sl. No.	Rock Type	Alappad	Klapana	Kulasekhara puram	Ochira	Thazhava	Thodiyoor
1	Beach (Coastal Plain)	0.01					
2	Coastal Plain	442.61	543.47	1208.27	1027.03	1114.78	1326.91
3	Denudational Hills						
4	Denudational Structural Hills						
5	Linear Ridge (Lower Plateau)						
6	Linear Ridge (Piedmont Zone)						
7	Lower Plateau (Lateritic) - Dissected					468.96	
8	Mud Flat (Coastal Plain)	132.88	322.62	286.65	96.84	656.28	663.14
9	Piedmont Zone						
10	Point Bar (Flood Plain)						
11	Residual Hill						
12	Residual Mount						
13	Residual Mount (Pediment)						
14	Rock Exposure						
15	Structural Valley						
16	Swale (Coastal Plain)		137.24	217.84	202.65	138.67	21.52
17	Valley						
18	Valley Fill						1.65
19	Water Body	313.31	36.05	2.74		0.77	58.26
	Panchayath Total	888.81	1039.38	1715.50	1326.52	2379.46	2071.48
	Block Total			9421.15			

Table:6.21

PATHANAPURAM BLOCK

Sl. No.	Rock Type	Pathanapuram	Pattazhi	Pattazhi Vadakkekara	Piravanthoor	Thalavoor	Vilakkudy
1	Beach (Coastal Plain)						
2	Coastal Plain						
3	Denudational Hills	1233.24			83.26		
4	Denudational Structural Hills	164.68			8593.14		
5	Linear Ridge (Lower Plateau)				27.89	44.27	63.54
6	Linear Ridge (Piedmont Zone)				140.61		
7	Lower Plateau (Lateritic) - Dissected	1485.86	1497.61	1362.39	2640.40	2856.34	1625.43
8	Mud Flat (Coastal Plain)						
9	Piedmont Zone	941.55			714.86		
10	Point Bar (Flood Plain)	4.87	6.88	24.49		3.30	
11	Residual Hill	8.50	133.90		598.81	7.11	77.12
12	Residual Mount	27.93	48.47	26.90	136.31	134.80	89.31
13	Residual Mount (Pediment)						
14	Rock Exposure						
15	Structural Valley						
16	Swale (Coastal Plain)						
17	Valley	17.88			133.23		
18	Valley Fill	186.86	144.71	247.79	36.93	344.73	152.72
19	Water Body	20.83	18.69	36.55	40.71	38.16	6.22
	Panchayath Total	4092.20	1850.26	1698.12	13146.15	3428.71	2014.34
	Block Total			26229.78			

(Area in Ha)

Table:6.22

SASTHAMKOTTA BLOCK

Sl. No.	Rock Type	Kunnathoor	Mynagapally	Poruvazhi	Sasthamkotta	Sooranadu South	Sooranadu North	West Kallada
1	Beach (Coastal Plain)							
2	Coastal Plain		3.46			3.68		4.50
3	Denudational Hills							
4	Denudational Structural Hills							
5	Linear Ridge (Lower Plateau)							
6	Linear Ridge (Piedmont Zone)							
7	Lower Plateau (Lateritic) - Dissected	1877.73	1467.75	1660.55	1700.11	1246.27	1606.10	669.53
8	Mud Flat (Coastal Plain)		31.05		1.88	110.08	477.48	513.69
9	Piedmont Zone							
10	Point Bar (Flood Plain)	7.08			1.36			1.77
11	Residual Hill							
12	Residual Mount							
13	Residual Mount (Pediment)							
14	Rock Exposure							
15	Structural Valley							
16	Swale (Coastal Plain)							
17	Valley							
18	Valley Fill	197.79	522.53	225.18	642.22	361.94	196.2	54.07
19	Water Body	64.89	21.48	5.80	155.76	16.01	2.41	94.15
	Panchayath Total	2147.49	2046.27	1891.53	2501.33	1737.98	2282.19	1337.71
	Block Total				13944.50			

Table:6.23

VETTIKAVALA BLOCK

Sl. No.	Rock Type	Kulakkada	Melila	Mylam	Pavithreswaram	Ummannoor	Vettikkavala
1	Beach (Coastal Plain)						
2	Coastal Plain						
3	Denudational Hills						
4	Denudational Structural Hills						
5	Linear Ridge (Lower Plateau)		29.58			173.29	74.75
6	Linear Ridge (Piedmont Zone)						
7	Lower Plateau (Lateritic) - Dissected	2733.00	1592.59	1752.40	2059.93	2749.24	2904.87
8	Mud Flat (Coastal Plain)						
9	Piedmont Zone						
10	Point Bar (Flood Plain)	14.99		6.15	0.76		
11	Residual Hill		5.73				73.67
12	Residual Mount	101.03	53.07	77.70		222.95	19.67
13	Residual Mount (Pediment)						
14	Rock Exposure	7.16					
15	Structural Valley						
16	Swale (Coastal Plain)						
17	Valley						
18	Valley Fill	248.06	249.80	421.36	357.30	349.10	404.78
19	Water Body	49.82		1.49	16.53		
	Panchayath Total	3154.06	1901.19	2288.68	2434.52	3494.58	3477.74
	Block Total				16750.77		

Table:6.24

MUNICIPALITY/CORPORATION

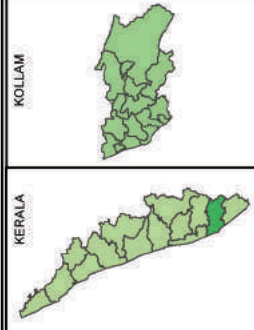
Sl. No.	Rock Type	Karunagapally (M)	Paravoor (M)	Punalur (M)	Kollam (C)	(Area in Ha)
1	Beach (Coastal Plain)					
2	Coastal Plain	934.24	61.53			1826.37
3	Denudational Hills					
4	Denudational Structural Hills			339.33		
5	Linear Ridge (Lower Plateau)			40.32		
6	Linear Ridge (Piedmont Zone)					
7	Lower Plateau (Lateritic) - Dissected		1310.45	1789.54		2413.44
8	Mud Flat (Coastal Plain)	581.90				491.85
9	Piedmont Zone			999.84		
10	Point Bar (Flood Plain)					
11	Residual Hill			53.57		
12	Residual Mount			135.36		
13	Residual Mount (Pediment)			96.95		
14	Rock Exposure					
15	Structural Valley					
16	Swale (Coastal Plain)	71.40				98.27
17	Valley			59.89		
18	Valley Fill		153.86	25.44		436.56
19	Water Body	245.91	392.80	79.99		425.58
	Total	1833.45	1918.64	3620.23		5692.07



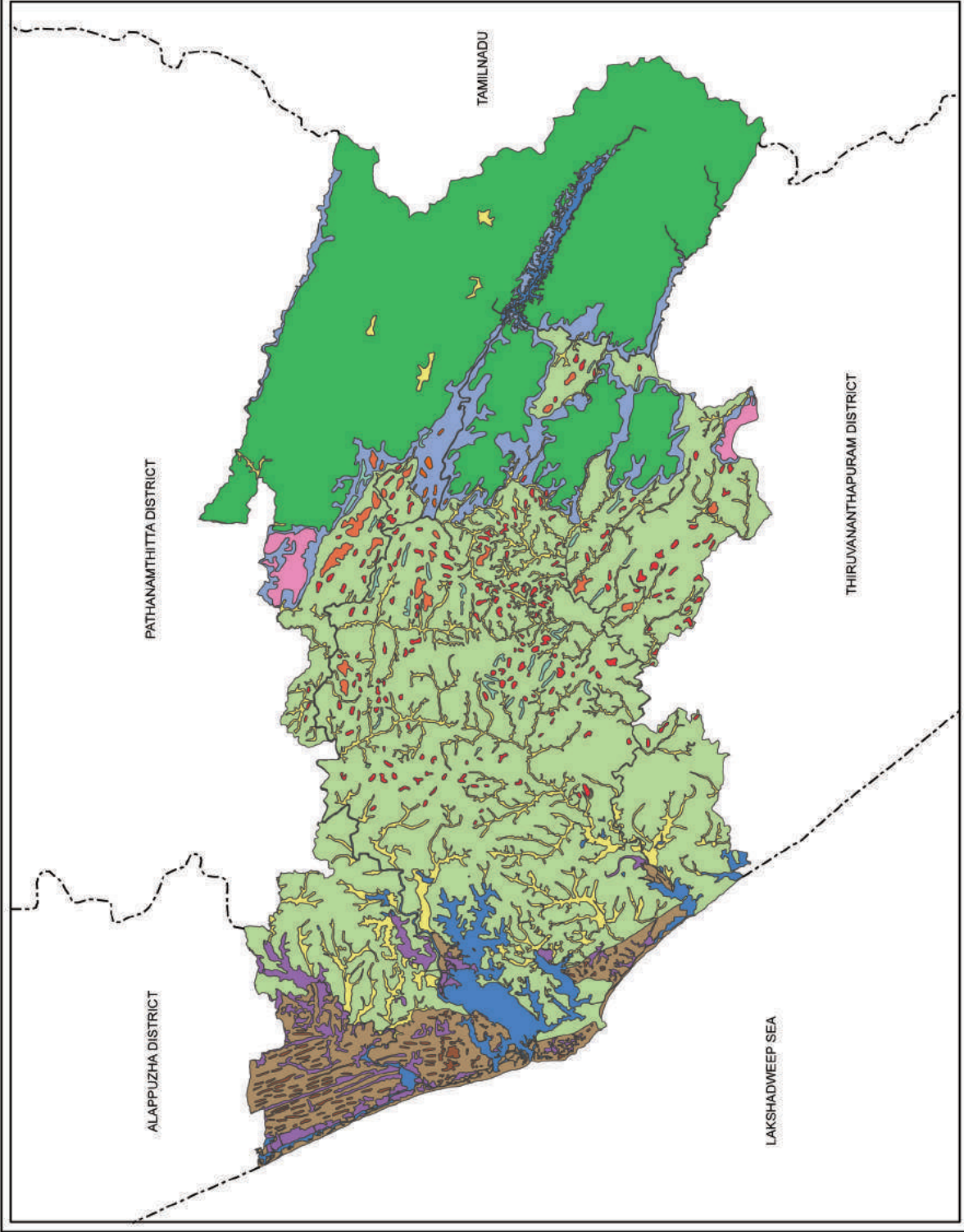
**GEOMORPHOLOGY
KOLLAM DISTRICT**

Legend

- Valley
- Beach(Coastal Plain)
- Coastal Plain
- Mud flat(Coastal Plain)
- Swale(Coastal Plain)
- Point bar(Flood Plain)
- Linear ridge
- Lower Plateau (Lateritic)
- Residual Mount(Pediment)
- Rock Exposure
- Denudational Hills
- Denudational Structural Hills
- Piedmont Zone
- Residual Hill
- Residual Mount
- Water Body



Kerala State Land Use Board
Vikas Bhawan, Thiruvananthapuram-33



PHYSIOGRAPHY

Based on the physiographic nature, Kerala is divided into three regions namely highland, midland and lowland then again it is further sub divided into four micro regions. Kollam district consist of four such micro regions viz i) Quilon Coast ii) Adoor Rolling Plain iii) Kottarakkara Undulating Upland iv) Kulathupuzha Forested Hills. The first region Quilon coast lies all along the coast of the district and is bounded by the Alleppey coast in the North, Adoor Rolling Plain and Kottarakkara Undulating Upland in the East, Trivandrum coast in the South and the Lakshadweep Sea in the West. The Quilon coast comprises of the whole of Karunagappally taluk and parts of Kunnathur and Quilon taluks. The height of this region is varying between 5 m and 27 m. The highest point lies in West Kallada village of Kunnathur taluk. Adoor Rolling Plain the second region is bounded by Chengannur Rolling Plain in the North, Kottarakkara Undulating Upland in the East, South and Quilon coast in the West. Parts of Kunnathur, Pathanamthitta, Kottarakkara and Quilon taluks from the Adoor Rolling Plains has a gentle slope towards the West. It has been maximum height (110 m) at Erath village of Adoor taluk and the minimum height (66 m) at Puthur village of Kottarakkara taluk. The third region Kottarakkara Undulating Upland terrain lies in a narrow stretch from North to South over the central part of the district comprising of parts of Kunnathur, Kozhencherry, Pathanapuram and Kottarakkara taluks. This region is narrow in the North and wider towards the South. The minimum height (106 m) lies in the Southern part of Kuzhinathikkad of Kareepra village of Kottarakkara taluk. Kulathupuzha Forested Hills the fourth region lies in the South Eastern portion of the district with boundaries as Pamba-Kakki forested hills in the North, Tamilnadu in the East, Ponmudi Agasthiar Forested Hills in the South and Kottarakkara Undulating Upland in the West. The maximum height (1233 m) lies in the Eastern end in the reserve forest and the minimum height (297 m) lies in the central portion in Chaliyakkara of Edamon village of Pathanapuram taluk.

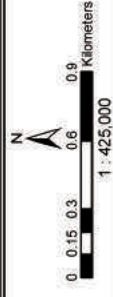
Table:7.1

**NATURAL REGIONS OF KOLLAM – DETAILS OF TALUKS/VILLAGES WITH
AREA BY REGIONS**

(Area in ha)

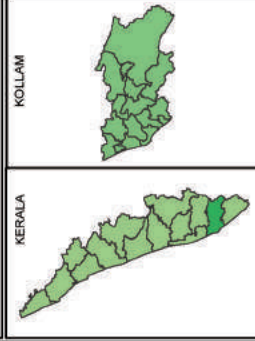
Sl.No.	Taluks/Villages	Low land	Mid land	High land
Karunagappally Taluk				
1	Perunad	2575	-	-
2	Krishnapuram	745	-	-
3	Thazhava	2358	-	-
4	Kulasekharapuram	1877	-	-
5	Thodiyoor	2061	-	-
6	Karunagappally	2116	-	-
7	Panmana	1685	-	-
8	Chavara	1189	-	-
9	Thekkumbhagam	3045	-	-
10	Thevalakkara	1571	-	-
11	Mynagappally	-	1970	-
	Total	19222	1970	-
Kunnathur Taluk				
1	Sooranad North	-	2267	-
2	Kunnathur	-	2144	-
3	Poruvazhy	-	1935	-
4	Sooranad South	-	1717	-
5	Sasthamkotta	-	2442	-
6	West Kallada	-	1336	-
	Total	-	11841	-
Pathanapuram Taluk				
1	Pattazhi	-	3972	-
2	Pathanapuram	-	2365	-
3	Thalavoor	-	2261	-
4	Vilakkudi	-	2143	-
5	Arakkal	-	1781	-
6	Idamulakkal	-	2092	-
7	Piravanthoor	-	-	12613
8	Edamon	-	-	20360
9	Aryankavu	-	-	15739
10	Kulathupuzha	-	-	42223
11	Eroor	-	-	4299
12	Punalur (M)	-	-	3460
13	Pidavoor	-	-	1478
14	Karavalur (P)	-	-	2364
15	Anchal	-	-	2445
16	Alayamon	-	-	3774
	Total	-	14614	108755

Sl.No.	Taluks/Villages	Low land	Mid land	High land
Kottarakkara Taluk				
1	Pavithreswaram	-	2362	-
2	Kulakkada	-	2918	-
3	Mailom	-	2749	-
4	Naduvathoor	-	2270	-
5	Ezhukone	-	1724	-
6	Kareepra	-	2320	-
7	Veliyam	-	3028	-
8	Melila	-	1852	-
9	Kottarakkara	-	1740	-
10	Vettikavala	-	3623	-
11	Ummannoor	-	3443	-
12	Elamadu	-	3002	-
13	Pooyappally	-	2228	-
14	Velinalloor	-	2746	-
15	Chadayamangalam	-	4106	-
16	Ittiva	-	4389	-
17	Kadakkal	-	4890	-
18	Chithara	-	5770	-
	Total	-	55160	-
Kollam Taluk				
1	Kollam (P)	917	-	-
2	Thrikkaruva	1839	-	-
3	Munroe Island	1336	-	-
4	East Kallada	1220	-	-
5	Perinad	2492	-	-
6	Thrikkadavur	1485	-	-
7	Vadakkevila	855	-	-
8	Iravipuram	1006	-	-
9	Mayyanadu	1683	-	-
10	Paravoor	1638	-	-
11	Quilon (M)	1848	-	-
12	Mulavana	-	2664	-
13	Kottamkara	-	2531	-
14	Nedumpana	-	2806	-
15	Thrikovilvattom	-	2222	-
16	Adichanalloor	-	1688	-
17	Meenad	-	3356	-
18	Kalluvathukkal	-	3657	-
19	Poothakulam	-	1657	-
20	Kilikolloor	1121	-	-
	Total	17440	20581	-

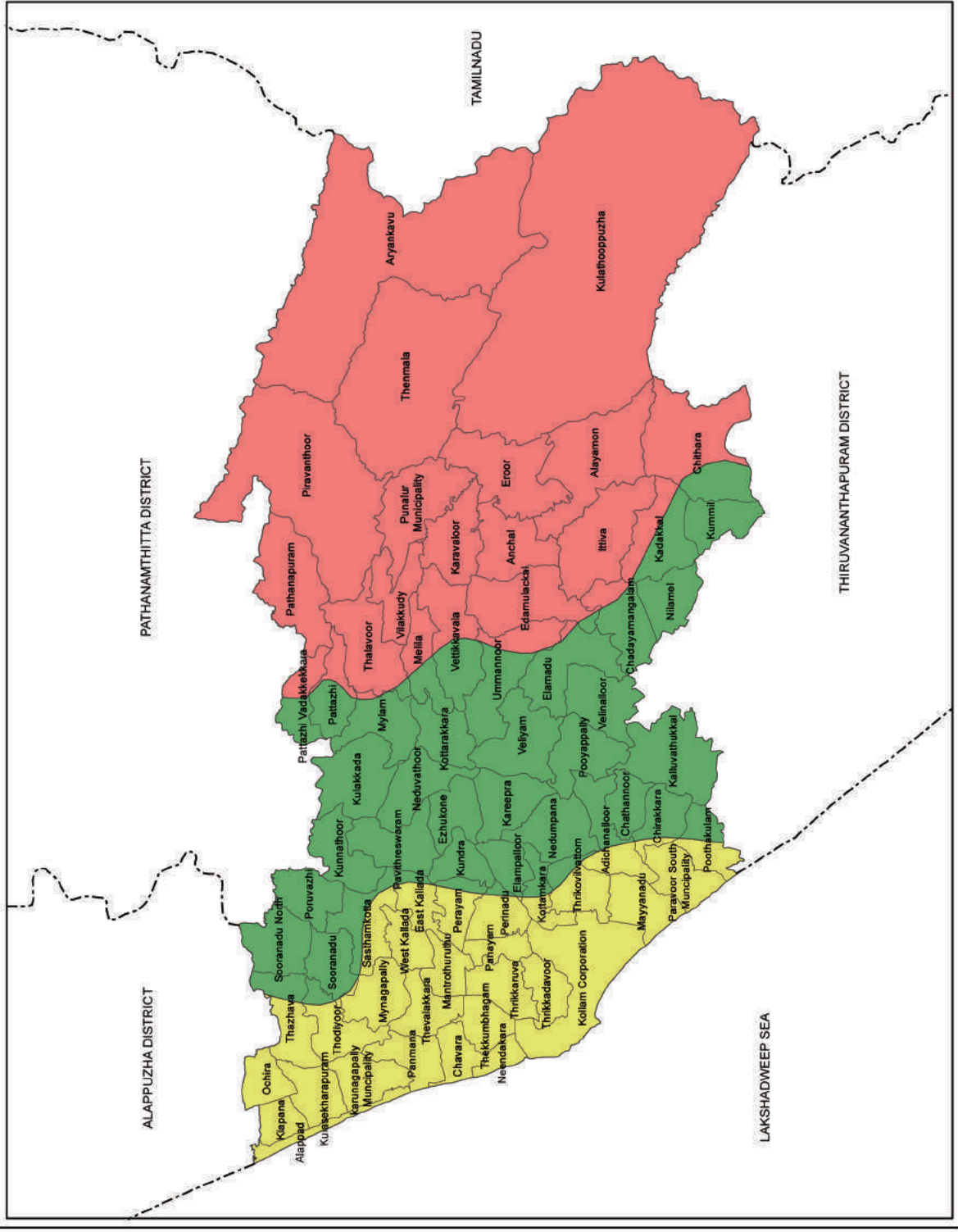


**PHYSIOGRAPHY
KOLLAM DISTRICT**

Legend



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



SOIL

Soil is an important natural resource, from it we obtain everything directly or indirectly. Its thickness varies from a few centimeters to a few meters on earth's surface, but it takes millions of years for its formation. Formation of soil is formed due to weathering by chemical, mechanical and biological forces. Formation is a very slow process as 21/2 cm of soil is formed in one thousand years. Soil is one of the major resources of land which determines the use of potential. Factors upon which formation of soil depend are (i) the parent rock (ii) topography or relief (soil cover is thin in hilly areas than on the plains) (iii) climate (it is the most important soil forming factor; weathering, i.e., breaking or disintegration of rocks depends upon the elements of climate, i.e., heat (hot/cold), rain, wind, etc.) (iv) vegetation. Soil is a natural body consisting of layers (soil horizons) that are primarily composed of minerals which differ from their parent materials in their texture, structure, consistency, colour, chemical, biological and other characteristics. The result soil is the end product of the influence of the climate (temperature, precipitation), relief (slope), organisms (flora and fauna), parent materials (original minerals), temperature and time. Kerala State is endowed with wide range of soil types.

Kollam district covers mainly four types of soils viz sandy, alluvial, laterite and forest. The sandy soil covers the entire Karunagappally taluk and a small coastal belt of Kollam taluk. Alluvial soil is important for agricultural purposes. Quilon coast and Adoor Rolling Plain cover sandy and alluvial soil. Laterite soil is found in entire region of Kottarakkara and part of Kunnathur taluks, Eastern region of Kollam taluk and Western sector of Pathanapuram taluk. Kottarakkara Undulating Upland region has sandy, alluvial and laterite soil. The forest soil covers the Eastern region of Pathanapuram taluk. Most of the area of Kulathupuzha Forested Hill is having forest loam soil.

Table: 8.1

SOILS IN KOLLAM DISTRICT (COMPREHENSIVE LEGEND)

Soil Mapping Unit	Description Major Soil	Classification	
		Major Soils	Inclusions
K01	Very deep, moderately well drained, sandy soils with moderately shallow water table on very gently sloping subdued sand dunes, with slight erosion: Associated with very deep, moderately well drained, sandy soils.	Mixed, Aquic Ustipsamments Mixed Typic Ustipsamments	Fine-loamy, Mixed, Typic Dystrypepts Coarse-loamy, Mixed Aquic Ustorthents
K02	Very deep, somewhat excessively drained sandy soils with moderately deep water table on very gently sloping beaches, with slight erosion: Associated with very deep, moderately well drained, sandy soils with moderately shallow water table.	Mixed, Typic Ustipsamments Mixed, Aquic Ustipsamments	Coarse-loamy, Mixed Aquic Ustorthents Fine, Mixed Aerlic Tropaquepts
K05	Very deep, imperfectly drained, clayey soils with shallow water table on level lands with valleys, with slight erosion.	Fine, Mixed Typic Dystrypepts Fine, Mixed Aerlic Tropaquepts	Fine, Mixed Typic Tropaquepts Fine-loamy, Mixed Ustic Kanhaplohumults
K07	Very deep, well drained, gravelly clay soils on gently sloping coastal laterites, with moderate erosion: Associated with very deep, well drained, gravelly clay soils with moderate surface gravelliness.	Clayey-skeletal, Kaolinitic, Typic Kandiusults Clayey-skeletal, Kaolinitic, Typic Kanhaplustults	Loamy- skeletal, Mixed Ustoxic Dystrypepts Clayey, Kaolinitic, Typic Kandiusults

Soil Mapping Unit	Description Major Soil	Classification	
		Major Soils	Major Soils
K08	Very deep, moderately well drained, clayey soils with moderately shallow water table in nearly level narrow valleys, with slight erosion: Associated with very deep, imperfectly drained clayey soils with moderately shallow water table on nearly level land.	Fine Mixed Typic Dystrupepts Fine Mixed Typic Trophaquepts	Clayey, Kaolinitic, Typic Kanhaplustults Fine Mixed Typic Ustropepts
K09	Very deep, well drained, gravely clay soils with moderate surface gravelliness on moderately steeply sloping laterite mounds, with moderate erosion: Associated with deep, well drained, gravelly clay soils on gently slopes.	Clayey-skeletal, Kaolinitic, Oxic Humitropepts Clay-skeletal, Kaolinitic, Ustic-Haplohumults	Clay-skeletal, Kaolinitic, Ustic-Kandihumults Fine-loamy, Mixed Typic Kandihumults
K12	Very deep, well drained, gravelly clay soils with moderate surface gravelliness on gently sloping midland laterite with valleys on Southern Kerala, with moderate erosion: Associated with very deep, well drained, clayey soils.	Clay-skeletal, Kaolinitic, Ustic-Kanhaplohumults Clayey, Kaolinitic, Typic Kandiusults	Fine-loamy, Mixed Aquic Ustifluvents Clay-skeletal, Kaolinitic, Typic Kanhaplustults
K31	Very deep, well drained, gravelly loam soils on steeply sloping medium hills with thick vegetation, with moderate erosion: Associated with very deep, well drained, clayey soils on moderate slopes.	Fine-loamy, Mixed, Ustic Humitropepts Clayey, Mixed Ustic Palehumults	Rock land Clayey, Mixed Ustic Haplohumults

Soil Mapping Unit	Description Major Soil	Classification	
		Major Soils	Major Soils
K32	Deep, well drained loamy soils on gently sloping low hills with isolated hillocks, with moderate erosion: Associated with deep, well drained, loamy soils with coherent material at 100 to 150 cm. on moderate slopes, severely eroded.	Fine-loamy, Mixed, Ustic Humitropepts Fine-loamy, Mixed Ustic-Haplohumults	Fine Mixed Ustic Humitropepts Clayey-skeletal, Mixed Ustic Humitropepts
K34	Very deep, imperfectly drained, loamy soils with moderately deep water table in nearly level valleys, with slight erosion: Associated with very deep, well drained, clayey soils on very gently slopes.	Fine-loamy, Mixed Typic Ustropepts Clayey-mixed Ustic Palehumults	Fine Loamy Mixed Tropic Fluvaquents Fine-loamy, Mixed Typic Ustifluvents
K35	Deep, well drained gravelly clay soils with coherent material at 100 to 150 cm. on moderately sloping isolated hillocks, with severe erosion: Associated with moderately shallow, well drained, gravely loam soils with coherent material at 50 to 75 cm. on very gently slopes, moderately eroded.	Clayey-skeletal, Kaolinitic Oxid Humitropepts Fine-loamy Mixed Oxid Humitropepts	Clayey-skeletal, Mixed Ustic Humitropepts Clayey, Mixed Ustic Haplohumults
K36	Very deep, well drained, clayey soils on moderately steeply sloping high hills with thick vegetation, with moderate erosion: Associated with deep, well drained, gravelly loam soils on gently slopes.	Clayey, Mixed, Ustic Haplohumults Fine-loamy, Mixed Oxid Humitropepts	Fine, Mixed, Ustic Humitropepts Rock land

Soil Mapping Unit	Description Major Soil	Classification	
		Major Soils	Major Soils
K37	Very deep, well drained, clayey soils on moderately sloping foot hills with moderate erosion: Associated with very deep, well drained, gravelly clay soils on gentle slopes.	Clayey, Mixed, Ustic Palehumults Clayey, Mixed Ustic Haplohumults	
K38	Very deep, well drained, clayey soils on moderately steeply sloping high hills with thin vegetation, with moderate erosion: Associated with rock outcrops.	Clayey, Mixed, Ustic Palehumults Rock land	Fine, Mixed, Ustic Humitropepts Fine-loamy, Mixed Ustic Humitropepts

Soils of the Lowland - K01, K02, K05, K07
Soils of the Midland - K08, K09, K12
Soils of the South Sahyadri - K31, K32, K37, K38
Soils of the Nilgris - K34, K35, K36

Table:8.2

LEGEND FOR THE SOIL MAP OF KOLLAM DISTRICT

Sl.No.	Map Symbol	Depth	Texture	Slope	Drainage
1	K01	vd	s	vg	mw
2	K02	vd	s	vg	e
3	K05	vd	c	vg	l
4	K07	vd	gc	g	w
5	K08	vd	c	vg	mw
6	K09	vd	gc	ms	w
7	K12	vd	gc	g	w
8	K31	vd	gl	s	w
9	K32	d	l	g	w
10	K34	vd	l	vg	l
11	K35	d	gc	m	w
12	K36	vd	c	ms	w
13	K37	vd	c	m	w
14	K38	vd	c	ms	w

Depth

1	d	deep
2	vd	very deep

Slope

1	g	gentle
2	vg	very gentle
3	m	moderate
4	s	steep
5	ms	moderately steep

Texture

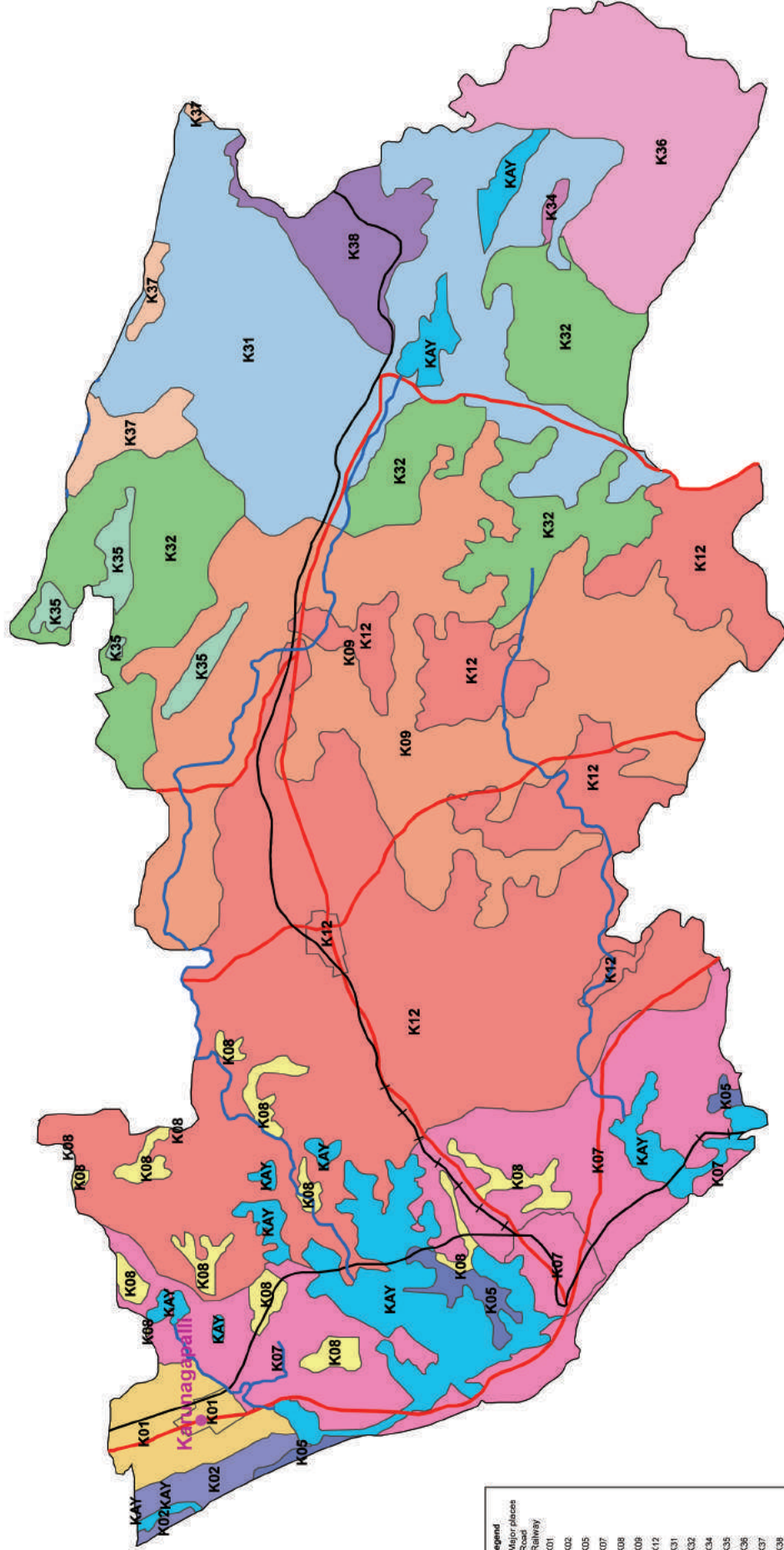
1	s	sandy
2	gc	gravelly clay
3	c	clay
4	l	loam
5	gl	gravelly loam

Drainage

1	mw	moderately well drained
2	w	well
3	e	excessive
4	i	imperfectly

SOILS - KOLLAM DISTRICT

SCALE - 1:350,000



Kerala State Land Use Board

WATER RESOURCES

In most developing countries, agriculture is the dominant user of water, accounting for more than 85% of all water use. Use of water in agriculture raises significant issues for water resources management like issues dealing with water scarcity, competing demands from other sectors, irrigation service delivery and system management, water use efficiencies are so forth. The primary objective in coming years will be to balance water supply and demand among users to ensure adequate water for agriculture and sustainable irrigation system management while satisfying other needs. Investments in irrigation are changing globally in response to changes in environment and experience with previous projects. In 1970's and 1980's investment typically involved large irrigation and drainage projects with considerable infrastructure development. In 1990's investment often supported system rehabilitation and management and more recently to small irrigation schemes. Increased water scarcity has shifted the focus from exploitation of water resources and building infrastructure to improvement of water use efficiency.

The basic premise of water resource management is that manages and develops the river basins as an integrated approach. This is always legally and politically complex due to the challenges of allocation between users and uses. In many cases the need of river infrastructure such as weirs, dykes, regulators and other storage structures are primary drivers for adopting institutional solutions. The investment in storage structures is essential to optimize water use as well as to address the growing number of water conflicts. The surface irrigation consists of major chunk of irrigation infrastructure in the State. There are 18 dams in the state intended for irrigation. Out of this, 14 have storages and remaining are barrages.

Live storage capacities of irrigation Reservoirs

The live storage position of the reservoirs during the beginning and end of the monsoon period for 2008 to 2011 are given in the following table.

Table: 9.1

(Mm ³)					
Sl. No.	Item	2008	2009	2010	2011
1	Storage at the beginning of the Monsoon	452	392	531	525
2	Storage at the end of the Monsoon	1156	1180	1213	1274
3	Increase due to Monsoon	704	788	682	749
4	Average for 10 years (2002 – 2011)				
	(I) at the beginning of the monsoon	430.48			
	(ii) at the end of the monsoon	1133.16			
	(iii) increase in monsoon storage	702.68			

The awareness among the public about the importance of the ground water has increased during the recent years. The need for ground water being felt by all sectors because of the shortage of surface water sources to mitigate the growing needs of the society. Recently the problems of decline in water table, contamination of ground water, sea water intrusion etc are being reported at many places. The shortage of rainfall in recent years and the increased utilization of ground water caused concern among the public that water may become scarce commodity in future. In order to assess the real situation of ground water conditions, it is very essential to monitor the ground water level and water quality over time and space. Central Ground Water Board monitoring water level and quality through a network of Ground Water Monitoring Wells distributed through out State. The monitoring started from the year 1969 for the nine monitoring wells and the number of monitoring wells was increased during the subsequent years and became 224 by the year 1979 and the number became 460 by the year 1988. Presently the total number of Ground Water Monitoring Wells (GMMWs) through out the Kerala State is 941. Water level is being monitored four times a year during January, April, August and November months and water quality is being monitored from the water samples collected from GMMWs during April.

The total number of GMMWs as on 31.3.2010 is 941. Out of these, 662 are dug wells tapping phreatic aquifers and 279 are bore wells/tube wells tapping deeper aquifers of confined/semi-confined nature. These GMMWs are spread over all the

physiographic divisions of the State. About 62% of the GMMWs fall in the midland region, 18% in coastal plains, 15% in highlands and 5% in plateau region. Among the GMMWs tapping phreatic acquire, 65% are tapping laterite, 17% tapping weathers and fractured crystalline, 15% tapping coastal alluvium and 3% tapping reverie alluvium. The data of these GMMWs were analyzed to understand the depth to water level scenario in the State, annual fluctuation in the water levels due to the monsoon recharge, long term trend in water levels and the nature of the quality of ground water and the salient features are brought out in this report.

RIVERS

There are 41 west flowing and 3 east flowing rivers, most of them having their source in the Western Ghats and draining into the Arabian Sea. Some of these rivers have a portion of their catchments in the adjoining States of Karnataka and Tamil Nadu. In addition, there are three rivers which also originate from the Western Ghats, but they flow eastwards into the States of Karnataka and Tamil Nadu. The important rivers in the district are Achenkovil, Pallikkal, Kallada, Ithikkara and Ayroor.

Achenkovil River

Several small streams originate from Pasukida Mettu, Ramakkal Teri and Rish Malai at altitudes ranging between +700m and +160m above M.S.L join together to form Achenkovil River. The length of the river is 128km. The total drainage area of the river 1484 sq.km covering portions of Kunnathur, Mavelikkara, Chengannoor, Karthikappally, Karunagappally and Pathanamthitta Taluks. The important towns in the basin are Pandalam, Mavelikkara and Harippad.

Pallikkal River

The river rises from the Southern slopes of Kalaritharakunnu at an elevation of less than +60m M.S.L North of Adoor. It initially flows in a southerly direction and after passing Adoor it takes a South – Westerly direction till Nellimugal. River has a length of 42km with a drainage area of 220 sq.km.

Kallada River

River is formed by three rivers Kulathupuzha, Chendumi and Kalthuruthy which join together near Parappan by the side of Trivandrum-Shencottah road. The length of the river is 121km with a drainage area of 1699 sq.km. The catchment lies entirely within the State. The important towns situated in the basin are Punalur, Pathanapuram, Kottarakkara, Adoor, Kundara and Quilon.

Ithikkara River

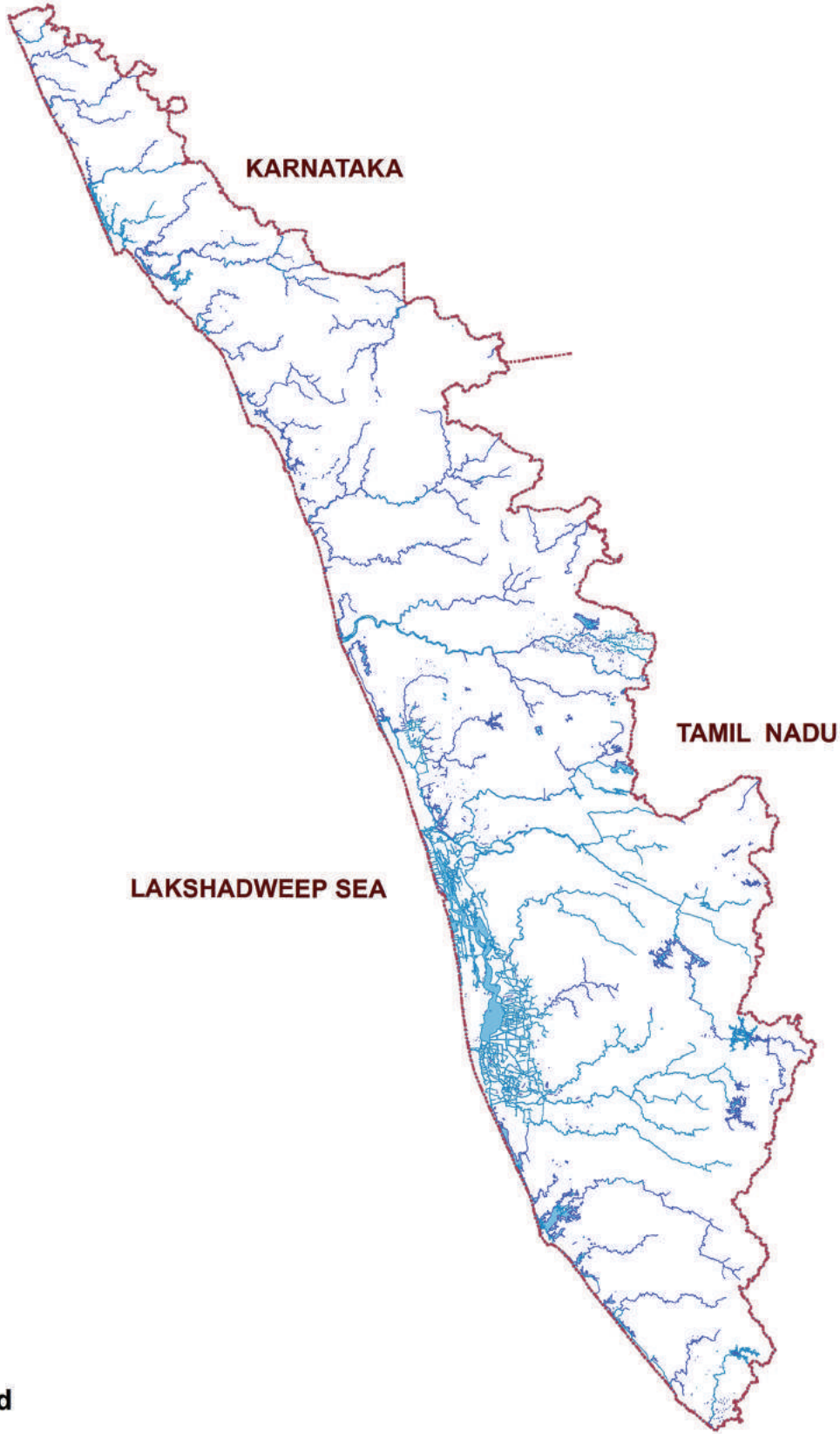
Ithikkara River originates from the low hills situated near Madathurikunnu at about +240m above M.S.L. and from the hills located South West of Kulathupuzha. Vattaparambu stream and Kundumon thodu are its important tributaries. The river passes through the villages of Vayala, Pampira, Ayur, Thiruvambhagam, Atturkonam and Adichanalloor. Kottayam, Chathannur and Chadayamangalam are some of the important places in the basin. River has a length of 56 km. and a catchment area of 642sq.km. The complete catchment lies within the State.

Ayroor River

Ayroor River is rising from Navaikulam. The length of river is 17km. and it drains an area of 66sq.km.

Source: ER, CGWD, PWD.

RIVERS OF KERALA



Legend



-  STATE BOUNDARY
-  RIVER/ WATERBODY

Table: 9.2

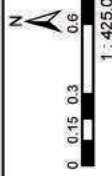
GROUND WATER STATISTICS (2008-09)

Sl. No.	Assessment Unit/District	Command/Non-Command/Total	Recharge from rainfall during monsoon season	Recharge from other sources during monsoon season	Recharge from rainfall during non-monsoon season	Recharge from other sources during non-monsoon season	Total Annual Ground Water Recharge (4+5+6+7)	Provision for Natural Discharges
1	2	3	4	5	6	7	8	9
1	Anchal	Non-Command	10555.27	17.85	3788.66	423.00	14784.79	1478.48
2	Anchalummoodu	Non-Command	1053.39	9.15	378.10	42.49	1483.13	148.31
3	Chadayamangalam	Non-Command	2777.98	18.23	997.12	351.00	4144.32	414.43
4	Chavara	Non-Command	1524.56	0.00	428.43	90.00	2042.99	102.15
5	Chittumala	Non-Command	1034.59	12.94	308.35	380.00	1735.87	86.79
6	Ithikkara	Non-Command	2205.72	16.20	791.71	262.00	3275.63	327.56
7	Karunagappally	Non-Command	1442.83	7.01	379.46	150.00	1979.30	98.96
8	Kottarakkara	Non-Command	1272.85	13.94	456.80	482.00	2225.39	222.54
9	Mukhathala	Non-Command	982.61	6.84	352.70	400.00	1742.15	174.21
10	Oachira	Non-Command	1379.40	7.80	404.29	100.00	1891.49	94.57
11	Pathanapuram	Non-Command	3122.56	20.99	1120.80	305.00	4569.35	456.93
12	Sasthamkotta	Non-Command	1225.91	12.89	406.38	616.00	2261.18	113.06
13	Vettikkavala	Non-Command	1620.40	15.88	581.62	570.00	2787.90	278.79
	Total (Ha.M)	Non-Command	30198.07	159.72	10394.42	4171.49	44923.48	3996.78
	Total (MCM)	Non-Command	301.98	1.60	103.94	41.71	449.23	39.97

Table: 9.2 Continued.....






Sl. No.	Assessment Unit/District	Net Annual Ground Water Availability	Existing Gross Ground Water Draft for irrigation	Existing Gross Water Draft for domestic and industrial water supply	Existing Gross Ground Water Draft for all issues (11+12)	Provision for domestic, and industrial requirement supply upto next 25 years	Net Ground Water Availability for future irrigation development (10-11-14)	Stage of Ground water Development (13/10)*100
1	2	10	11	12	13	14	15	16
1	Anchal	13306.31	431.58	1145.12	1576.70	1271.39	11603.34	11.85
2	Anchalummoodu	1334.82	202.76	984.63	1187.39	1092.59	39.47	88.96
3	Chadayamangalam	3729.89	439.03	1030.63	1469.66	1143.02	2147.84	39.40
4	Chavara	1940.84	178.10	762.98	941.08	846.21	916.53	48.49
5	Chittumala	1649.08	299.33	582.72	882.05	646.92	702.83	53.49
6	Ithikkara	2948.06	389.10	1145.42	1534.52	1271.82	1287.14	52.05
7	Karunagappally	1880.33	188.64	808.55	997.19	1130.12	561.57	53.03
8	Kottarakkara	2002.85	334.36	871.43	1205.79	966.07	702.42	60.20
9	Mukhathala	1567.93	189.22	900.96	1090.18	888.46	490.25	69.53
10	Oachira	1796.92	197.97	681.14	879.11	756.21	842.73	48.92
11	Pathanapuram	4112.41	475.44	984.54	1459.98	1092.70	2544.28	35.50
12	Sasthamkotta	2148.12	308.26	806.93	1115.19	895.72	944.14	51.91
13	Vettikkavala	2509.11	381.17	991.14	1372.31	1100.32	1027.63	54.69
	Total (Ha.M)	40926.67	4014.96	11696.19	15711.15	13101.55	23810.17	38.39
	Total (MCM)	409.27	40.15	116.96	157.11	131.02	238.02	38.39

Source: Central Ground Water Department



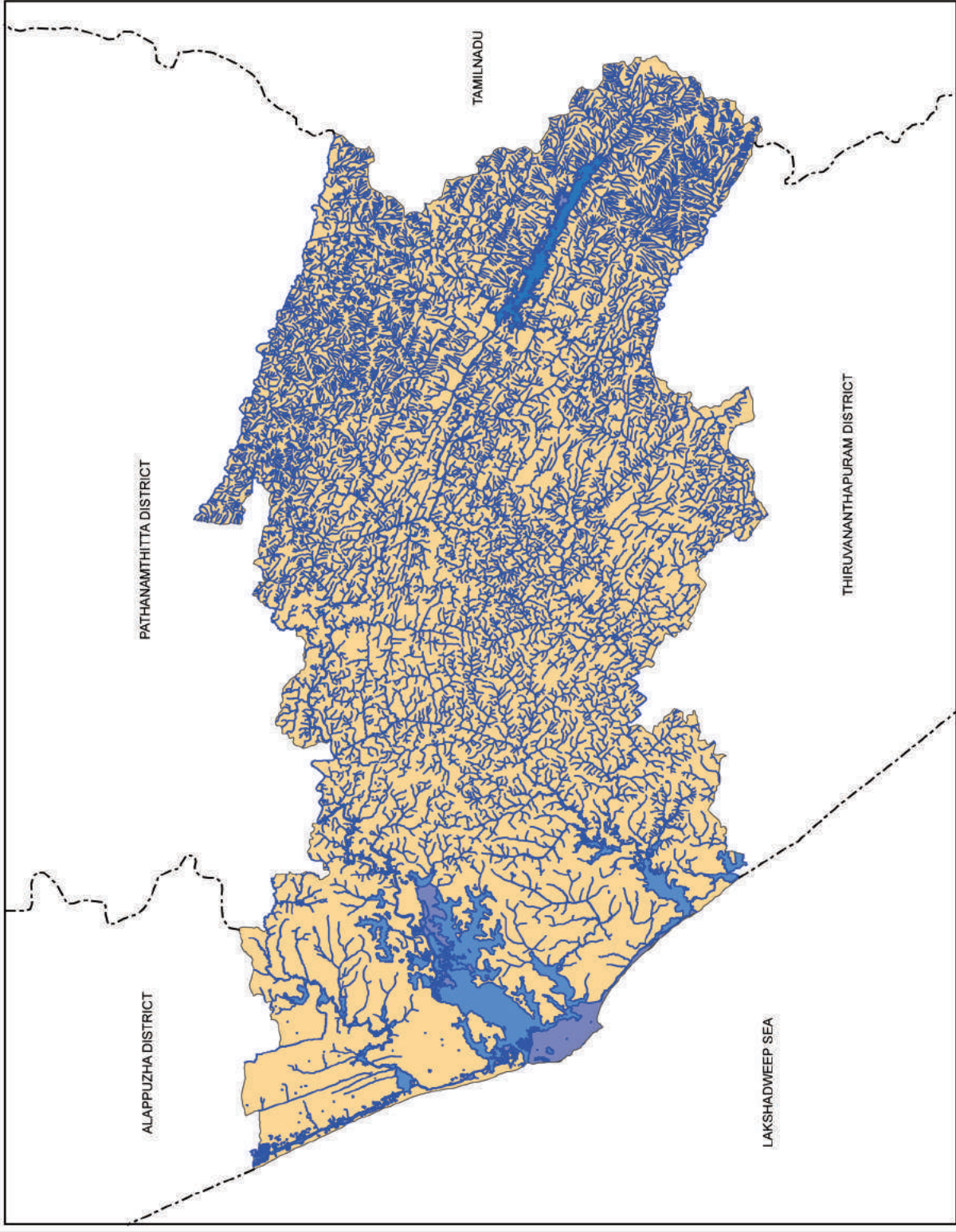
**WATER RESOURCE
KOLLAM DISTRICT**

Legend

-  Drains
-  Open Area
-  Miscellaneous
-  Reservoir
-  Waterbody



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



MINERALS

The availability of minerals determines the pace of economic development of a State to a great extent. Minerals are basically natural resources. Kerala State is endowed with a number of occurrences/deposits of minerals such as Heavy Mineral Sands (Ilmenite, Rutile, Zircon, Monazite, Sillimanite), Gold, Iron Ore, Bauxite, Graphite, China Clay, Fire Clay, Tile and Brick Clay, Silica Sand, Lignite, Limestone, Limeshell, Dimension Stone (Granite), Gemstones, Magnezite and Steatite etc. However mining activities on large scale are confined mainly to a few minerals - Heavy Mineral Sands, China Clay and to a lesser extent Limestone/Limeshell, Silica Sand and Granite. In fact, Heavy Mineral Sand and China Clay contribute more than 90% of the total value of mineral production in the State.

The district is immensely rich in mineral sources and is endowed with large deposits of beach sand containing Ilmenite, Monozite, Clays, Bauxite, Graphite and Laterite. Ilmenite and Monozite are found at Chavara, Neendakara and Koilthottam. The mineral deposit of the Kollam coast containing Monozite is one of the richest in the world and reported to have the highest content of Thorium. Good quality bauxite occurs in Sooranadu - Vadakkemuri, Adichanallur and Chittavattom areas. Aluminium oxide content varies between 40 to 50%. China Clay both primary and secondary origin suitable for ceramics, paper coating, textile and rubber industries occurs in Kundara, Mulavana, Vellichikala, Perumbuzha, Kalluvathukkal and Chathanoor. Phologophite mica occurs near Punalur. The khondalite suite has graphite, associated with it. China Clay is concentrated at Chathannur, Kundara and Mulavana. Large deposits of residual clays occur at Kundara. Fire clay deposits were discovered in Padappakara, Kundara, Pallimon, Ambalathumbhagom and Vadakkumthala. Ball clay occurs in large quantities at Polachira and Padappakkara. Limeshell deposits were seen in Ashtamudi Lake and Vembanad Lake. Bauxite deposits are available in Adichanalloor and disseminated Graphite in Punalur. Gemstones were discovered in Kulathupuzha and Mineral Sands in Chavara and Kayamkulam.

Table: 10.1

INVENTORY OF THE MINERAL RESOURCES OF THE STATE

Sl. No.	Name of Minerals	Occurrence	Reserves (Million Tonnes)	Uses
1	Gold	Wayanad, Maruda, Nilambur, Malappuram	0.55	Manufacture of ornaments
2	Iron	Kozhikode (Eleyettimala, Naduvallur Nanminda, Cheruppa, Alampara) Malappuram (Korattimala)	83.04	Iron is useful in building (Bridge, highway, rail road, etc.), transportation (car, train, boats, plane, etc.) tools (knife, machines, etc.)
3	China clay	Thiruvananthapuram, Kollam, Kannur, Kasaragod	172	Ceramics, pottery, paper, textiles, rubber and paints
4	Ball clay	Thiruvananthapuram (Nadayara) Kollam (Kumbalam, <i>Kanjirottusery</i> , Mulavana) Kannur (Pattuvam, Karivalloor, <i>Eariapuram</i> , Pazhayangadi)	1.67	Manufacture of Refractory products, Ceramic Granite tiles, Glazed tiles, table ware & High tension electric insulators etc.
5	Fire clay	Kollam (Kundamon, Pallikkal), Alappuzha (Thamarakulam), Ernakulam (Amballoor, Kanjiramattom, Keezhumadu), Thrissur (Poomangalam) Kannur (Pattuvam)	11.55	Manufacture of firebrick and of various accessory utensils, such as crucibles, saggars, retorts and glass pots, used in the metal working industries.
6	Silica	Coastal area of Alappuzha	28.40	Used in ceramics and to make glass with. It can also be used to strength iron and steel.
7	Bauxite	Thiruvananthapuram (Mangalapuram, Chilambil, Sasthavattom), Kollam (Poruvazhy, Aadichanalloor) Kannur, Kasaragod	12.5	Manufacture of Aluminium. It is used in cement, chemicals, face makeup, soda cans, dishwashers, siding for houses.

Sl. No.	Name of Minerals	Occurrence	Reserves (Million Tonnes)	Uses
8	Lime shell	Alappuzha, Ernakulam (Vembanad lake), Kottayam, Thrissur (Vadanapally) Kannur (Payyannur, Thrikkaripur)	4.05	Manufacture of a variety of products including white cements.
9	Limestone	Palakkad (Walayar)	24	Manufacture of cement, calcium carbide, Iron & Steel Industry etc.
10	Graphite	Thiruvananthapuram (Veli, Kuttichal), Ernakulam (Vadakode), Kottayam (Chirakadavu)	2.81	Crucible Foundry, Refractory, Paints & Lubricant Industries
11	Lignite	Kannur (Madai), Kasaragod (Nileswaram, Palayi)	9.65	Used as fuel for steam electric power generation in some countries
12	Magnezite	Palakkad (Attapadi)	0.037	Refractory bricks for furnaces

Table: 10.2

NUMBER OF QUARRYING PERMITS ISSUED DURING 2009-10 (Mineral wise)

Sl. No.	District	Name of Mineral						Total
		Granite Building Stone	Late rite	Brick Clay	Ordinary Sand	Sea shell	Lime Shell	
1	Thiruvananthapuram	158	4	5	4			171
2	Kollam	112	11	7	25			155
3	Pathanamthitta	162	9	8				179
4	Alappuzha		51	4				55
5	Kottayam	274		14	239			527
6	Idukki	172			118			290
7	Ernakulam	294	11	14	2		1	322
8	Thrissur	299	60	82				441
9	Palakkad	142	7		283			432
10	Malappuram	326	489	17				832
11	Kozhikode	336	85	30	20			471
12	Wayanad	151	3	12	4			170
13	Kannur	218	226		37	1		482
14	Kasaragod	172	336		148			656
	Total	2816	1292	193	880	1	1	5183

Table: 10.3

**NUMBER OF MINING LEASES IN THE STATE OF KERALA AS ON 31-03-2010
(Mineral wise)**

Sl. No.	District	Name of Mineral									
		Graphite	China clay	Laterite	Iron ore	Quartz	Lime shell	Mineral sand	Lime stone	Silica sand	Quartzite
1	Thiruvananthapuram		30								
2	Kollam		1					3			
3	Pathanamthitta										
4	Alappuzha			1			4			22	
5	Kottayam						2				1
6	Idukki										
7	Ernakulam	1									
8	Thrissur										
9	Palakkad								1		
10	Malappuram										
11	Kozhikode				1						
12	Wayanad										
13	Kannur		2	5							
14	Kasaragod		1	1							
	Total	1	34	7	1	1	6	3	1	22	1

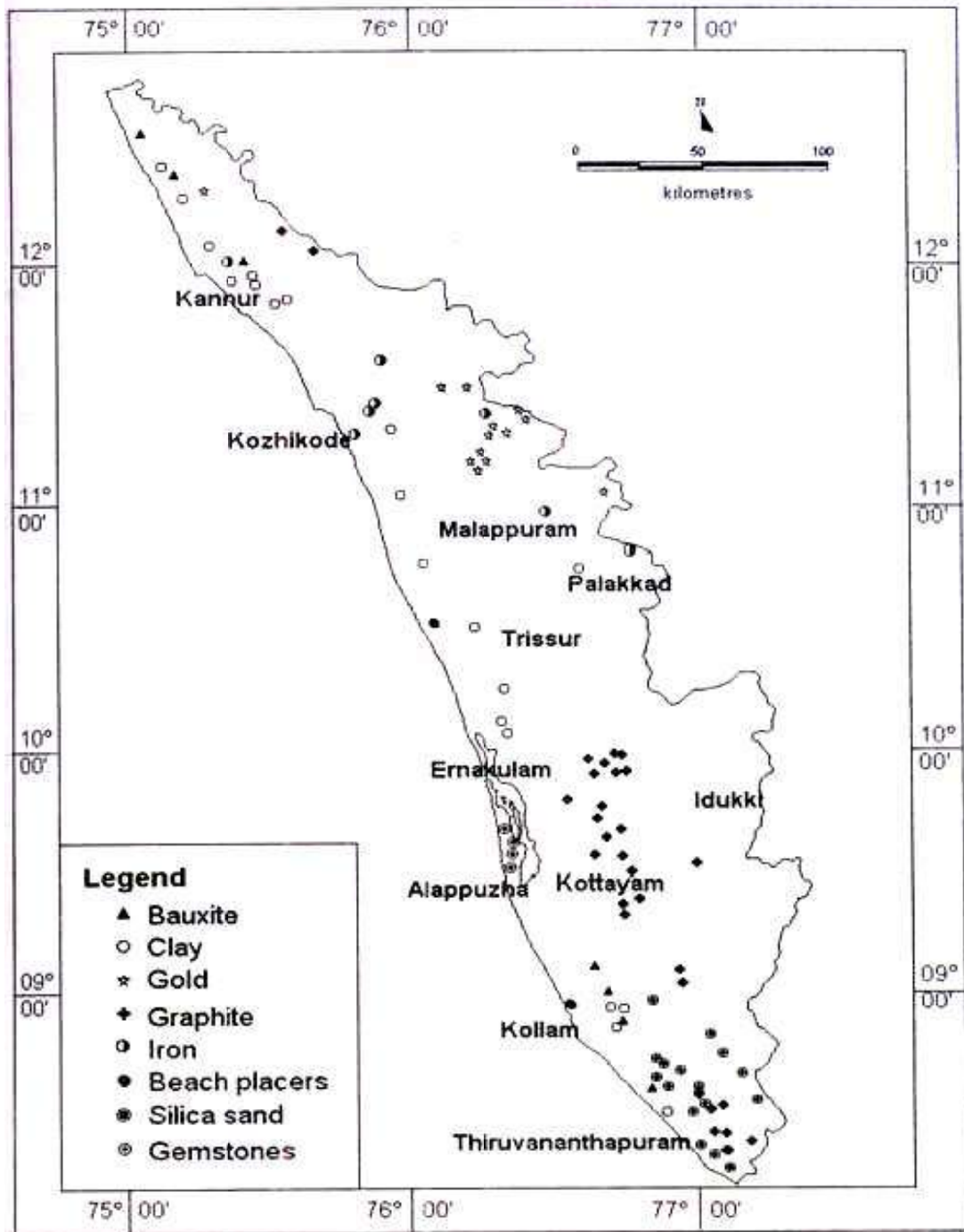
Table: 10.4

DISTRICT WISE REVENUE COLLECTION FOR 2011-12

Sl. No.	Districts	Major minerals	Minor minerals	Total
1	Thiruvananthapuram	11661103	24533618	36294721
2	Kollam	47548382	14615433	62163815
3	Pathanamthitta	0	20203550	20203550
4	Alappuzha	8138592	2364614	10503206
5	Kottayam	1875258	20363947	22239205
6	Idukki	0	13817639	13817639
7	Ernakulam	18720	48886751	48905471
8	Thrissur	0	39086404	39086404
9	Palakkad	34417152	34307255	68724407
10	Malappuram	158850	33863331	34022181
11	Kozhikode	0	17572244	17572244
12	Wayanad	0	11442866	11442866
13	Kannur	1582350	27790851	29373201
14	Kasaragod	4040597	12668970	16709567
15	KMS(NR)	52700	1926000	1978700
16	KMS(SR)	0	915000	915000
17	KMS(CR)	0	4882000	4882000
18	DRT	2183979	1970672	4154651
	Total	111677683	331311145	442988828

Source: Infrastructure Statistics of Kerala, 2011

Mineral reserves (2000-01)



Mineral map of Kerala (After Dept. of Mining and Geology, 2005)

Source: www.Kerenvis.nic.in

LAND USE

The spatial information on land use/land cover and their pattern of change is essential for planning, utilization and management of the country's land resources. Land use/land cover inventories are assuming increasing importance in various resource sectors like agriculture planning, settlement and cadastral surveys, environmental studies and operational planning based on agro-climatic zones. Information on land use/land cover permits a better understanding of the land utilization aspects on cropping pattern, fallow land, forest and grazing land, wasteland, surface water bodies etc., which is very vital for developmental planning. Further the draft outline of the National land Use Policy having strongly re-iterated the main thrust and strategy on "Optimum Land Use Planning" for sustained efforts and economic returns, up to date information on the nature, distribution and extent of land use/land cover will be of great relevance. Space remote sensing with its wider scope, rapid and repetitive coverage capabilities, can provide highly reliable and accurate estimate on the various resources.

Realising its importance, land use mapping on 1:250,000 scales was envisaged for the entire country using satellite data by Department of Space in 1986 as a part of Remote Sensing Application Mission Project. The study enabled to arrive at a Nationwide Land use/Land cover classification system.

Subsequently, the Government of Kerala felt the need for having up to date information for the whole State on agriculture and other land use categories and their estimate for agro-climate zone planning in 1:50,000 scale. The work undertaken by the Board, involves preparation of land use maps on 1:50,000 scale for 14 districts through digital techniques.

The Kerala State Land Use Board was entrusted with the task of preparing the Land use/land cover maps of State, by interpretation of satellite imagery. Standard False Color Composite (FCC) generated on 1:12,500 scale of IRS (LISS-IV) was interpreted for identification of different Land use/Land cover classes, based on the image characteristics like tone, size, shape, pattern, texture, location, association etc. by developing a detailed interpretation key for each district.

Multi-date imagery was essentially interpreted to identify and map the details of crop land in Viruppu and Mundakan seasons the area under double crop, fallow lands and for better boundary delineation of boundaries of the other land use/land cover classes. Ancillary data like topographical maps and other thematic maps of the district was also used for the interpretation.

METHODOLOGY

The methodology is essentially digital interpretation of IRS-1C (LISS - IV) geo-coded image (FCC) for identification of different categories of land use/land cover using standard visual image interpretation techniques which is based on interpretation elements such as tone, texture, shape, size, etc. supplemented by the local knowledge of the interpreter. Other ancillary data like topographical maps and any other available information will be used for identification and mapping of land use/ land cover. The interpreted details are to be verified on the ground in order to rectify the doubtful areas, and based on the ground verification, the wasteland boundaries (interpreted details) are to be finalized.

The geographical area under different land use/land cover categories was then computed and expressed as simple percentage to the total geographical area of each district.

Land Use/Land Cover Categories and their Spatial Distribution- Kollam

Land use refers to man's activities and the various use which are carried on land. Land cover refers to, "natural vegetation, water bodies, rock/soil, artificial cover and others resulting due to land transformations".

A brief description of the major land use/land cover categories observed in the Kollam district and their spatial distribution is given below:

i) Built up land

It is defined as an area of human habitation developed due to non-agricultural use and that which has a cover of buildings, transport, and communication, utilities in association with water, vegetation and vacant lands. An area 6926 ha accounting for 2.79 per cent of the TGA is estimated under this category.

ii) Agricultural land

It is defined as the land primarily used for farming and for production of food, fibre and other commercial and horticultural crops. It includes land under crops (irrigated and unirrigated), fallow land and plantation area under agricultural tree crops planted adopting certain agricultural management techniques. This is the major category occupying an area of 144928 ha accounting for 56.38 per cent of the TGA. Of these, the paddy area covers an area of 10820 ha. Nearly 5320 ha of paddy area has been converted to other land uses. The mixed crop which covers an area of 50744 ha is the major land use identified under this category.

iii) Forest

It is an area bearing an association predominantly of trees and other vegetation types capable of producing timber and other forest produce. It includes notified forests, private forests and vested forests, of which only the notified forests possess territorial boundaries. The other categories do not have any demarcation in the ground as well as in the concerned toposheets. This category includes Evergreen/Semi-evergreen and Deciduous forests, degraded forests where the vegetative (crown) density is less than 20% of the canopy cover, forest blanks described as openings amidst forests without any tree cover and forest plantations of trees of forestry importance and raised on forest lands. This category accounts for 84293 ha, which is 33.96 per cent of the total geographical area.

iv) Waste lands

It is described as degraded land which can be brought under vegetative cover with reasonable efforts and which is currently under utilized and land which is deteriorating due to lack of appropriate water and soil management or on account of natural causes. The three major classes in the category are; a) Land with or without scrub which occupy higher topography like uplands or high grounds with or without scrub, generally prone to degradation or erosion b) underutilized/degraded notified forest - scrub dominated and c) barren rocky/stony waste/sheet rock area which are rock exposures of varying lithology and devoid of soil cover and vegetation. They occur amidst hill forests as opening or scattered as isolated exposures or loose fragments of

boulders or as sheet rocks on plateau and plains. The waste lands occupy an area of 5231 ha accounting for 2.11 percent of the total geographical area.

v) Water bodies

It is an area of impounded water, area in extent and often with a regulated flow of water. It includes manmade reservoirs/lakes/tanks/canals, besides natural lakes, rivers/streams and creeks. The water bodies mapped occupy an area of 11816 Ha accounting for 4.76 percent of the total area.

The land use/land cover categories identified and mapped in the district is furnished in the table below:

Table: 11.1

LAND USE / LAND COVER CATEGORIES- KOLLAM

(Area in Sq.Km)

SI.No.	Category	Area	Percentage
1	Built up land (urban) - industrial	0.01	0
2	Built up land (urban) - commercial	46.78	1.88
3	Built up land (urban) - beaches	4.2	0.17
4	Built up land (rural) - residential	17.65	0.71
5	Built up land (rural) - mixed builtup	0.62	0.02
6	Paddy - viruppu	82.96	3.34
7	Paddy - viruppu + mundakan	25.24	1.02
8	Paddy reclaimed arecanut	2.79	0.11
9	Paddy reclaimed coconut	3.69	0.15
10	Paddy reclaimed rubber	2.1	0.08
11	Paddy reclaimed mixed crop	6.53	0.26
12	Paddy reclaimed banana	32.22	1.3
13	Paddy reclaimed banana + tapioca	4.19	0.17
14	Paddy reclaimed residential area	1.68	0.07
15	Paddy - fallow	8.57	0.35
16	Tea	1.49	0.06
17	Rubber	513.03	20.67
18	Coconut	48.02	1.93
19	Oil palm	4.11	0.17
20	Tea + Eucalyptus	0.76	0.03

21	Teak	0.22	0.01
22	Mixed crop	507.44	20.45
23	Coconut dominant mixed crop	154.24	6.21
24	Semi evergreen/Evergreen - Dense mixed forest	5.66	0.23
25	Semi evergreen/Evergreen - Dense mixed forest (Reserve Forest)	416.81	16.79
26	Semi evergreen/Evergreen - Dense mixed forest mainly bamboo	0.2	0.01
27	Semi evergreen/Evergreen - Dense mixed forest mainly bamboo (Reserve Forest)	0.17	0.01
28	Deciduous - Dense mixed forest mainly bamboo + teak (Reserve Forest)	64.01	2.58
29	Deciduous - Open mixed forest (Reserve Forest)	1.62	0.07
30	Deciduous - Scrub forest	11.05	0.45
31	Forest plantation - Teak (Reserve Forest)	231.35	9.32
32	Forest plantation - Eucalyptus (Reserve Forest)	10.37	0.42
33	Forest plantation - Rubber (Reserve Forest)	65.29	2.63
34	Forest plantation - Cashew (Reserve Forest)	0.56	0.02
35	Forest plantation - Oilpalm (Reserve Forest)	20.1	0.81
36	Forest plantation - Tea (Reserve Forest)	6.59	0.27
37	Forest plantation - Bamboo (Reserve Forest)	2.05	0.08
38	Forest plantation - Teak + Softwood (Reserve Forest)	7.1	0.29
39	Land with scrub	11.15	0.45
40	Land without scrub	0.3	0.01
41	Mining/Industrial wastelands	6.51	0.26
42	Barren rocky/sheet rock area	0.59	0.02
43	Degraded land under plantation crop (Tea)	1.78	0.07
44	Degraded land under plantation crop (Teak)	0.04	0
45	Degraded land under plantation crop (Rubber)	24.57	0.99
46	Degraded land under plantation crop (Cashew)	0.08	0
47	Degraded land under plantation crop (Oil palm)	2.82	0.11
48	Coastal sand	0.08	0
49	Waterlogged area	4.17	0.17
50	Sands/riverine	0.22	0.01
51	Water bodies	118.16	4.76
	Total	2481.94	100

Table:11.2

ANCHAL BLOCK

Sl. No.	Land Use	Alayamon	Anchal	Aryankavu	Edamulackal	Eroor	Karava loor	Kulathoopuzha	Themmala
1	Agriculture plantation (Arecanut)								
2	Agriculture plantation (Banana)								
3	Agriculture plantation (Cashew)								
4	Agriculture plantation (Coconut)		66.13		11.17		85.91		
5	Agriculture plantation (Mixed)	1369.96	1665.08	0.61	2331.66	2740.2	942.75	3675.93	622.49
6	Agriculture plantation (Rubber)	381.04	744.09	1355.04	972.05	1041.1	1135.79	1615.68	1817.61
7	Agriculture plantation (Tea)			694.18				824.46	323.82
8	Barrenrock/Stonywaste/Sheetrock	20.73		386.72				305.10	619.51
9	Built-up (Cities/Town/Villages)	16.40	71.97	11.66	47.25	27.79	42.64	33.96	19.33
10	Cropland (Kharif)								
11	Doublecrop (Kharif+Rabi)	153.96	156.99	33.62	166.98	269.02	408.5		
12	Fallow land								
13	Forest deciduous (Dense)			1.85					
14	Forest deciduous (Open)								
15	Forest deciduous (scrub/degrade)			78.93				488.95	
16	Forest evergreen (Dense)			5344.25				22875.12	1248.56
17	Forest evergreen (Open)							30.07	6588.54
18	Forest plantations	3262.98		12312.14		60.69		5179.77	
19	Forest mangroves (Littoral Swamp)								
20	Land with scrub	376.43		1158.26	119.73	95.19		1534.64	1271.39
21	Land without scrub			105.41				2022.04	315.68
22	Marshy/Swampy								
23	Mining/Industrial waste	1.73						2.72	
24	River/Waterbodies		0.01	37.71	2.21	14.88		1251.06	54.05
25	Sandy area								
26	Wetlands (Waterlogged)								
	Panchayath Total	5583.23	2704.27	21520.38	3651.05	4248.88	2615.59	39839.50	12880.98
	Block Total				93043.88				

Table:11.3

CHADAYAMANGALAM BLOCK

Sl. No.	Land Use	Chadaya mangalam	Chithara	Elamadu	Ittiva	Kadakkal	Kummil	Nilamel	Velinalloor
1	Agriculture plantation (Arecanut)								
2	Agriculture plantation (Banana)								
3	Agriculture plantation (Cashew)				72.42	7.24		20.51	
4	Agriculture plantation (Coconut)	11.35							
5	Agriculture plantation (Mixed)	1756.81	3453.61	1866.8	2901.7	2198.94	1340.45	1255.79	1683.11
6	Agriculture plantation (Rubber)	470.87	859.96	768.42	575.43	592.45	181.07	458.64	559.06
7	Agriculture plantation (Tea)								
8	Barrenrock/Stonywaste/Sheetrock	31.14	5.21	13.41	2.21	3.22	14.10		12.97
9	Built-up (Cities/Town/Villages)		36.49	12.62	46.82	51.36	6.64	85.21	42.85
10	Cropland (Kharif)			5.85					
11	Doublecrop (Kharif+Rabi)	212.89	292.45	190.61	387.07	182.41	210.81	32.53	179.15
12	Fallow land								
13	Forest deciduous (Dense)								
14	Forest deciduous (Open)								
15	Forest evergreen (Dense)								
16	Forest mangroves (Littoral Swamp)								
17	Forest deciduous (scrub/degrade)								
18	Forest evergreen (Open)								
19	Forest plantations		1036.20		43.67				
20	Land with scrub		202.11	77.48	68.58	3.38		2.45	
21	Land without scrub		37.02			69.38		42.68	
22	Marshy/Swampy								
23	Mininig/Industrial waste		13.23	21.38	108.20	16.65	24.43		11.43
24	River/Waterbodies	46.72		1.97	27.15				35.24
25	Sandy area								
26	Wetlands (Waterlogged)								
	Panchayath Total	2529.78	5936.28	2958.54	4233.25	3125.03	1777.50	1897.81	2523.81
	Block Total				24982.00				

Table:11.4

CHAVARA BLOCK

Sl. No.	Land Use	Chavara	Neendakara	Panmana	Thekkumbhagam	Thevalakkara
1	Agriculture plantation (Areca nut)					
2	Agriculture plantation (Banana)					
3	Agriculture plantation (Cashew)					
4	Agriculture plantation (Coconut)	217.15	157.56	86.92	5.50	1.02
5	Agriculture plantation (Mixed)	798.47	210.03	1329.08	464.23	1342.09
6	Agriculture plantation (Rubber)					
7	Agriculture plantation (Tea)					
8	Barrenrock/Stonywaste/Sheetrock					
9	Built-up (Cities/Town/Villages)	54.43	3.97	159.50	23.08	33.15
10	Cropland (Kharif)					
11	Doublecrop (Kharif+Rabi)	49.28		62.58		117.78
12	Fallow land					5.46
13	Forest deciduous(Dense)					
14	Forest deciduous(Open)					
15	Forest evergreen(Dense)					
16	Forest mangroves(Littoral Swamp)					
17	Forest deciduous (Scrub/degrade)					
18	Forest evergreen (Open)					
19	Forest plantations					
20	Land with scrub					
21	Land without scrub					
22	Marshy/Swampy					
23	Mininig/Industrial waste					
24	River/Waterbodies	20.13	258.16	17.67	899.17	188.42
25	Sandy area	73.24	64.54	20.76		
26	Wetlands(Waterlogged)					
	Panchayath Total	1212.70	694.26	1676.51	1391.98	1687.92
	Block Total			6663.37		

(Area in Ha)

Table:11.5

CHITTUMALA BLOCK

Sl. No.	Land Use	East kallada	Kundara	Manthro thuruthu	Panayam	Perayam	Perinadu	Thrikka davor	Thrikka ruva
1	Agriculture plantation (Arecanut)								
2	Agriculture plantation (Banana)								
3	Agriculture plantation (Cashew)								
4	Agriculture plantation (Coconut)	880.08	814.52	618.20	574.81	646.01	1017.25	780.12	631.37
5	Agriculture plantation (Mixed)	44.32	272.15	2.48			5.18	1.48	
6	Agriculture plantation (Rubber)		4.97						
7	Agriculture plantation (Tea)								
8	Barrenrock/Stonywaste/Sheetrock								
9	Built-up (Cities/Town/Villages)		98.33		10.81	10.84	36.81	61.55	33.77
10	Cropland (Kharif)								
11	Doublecrop (Kharif+Rabi)	223.14	97.01		91.44	0.12	97.05	17.29	35.67
12	Fallow land								
13	Forest deciduous(Dense)								
14	Forest deciduous(Open)								
15	Forest evergreen(Dense)								
16	Forest mangroves(Littoral Swamp)								
17	Forest deciduous(scrub/degrade)								
18	Forest evergreen(Open)								
19	Forest plantations								
20	Land with scrub								
21	Land without scrub								
22	Marshy/Swampy								
23	Mininig/Industrial waste					16.89	7.38		
24	River/Waterbodies	35.68	0.69	694.51	266.53	770.79	416.21	609.1	1100.46
25	Sandy area								
26	Wetlands(Waterlogged)	119.97	26.83			15.75			
	Panchayath Total	1303.19	1314.5	1315.19	943.59	1460.4	1579.88	1469.54	1801.27
	Block Total				11187.56				

Table:11.6

ITHIHKARA BLOCK

Sl No	Land Use	Adichanalloor	Chathannoor	Chirakkara	Kalluvathukkal	Poothakulam
1	Agriculture plantation (Arecanut)					
2	Agriculture plantation (Banana)					
3	Agriculture plantation (Cashew)	68.56		0.01	99.04	207.58
4	Agriculture plantation (Coconut)	814.41	653.56	463.86	4.55	63.68
5	Agriculture plantation (Mixed)	692.37	369.82	1000.46	2849.23	908.37
6	Agriculture plantation (Rubber)	210.86	38.57		377.72	
7	Agriculture plantation (Tea)					
8	Barrenrock/Stonywaste/Sheetrock					
9	Built-up (Cities/Town/Villages)	235.20	81.35	69.54	99.22	33.41
10	Cropland (Kharif)					
11	Doublecrop (Kharif+Rabi)	88.20	145.06	43.24	366.29	205.80
12	Fallow land					
13	Forest deciduous(Dense)					
14	Forest deciduous(open)					
15	Forest evergreen(Dense)					
16	Forest mangroves(Littoral Swamp)					
17	Forest deciduous(scrub/degrade)					
18	Forest evergreen(Open)					
19	Forest plantations					
20	Land with scrub		23.51	6.86		25.54
21	Land without scrub					
22	Marshy/Swampy					
23	Mininig/Industrial waste				4.64	
24	River/Waterbodies	109.17	22.04	9.78	5.18	252.58
25	Sandy area					4.37
26	Wetlands(Waterlogged)	145.93				
	Panchayath Total	2364.70	1333.91	1593.75	3805.87	1701.33
	Block Total		10799.56			

Table:11.7

KOTTARAKKARA BLOCK

Sl. No.	Land Use	Ezhukone	Kareepra	Kottarakkara	Neduvathoor	Pooyappally	Velijam
1	Agriculture plantation (Arecanut)						
2	Agriculture plantation (Banana)						
3	Agriculture plantation (Cashew)		24.84	13.89	71.89		
4	Agriculture plantation (Coconut)	86.39	232.32				
5	Agriculture plantation (Mixed)	1388.76	1587.67	1191.69	1401.40	1238.86	2088.85
6	Agriculture plantation (Rubber)	158.90	171.23	161.52	443.83	459.64	674.16
7	Agriculture plantation (Tea)						
8	Barrenrock/Stonywaste/Sheetrock				6.78	13.52	1.55
9	Built-up (Cities/Town/Villages)	72.09	15.11	314.81	73.38	296.93	77.31
10	Cropland (Kharif)						
11	Doublecrop (Kharif+Rabi)	57.27	232.97	147.87	239.02	311.90	179.59
12	Fallow land					6.42	
13	Forest deciduous(Dense)						
14	Forest deciduous(Open)						
15	Forest evergreen(Dense)						
16	Forest mangroves(Littoral Swamp)						
17	Forest deciduous(scrub/degrade)						
18	Forest evergreen(Open)						
19	Forest plantations						
20	Land with scrub	11.28	4.04				11.61
21	Land without scrub						
22	Marshy/Swampy						
23	Mininig/Industrial waste	7.31	4.11		1.61	3.17	35.95
24	River/Waterbodies					18.73	
25	Sandy area						
26	Wetlands(Waterlogged)						
	Panchayath Total	1782.00	2272.29	1829.78	2237.91	2349.17	3069.02
	Block Total			13540.17			

Table:11.8

MUKHATHALA BLOCK

SI. No.	Land Use	Elampalloor	Kottankara	Mayyanadu	Nedumpana	Thrikovilvattom	(Area in Ha)
1	Agriculture plantation (Arecanut)						
2	Agriculture plantation (Banana)						
3	Agriculture plantation (Cashew)			113.23			
4	Agriculture plantation (Coconut)	472.02	886.98	1207.45	622.32		1202.33
5	Agriculture plantation (Mixed)	568.60	151.62	118.98	1322.76		181.46
6	Agriculture plantation (Rubber)				119.96		
7	Agriculture plantation (Tea)						2.81
8	Barrenrock/Stonywaste/Sheetrock						
9	Built-up (Cities/Town/Villages)	52.58	34.91	214.40	15.32		131.78
10	Cropland (Kharif)						
11	Doublecrop (Kharif+Rabi)	123.88	183.10	150.06	276.10		356.66
12	Fallow land						
13	Forest deciduous (Dense)						
14	Forest deciduous(Open)						
15	Forest evergreen(Dense)						
16	Forest mangroves(Littoral Swamp)						
17	Forest deciduous(scrub/degrade)						
18	Forest evergreen(Open)						
19	Forest plantations						
20	Land with scrub		8.97				
21	Land without scrub						
22	Marshy/Swampy						
23	Mininig/Industrial waste						
24	River/Waterbodies			183.49	35.00		6.02
25	Sandy area						
26	Wetlands(Waterlogged)				114.36		4.30
	Panchayath Total	1217.08	1265.58	1987.61	2505.82	1885.36	
	Block Total		8861.45				

Table:11.9

OCHIRA BLOCK

SI. No.	Land Use	Alappad	Klapana	Kulasekharapuram	Ochira	Thazhava	Thodiyoor
1	Agriculture plantation (Arecanut)						
2	Agriculture plantation (Banana)						
3	Agriculture plantation (Cashew)						
4	Agriculture plantation (Coconut)	528.22	892.91	1419.56	980.90	1008.92	1547.30
5	Agriculture plantation (Mixed)	9.94	4.81	6.57	3.50	652.15	19.00
6	Agriculture plantation (Rubber)					7.53	
7	Agriculture plantation (Tea)						
8	Barrenrock/Stonywaste/Sheetrock						
9	Built-up(Cities/Town/Villages)		7.98	63.07	63.47	47.98	91.54
10	Cropland(Kharif)		12.59		0.68		
11	Doublecrop(Kharif+Rabi)	22.38	85.87	223.58	277.96	529.37	308.71
12	Fallow land						
13	Forest Deciduous(Dense)						
14	Forest Deciduous(Open)						
15	Forest Evergreen(Dense)						
16	Forest mangroves(Littoral Swamp)						
17	Forest Deciduous(scrub/degrade)						
18	Forest Evergreen(Open)						
19	Forest plantations						
20	Land with scrub						
21	Land without scrub						
22	Marshy/Swampy						
23	Mininig/Industrial waste						
24	River/waterbodies	312.86	35.21	2.74		76.72	96.73
25	Sandy area	15.4					
26	Wetlands(waterlogged)					56.81	8.20
	Panchayath Total	888.8	1039.37	1715.52	1326.51	2379.48	2071.48
	Block Total			9421.16			

Table:11.10

PATHANAPURAM BLOCK

Sl. No.	Land Use	Pathanapuram	Pattazhi	Pattazhi Vadakkekara	Piravanthoor	Thalavoor	Vilakkudy
1	Agriculture plantation (Arecanut)				32.19		
2	Agriculture plantation (Banana)					7.72	
3	Agriculture plantation (Cashew)				43.89		
4	Agriculture plantation (Coconut)						
5	Agriculture plantation (Mixed)	656.11	954.85	861.12	781.83	2215.97	1192.04
6	Agriculture plantation (Rubber)	1886.92	646.87	533.15	2560.17	765.53	368.14
7	Agriculture plantation (Tea)						
8	Barrenrock/Stonywaste/Sheetrock				174.69		
9	Built-up(Cities/Town/Villages)	221.77	64.36	33.75	28.80	124.75	304.10
10	Cropland(Kharif)						
11	Doublecrop(Kharif+Rabi)	151.52	95.17	177.84	158.23	245.32	117.26
12	Fallow land						
13	Forest Deciduous(Dense)						
14	Forest Deciduous(Open)	4.59					
15	Forest Evergreen(Dense)				150.59		
16	Forestmangroves(Littoral Swamp)						
17	Forest Deciduous(scrub/degrade)						
18	Forest Evergreen(Open)						
19	Forest plantations	868.31			8913.23		
20	Land with scrub	274.53	63.95	39.11	202.19	27.93	26.59
21	Land without scrub	3.51			54.23		
22	Marshy/Swampy						
23	Mininig/Industrial waste						
24	River/waterbodies	20.83	18.69	36.43	46.12	38.08	6.22
25	Sandy area	4.09	6.38	16.72		3.37	
26	Wetlands(waterlogged)						
	Panchayath Total	4092.18	1850.27	1698.12	13146.16	3428.67	2014.35
	Block Total			26229.75			

(Area in Ha)

Table:11.11

SASTHAMKOTTA BLOCK

Sl. No.	Land Use	Kunnathoor	Mynagapally	Poruvazhi	Sasthamkotta	(Area in Ha)		
						Sooranadu South	Sooranadu North	West Kallada
1	Agriculture plantation (Areca nut)							
2	Agriculture plantation (Banana)			21.98				
3	Agriculture plantation (Cashew)							
4	Agriculture plantation (Coconut)	139.98	4.37	6.45	81.35	65.26		9.44
5	Agriculture plantation (Mixed)	1474.00	1582.13	1481.10	1548.08	1281.09	1651.81	886.21
6	Agriculture plantation (Rubber)	199.80		111.37	27.96	11.93	102.23	
7	Agriculture plantation (Tea)							
8	Barrenrock/Stonywaste/Sheetrock							
9	Built-up(Cities/Town/Villages)	39.54	69.12	21.97	212.42	40.05	15.85	62.89
10	Cropland(Kharif)							
11	Doublecrop(Kharif+Rabi)	217.16	234.09	231.10	112.15	255.19	509.88	
12	Fallow land							
13	Forest Deciduous(Dense)							
14	Forest Deciduous(Open)							
15	Forest Evergreen(Dense)							
16	Forest mangroves(Littoral Swamp)					18.34		
17	Forest Deciduous(scrub/degrade)				11.84			
18	Forest Evergreen(Open)					11.91		
19	Forest plantations							
20	Land with scrub							
21	Land without scrub							
22	Marshy/Swampy	1.47			11.91			
23	Mininig/Industrial waste		7.61			0.51		3.89
24	River/waterbodies	68.42	21.71	5.81	494.26	18.56	2.41	276.44
25	Sandy area	7.13			1.36			
26	Wetlands(waterlogged)		127.25	11.77		35.13		98.85
	Panchayath Total	2147.50	2046.28	1891.55	2501.33	1737.97	2282.18	1337.72
	Block Total				13944.53			

Table:11.12

VETTIKAVALA BLOCK

Sl. No.	Land Use	Kulakkada	Melila	Mylam	Pavithreswaram	Ummannoor	Vettikkavala
1	Agriculture plantation (Arecanut)				37.87		
2	Agriculture plantation (Banana)		8.47	2.11			
3	Agriculture plantation (Cashew)						
4	Agriculture plantation (Coconut)	77.61			12.86		
5	Agriculture plantation (Mixed)	1947.96	1305.43	1663.29	1851.70	2538.82	2126.85
6	Agriculture plantation (Rubber)	525.07	390.62	263.61	166.27	633.00	966.12
7	Agriculture plantation (Tea)						
8	Barrenrock/Stonywaste/Sheetrock					5.08	2.41
9	Built-up(Cities/Town/Villages)	122.65	67.85	132.15	57.13	24.99	57.92
10	Cropland(Kharif)				12.64		
11	Doublecrop(Kharif+Rabi)	413.06	120.02	219.88	234.94	276.70	80.31
12	Fallow land						
13	Forest Deciduous(Dense)						
14	Forest Deciduous(Open)						
15	Forest Evergreen(Dense)						
16	Forestmangroves(Littoral Swamp)						
17	Forest Deciduous(scrub/degrade)						
18	Forest Evergreen(Open)						
19	Forest plantations						
20	Land with scrub		8.73		14.00	10.21	235.62
21	Land without scrub						
22	Marshy/Swampy						
23	Mininig/Industrial waste	2.89				5.78	
24	River/waterbodies	49.86		1.49	8.72		
25	Sandy area	14.95	0.07	6.15	0.75		8.52
26	Wetlands(waterlogged)				37.64		
	Panchayath Total	3154.05	1901.19	2288.68	2434.52	3494.58	3477.75
	Block Total				16750.77		

Table:11.13

MUNICIPALITY/CORPORATION

Sl. No.	Land Use	(Area in Ha)			
		Karunagapally (M)	Paravoor (M)	Punalur (M)	Kollam (C)
1	Agriculture plantation (Areca nut)				
2	Agriculture plantation (Banana)			8.14	
3	Agriculture plantation (Cashew)		13.49		
4	Agriculture plantation (Coconut)	1254.31	436.77		2547.05
5	Agriculture plantation (Mixed)	20.54	776.77	1353.85	368.64
6	Agriculture plantation (Rubber)			1229.56	
7	Agriculture plantation (Tea)				
8	Barren rock/Stony waste/Sheetrock				
9	Built-up(Cities/Town/Villages)	52.79	152.13	608.59	1873.27
10	Cropland(Kharif)				
11	Doublecrop(Kharif+Rabi)	259.93	77.17	97.51	442.73
12	Fallow land				
13	Forest Deciduous(Dense)				
14	Forest Deciduous(Open)				
15	Forest Evergreen(Dense)				
16	Forest mangroves(Littoral Swamp)				
17	Forest Deciduous(scrub/degade)				1.27
18	Forest Evergreen(Open)				
19	Forest plantations			26.59	
20	Land with scrub		9.71	216.00	
21	Land without scrub				
22	Marshy/Swampy				
23	Mininig/Industrial waste				
24	River/waterbodies	245.89	396.05	79.99	427.63
25	Sandy area		18.30		31.47
26	Wetlands(waterlogged)		38.24		
	Total	1833.46	1918.63	3620.23	5692.06

1 : 250,000

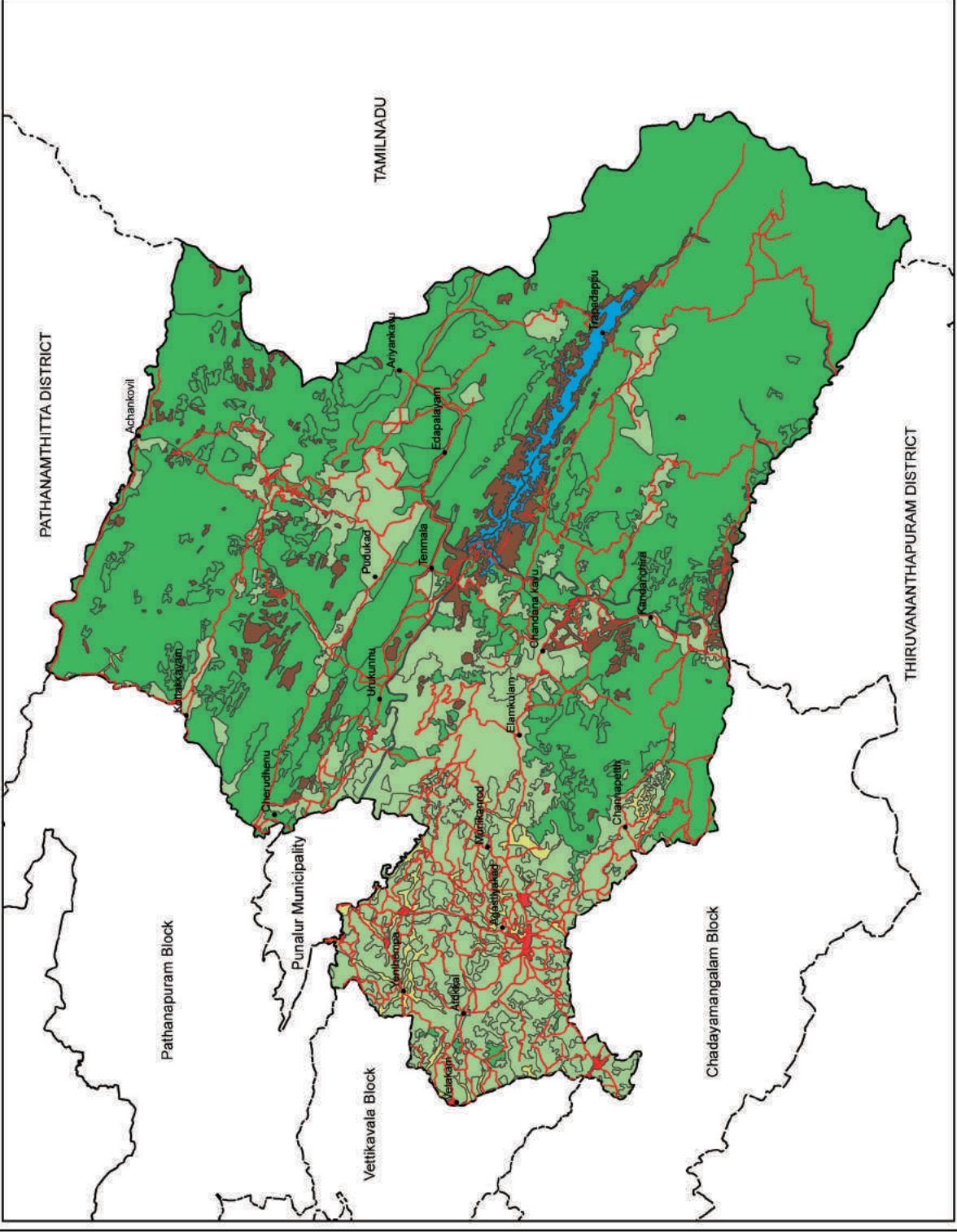
LANDUSE ANCHAL BLOCK KOLLAM DISTRICT

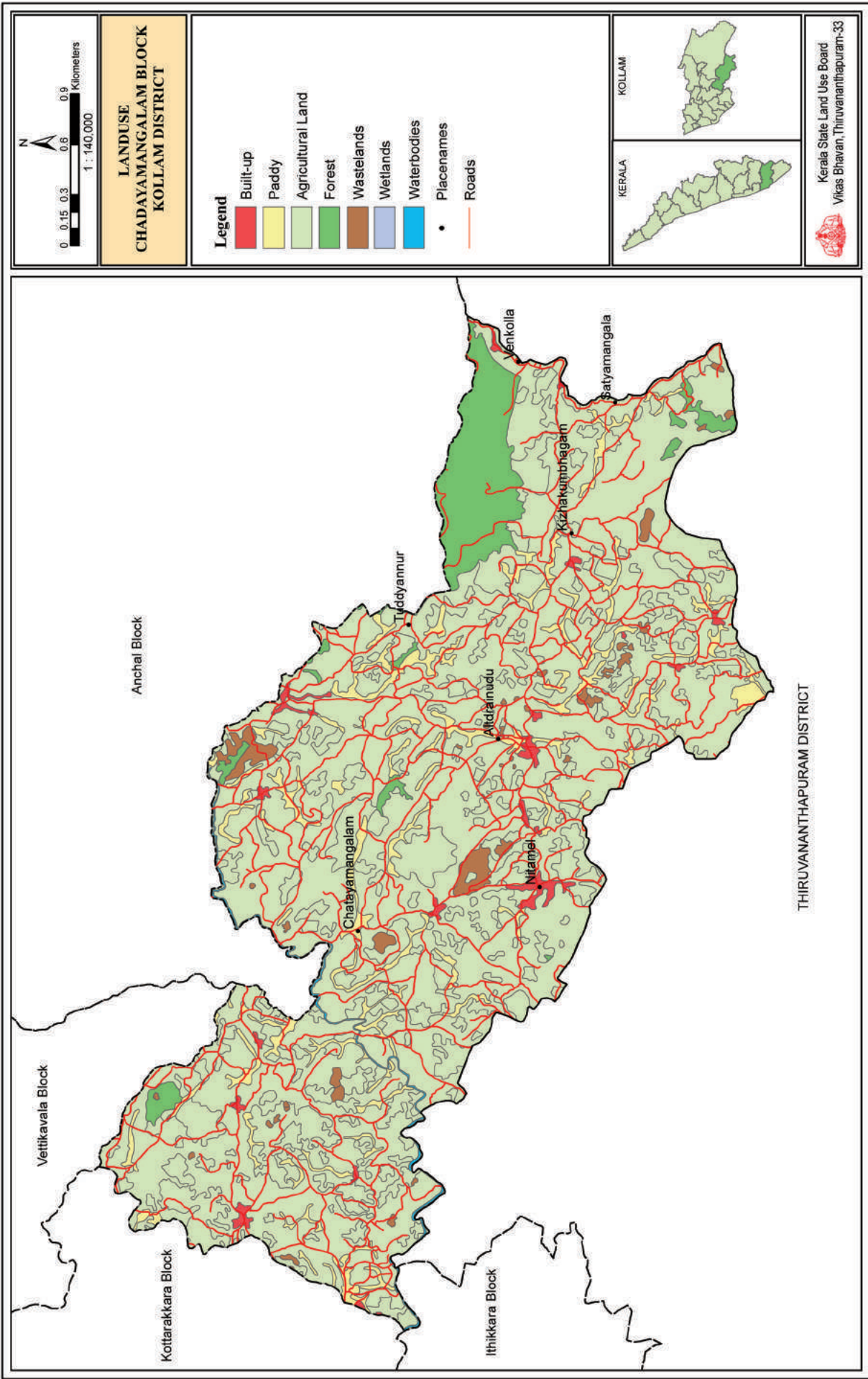
Legend

- Built-up
- Paddy
- Agricultural Land
- Forest
- Wastelands
- Wetlands
- Waterbodies
- Placenames
- Roads

KERALA
KOLLAM

Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

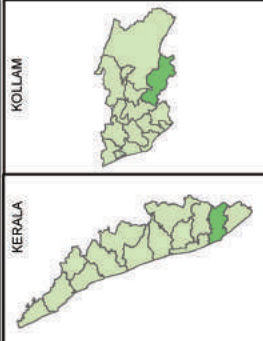




0 0.15 0.3 0.6 0.9 Kilometers
1 : 140,000

**LANDUSE
CHADAYAMANGALAM BLOCK
KOLLAM DISTRICT**

- Legend**
- Built-up
 - Paddy
 - Agricultural Land
 - Forest
 - Wastelands
 - Wetlands
 - Waterbodies
 - Placenames
 - Roads



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

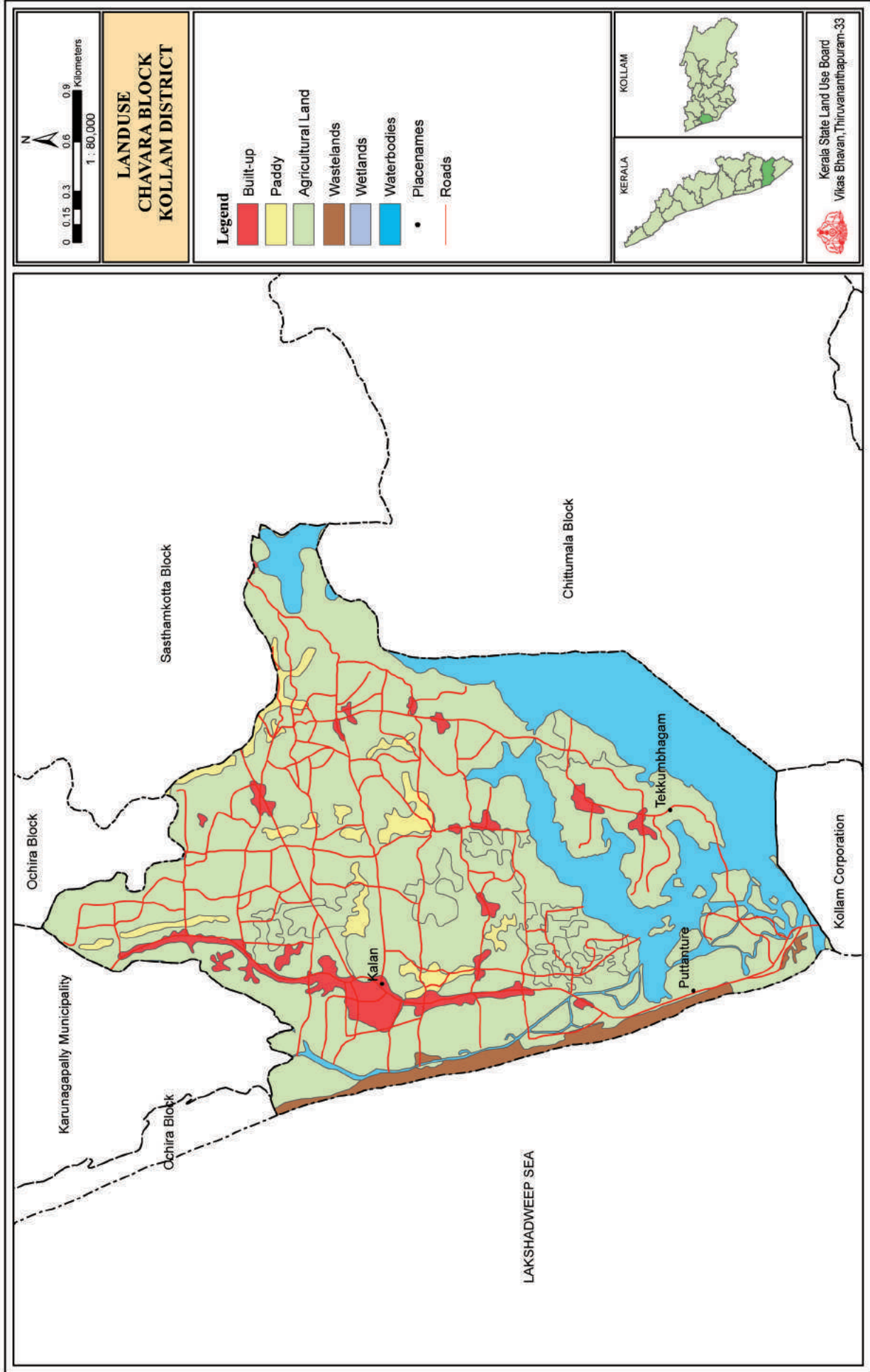
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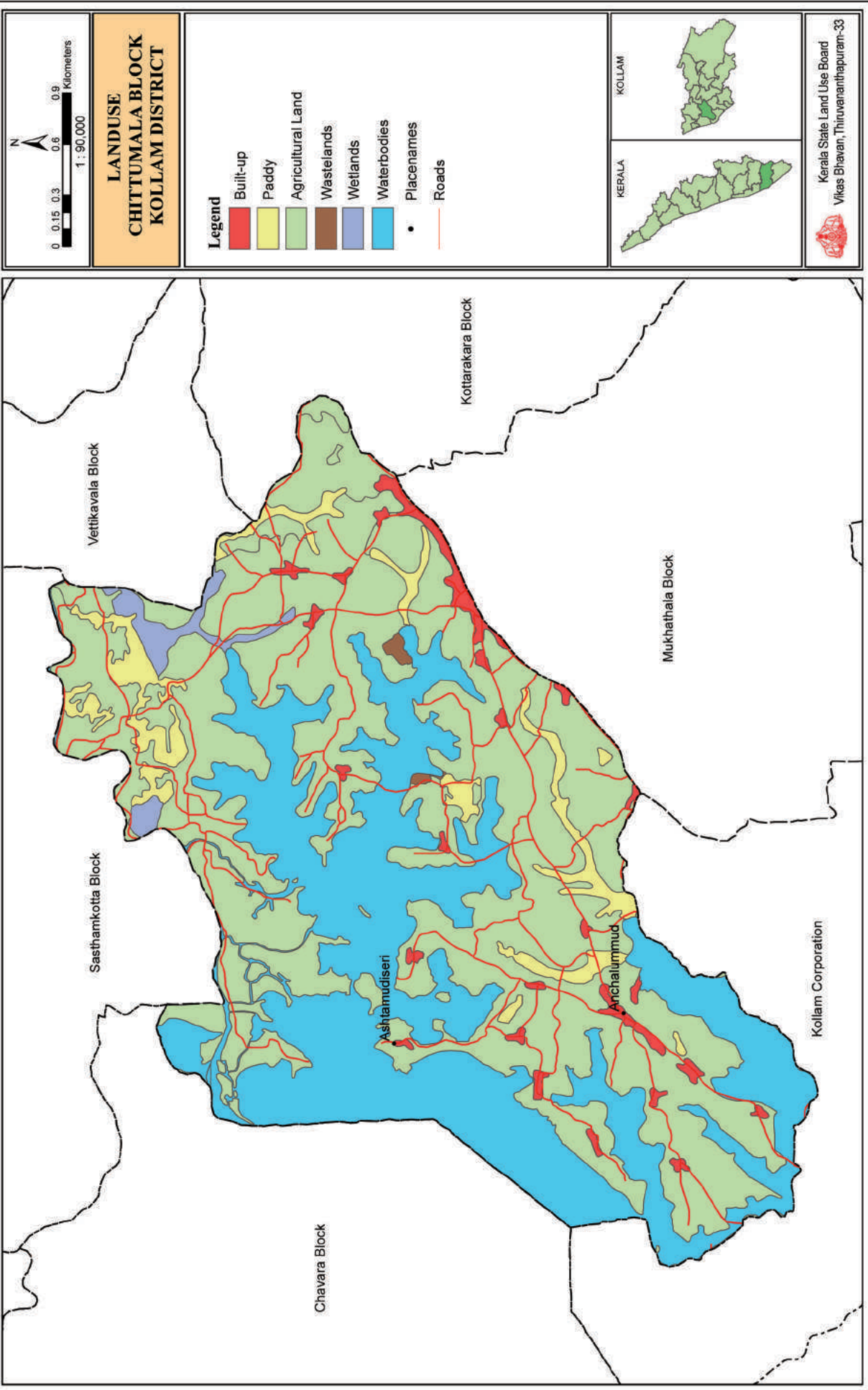
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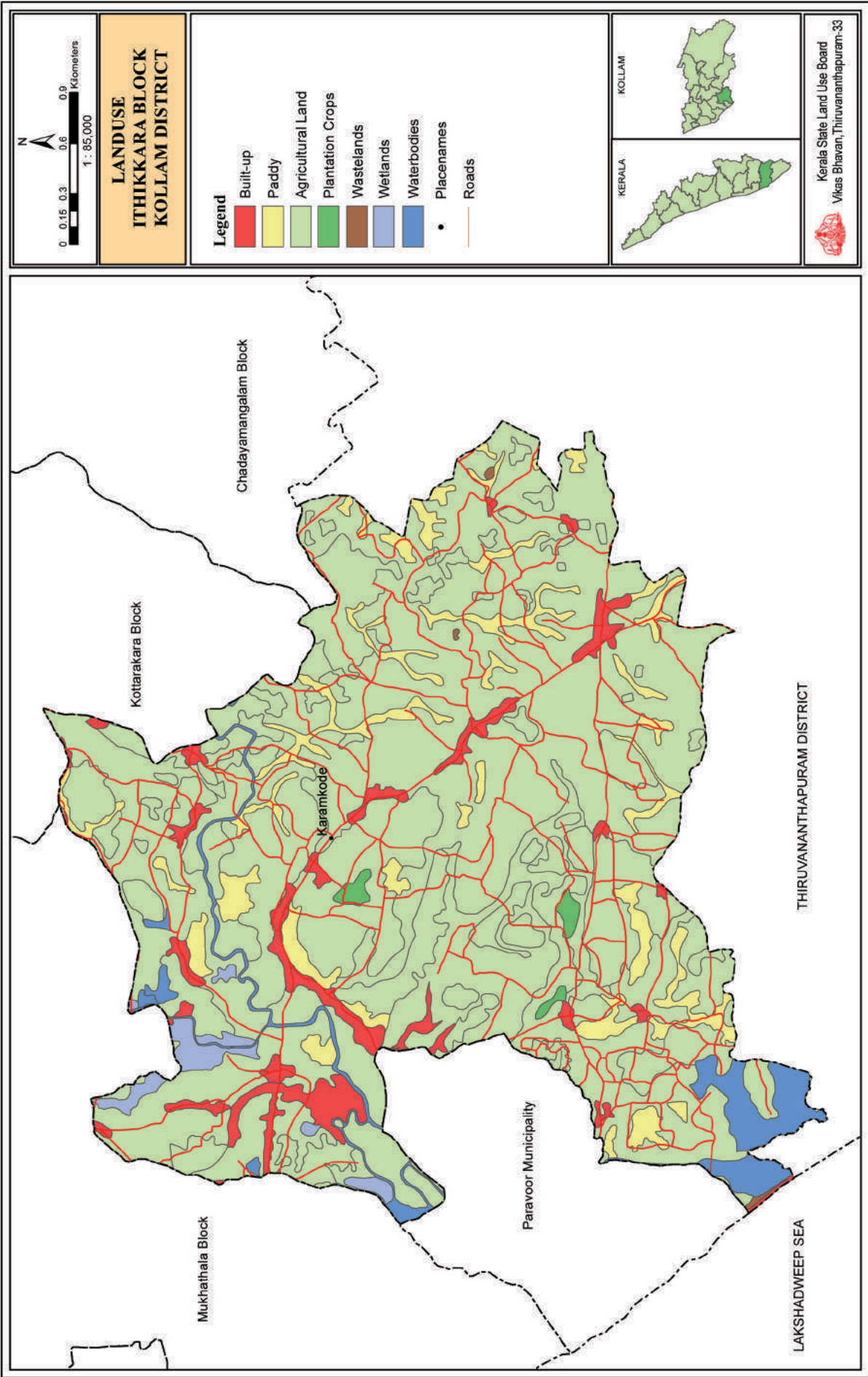
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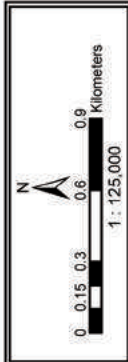
Ithikkara Block

THIRUVANANTHAPURAM DISTRICT

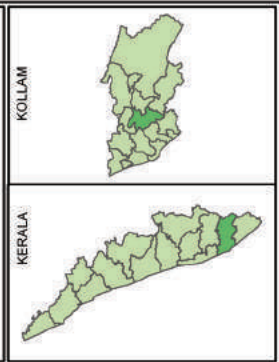
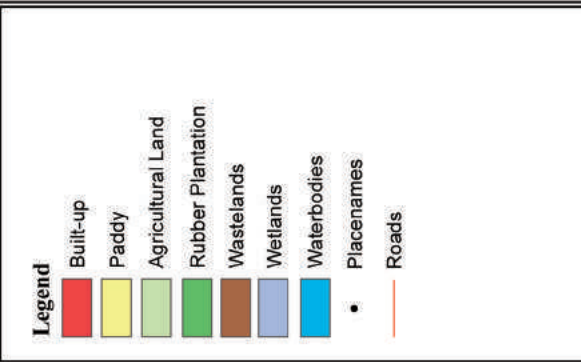




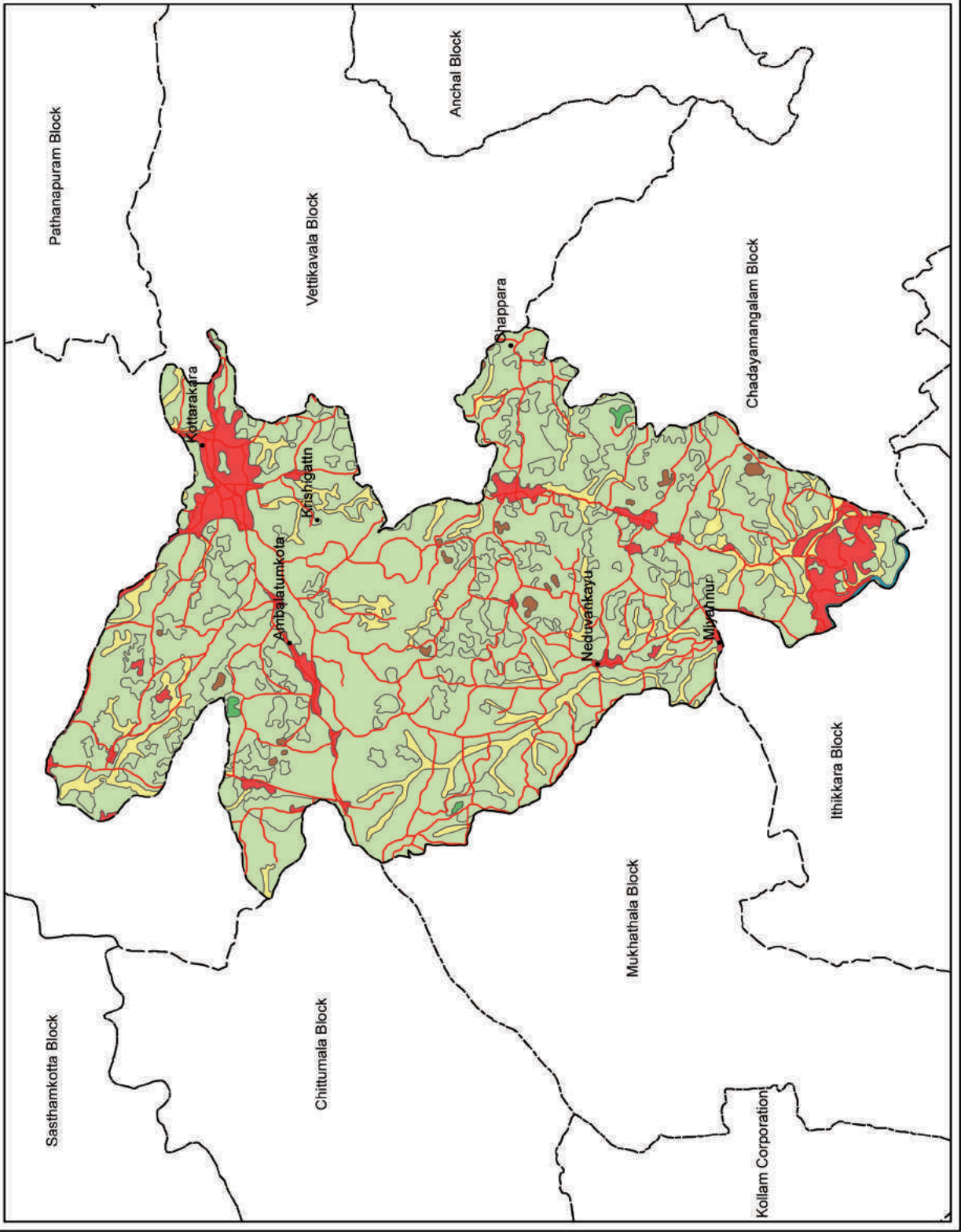




**LAND USE
KOTTARAKARA BLOCK
KOLLAM DISTRICT**



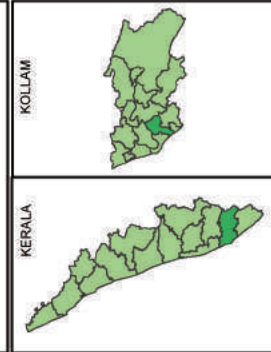
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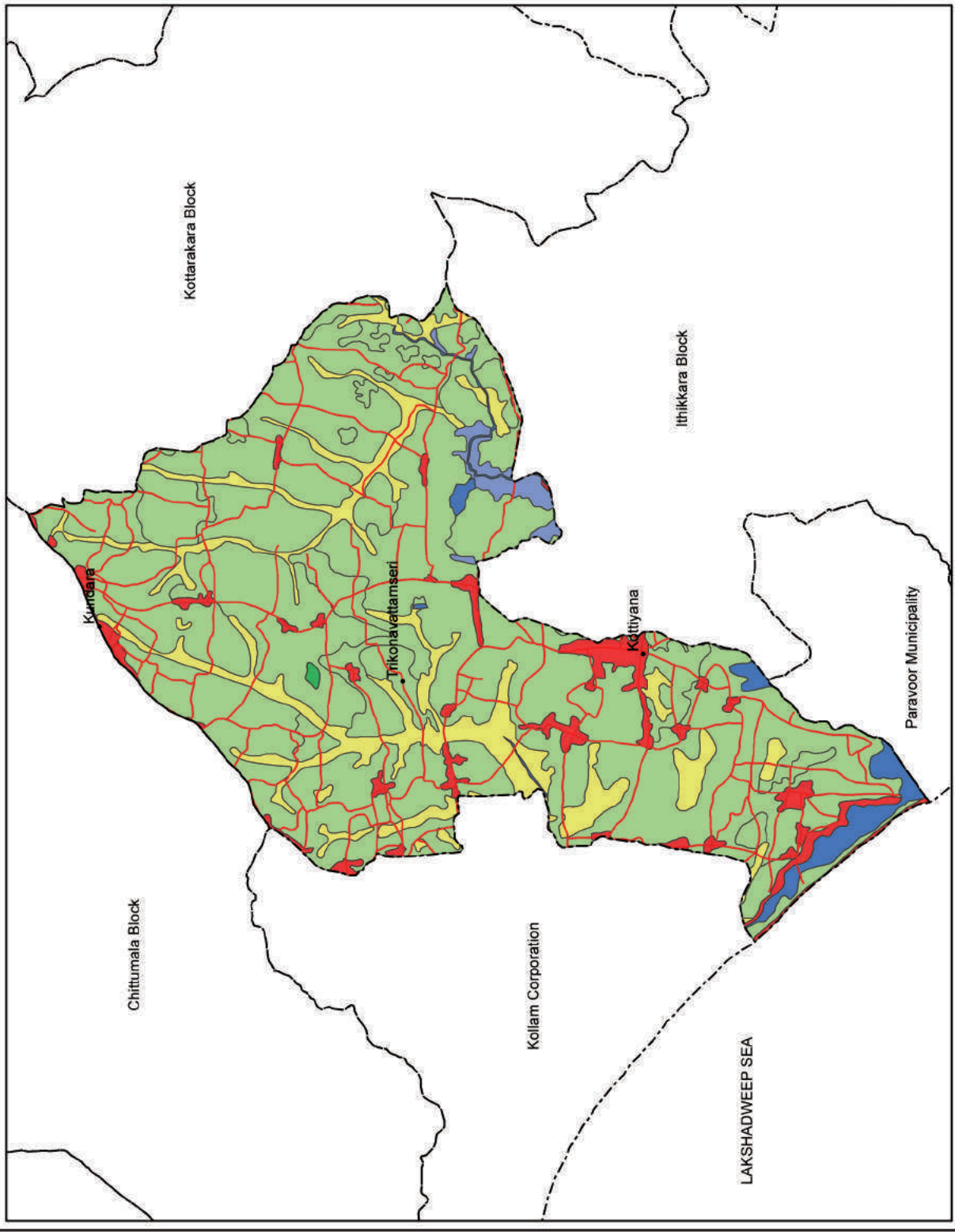


**LANDUSE
MUKHATHALA BLOCK
KOLLAM DISTRICT**

- Legend**
- Built-up
 - Paddy
 - Agricultural Land
 - Plantation Crops
 - Wastelands
 - Wetlands
 - Waterbodies
 - Placenames
 - Roads



Kerala State Land Use Board
Vikas Bhawan, Thiruvananthapuram-33



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1 : 80,000

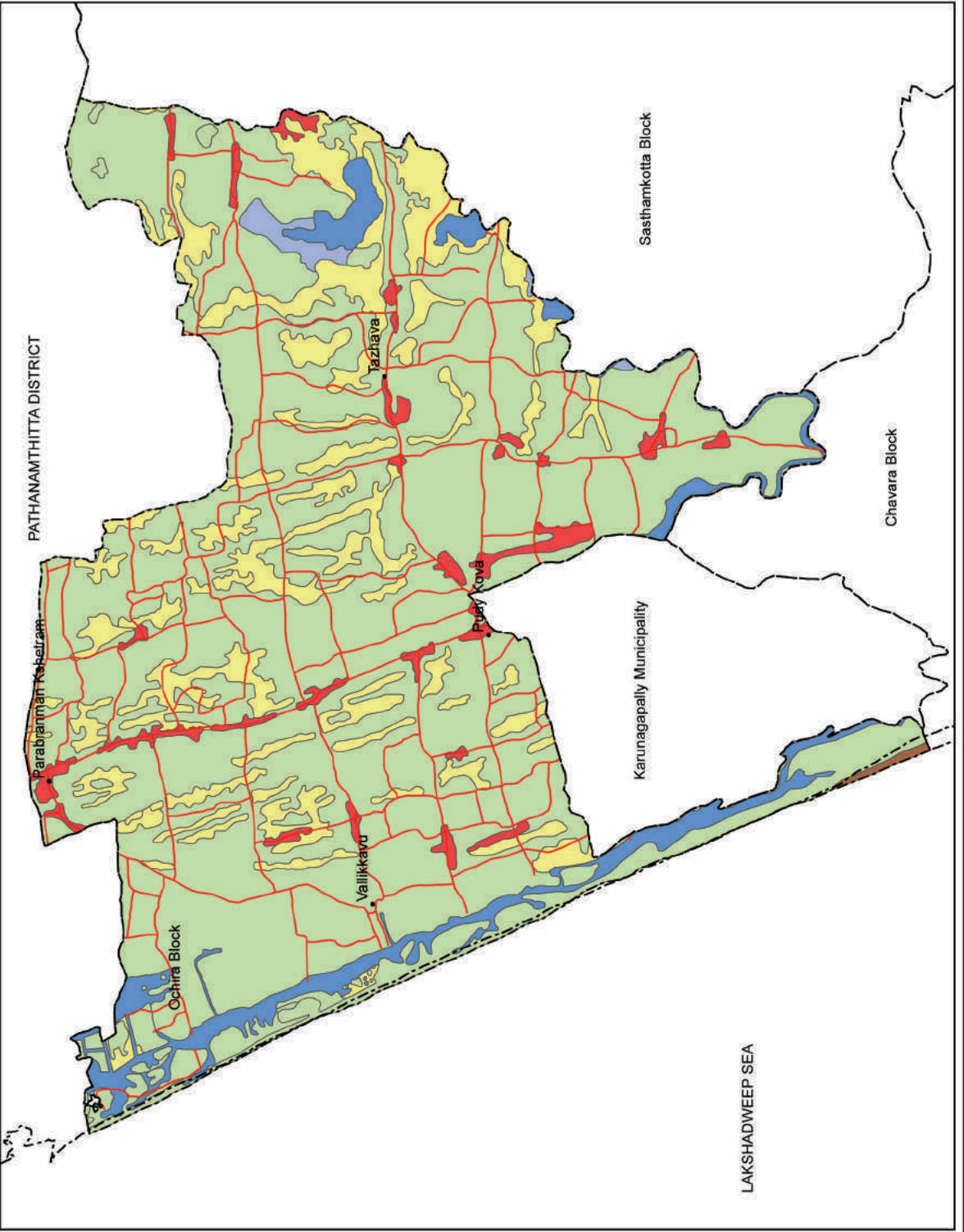
LANDUSE OCHIRA BLOCK KOLLAM DISTRICT

Legend

- Built-up
- Paddy
- Agricultural Land
- Wastelands
- Wetlands
- Waterbodies
- Placenames
- Roads

KERALA
KOLLAM

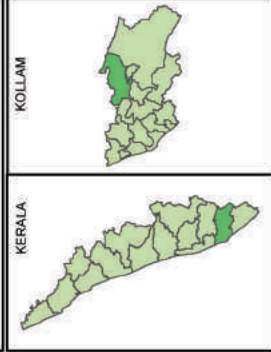
Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



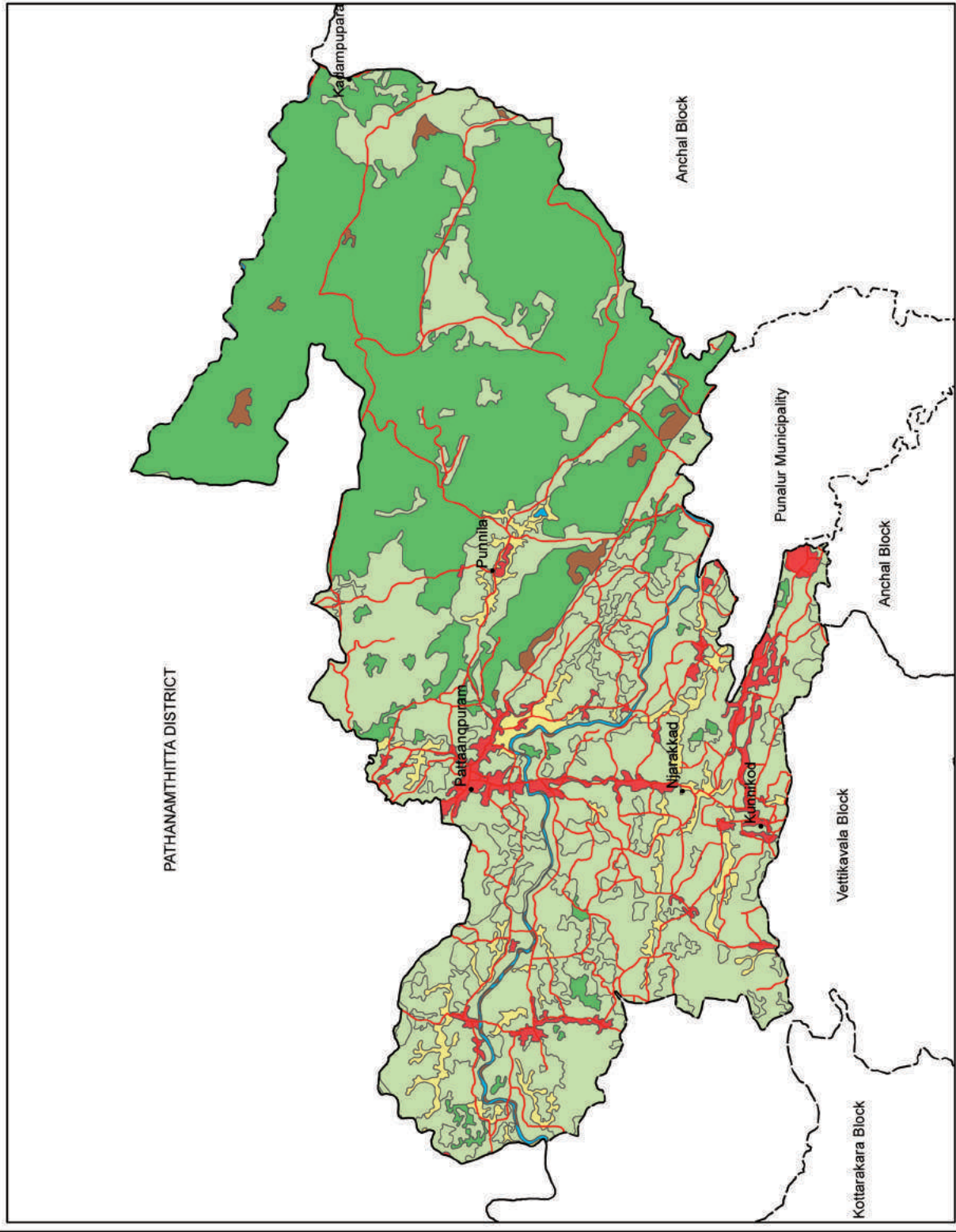


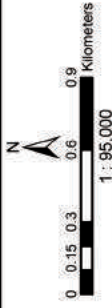
**LANDUSE
PATHANAPURAM BLOCK
KOLLAM DISTRICT**

- Legend**
- Built-up
 - Paddy
 - Agricultural Land
 - Forest
 - Wastelands
 - Wetlands
 - Waterbodies
 - Placenames
 - Roads



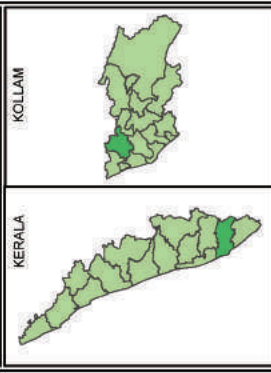
Kerala State Land Use Board
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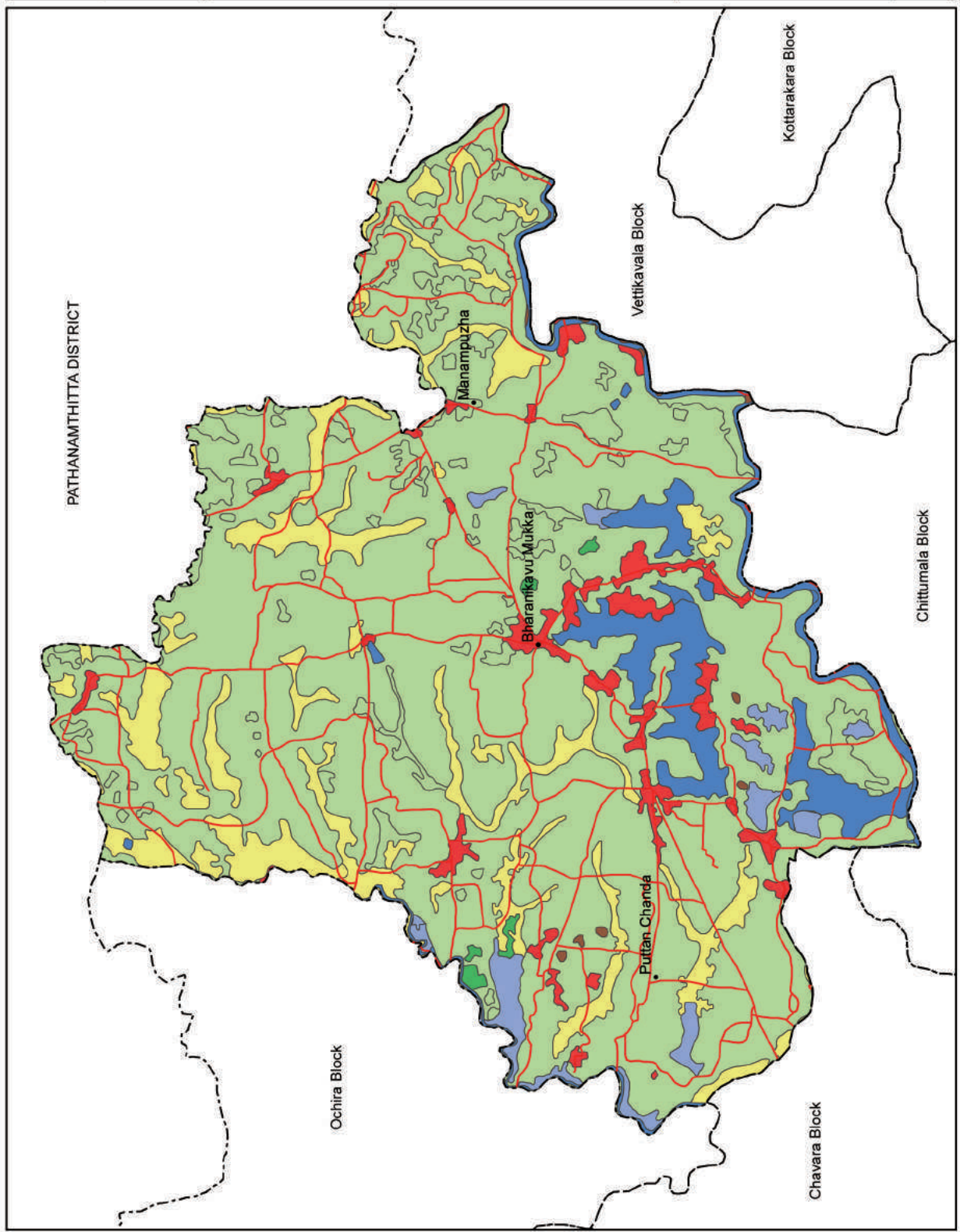


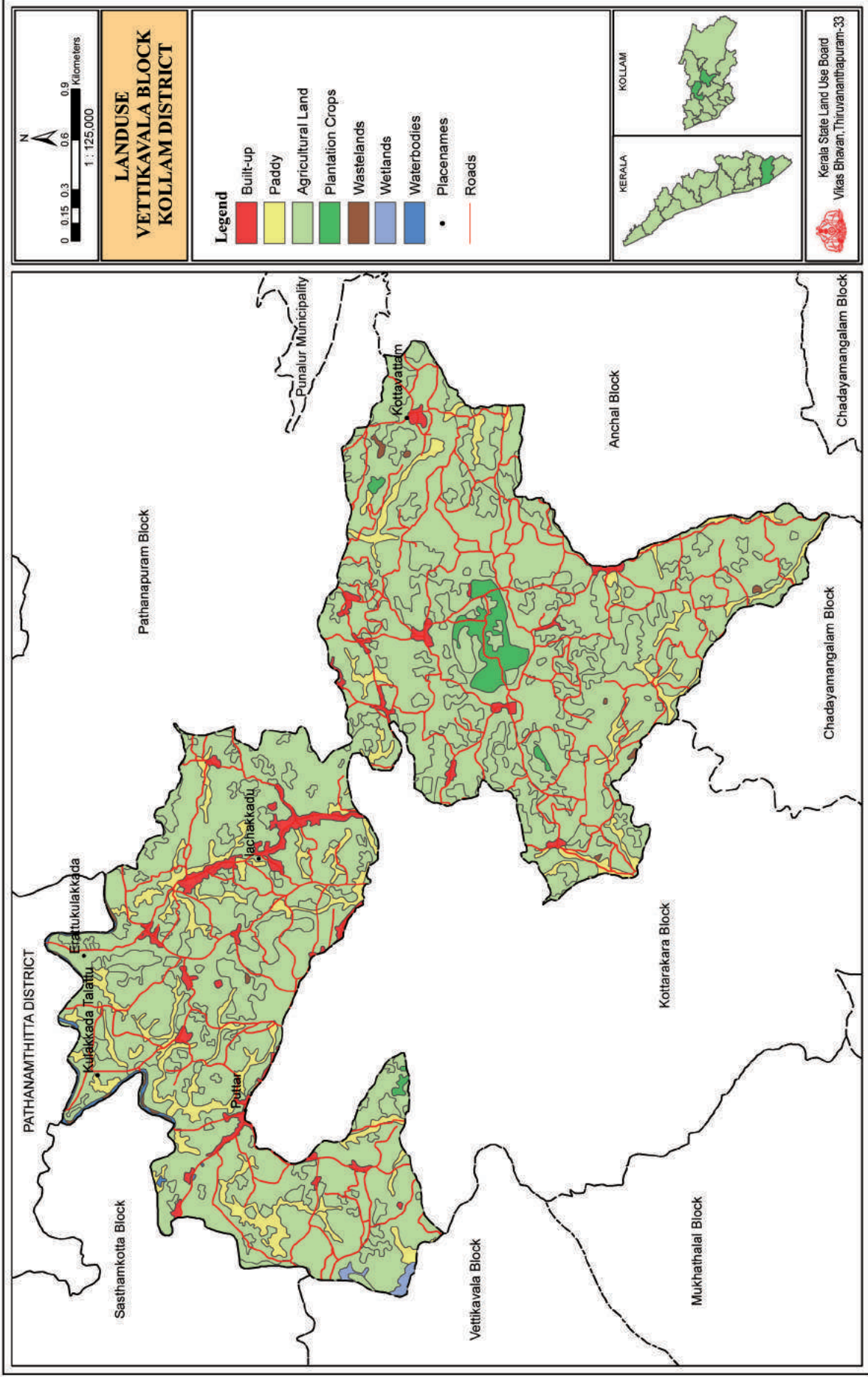
**LANDUSE
SASTHAMKOTTA BLOCK
KOLLAM DISTRICT**

- Legend**
- Built-up
 - Paddy
 - Agricultural Land
 - Plantation Crops
 - Wastelands
 - Wetlands
 - Waterbodies
 - Placenames
 - Roads



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

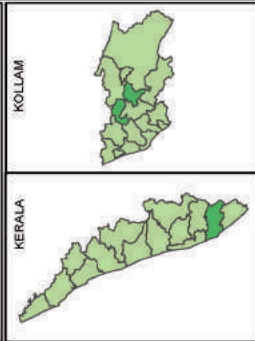




0 0.15 0.3 0.6 0.9 Kilometers
1 : 125,000

**LANDUSE
VETTIKAVALA BLOCK
KOLLAM DISTRICT**

- Legend**
- Built-up
 - Paddy
 - Agricultural Land
 - Plantation Crops
 - Wastelands
 - Wetlands
 - Waterbodies
 - Placenames
 - Roads

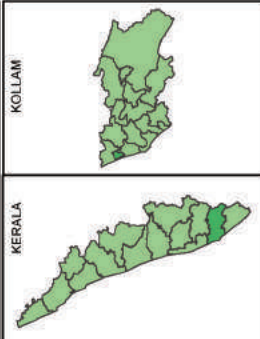


Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

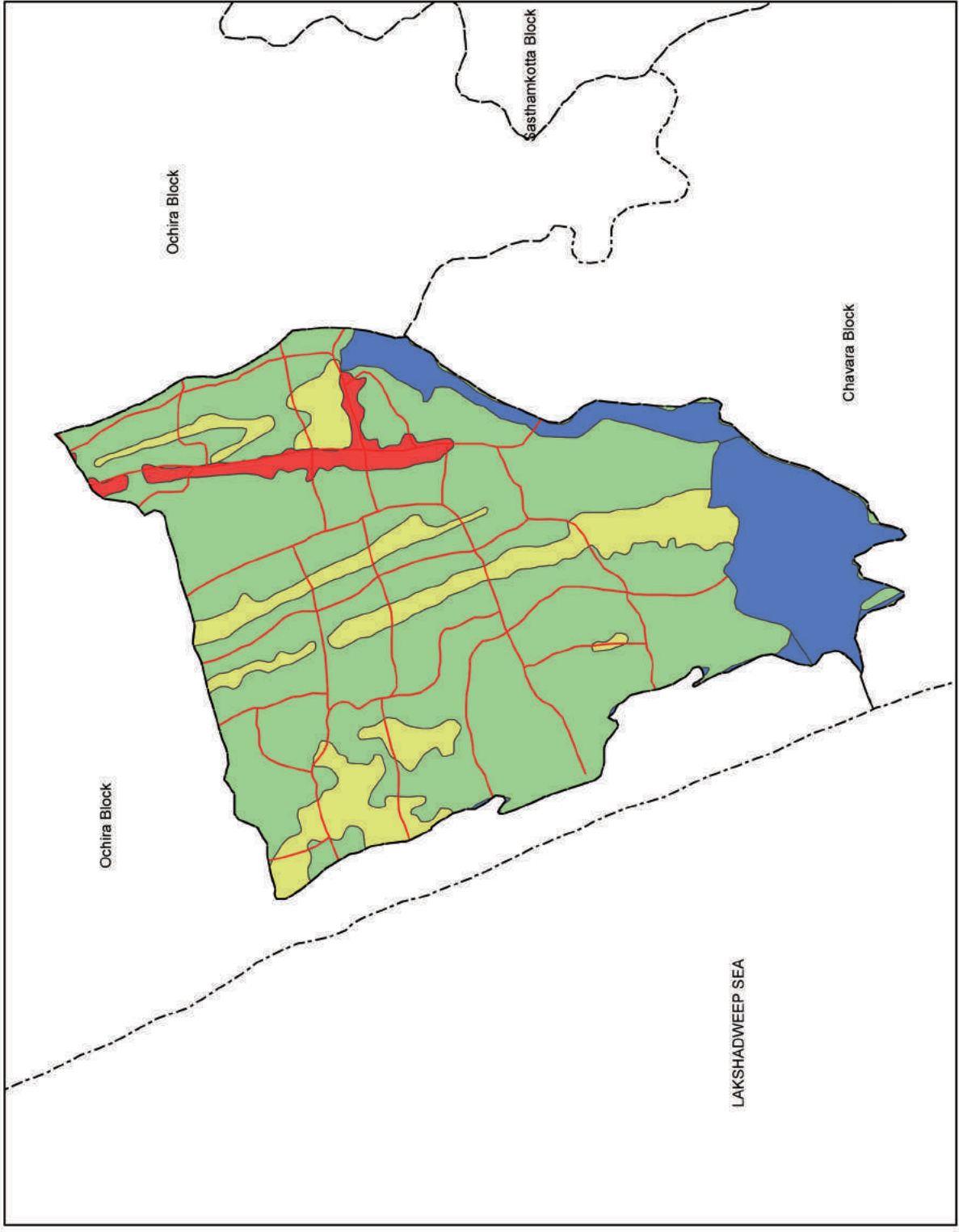


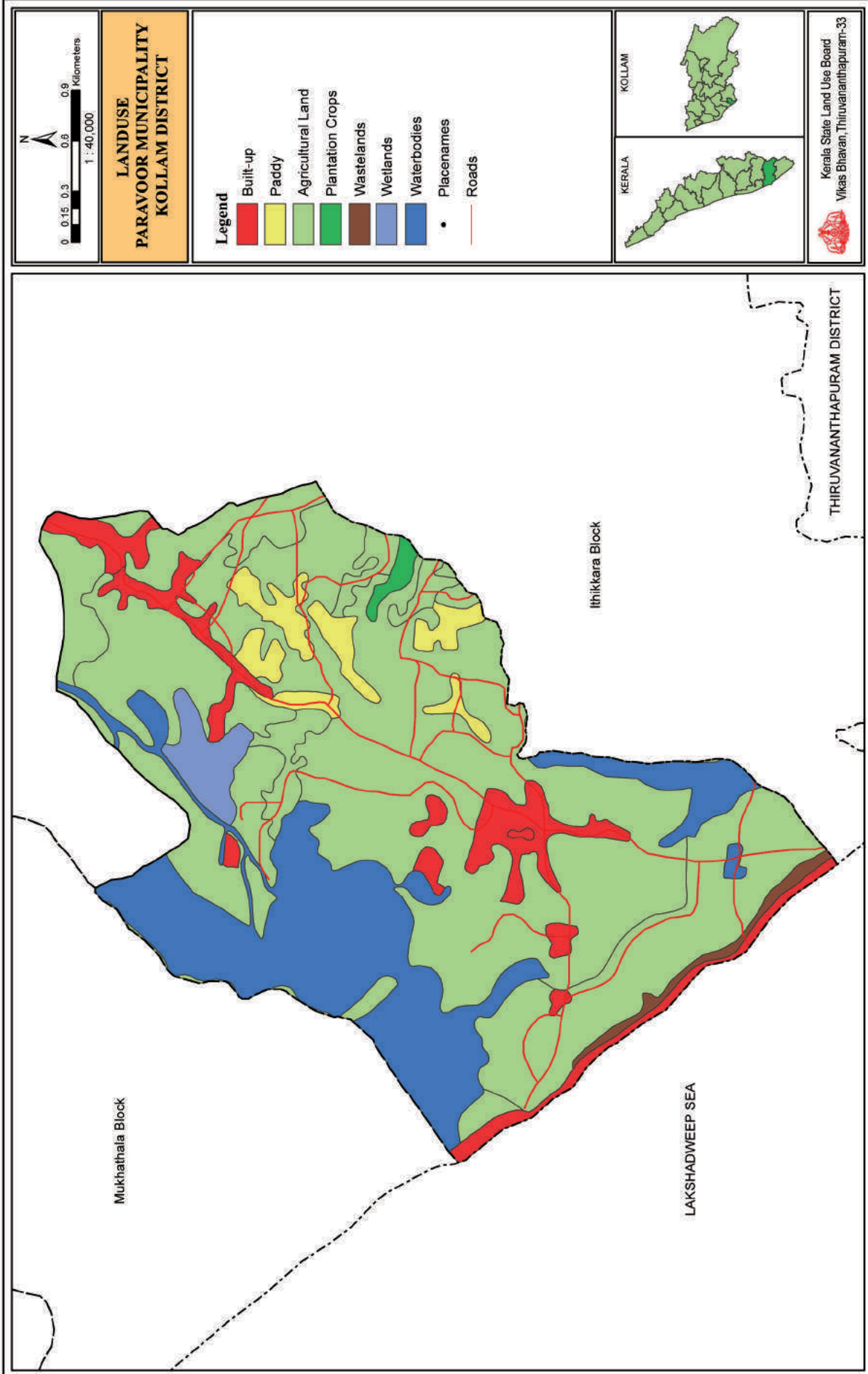
**LANDUSE
KARUNAGAPALLY MUNICIPALITY
KOLLAM DISTRICT**

- Legend**
- Built-up
 - Paddy
 - Agricultural Land
 - Waterbodies
 - Placenames
 - Roads



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33





1 : 50,000

LAND USE
PUNALUR MUNICIPALITY
KOLLAM DISTRICT

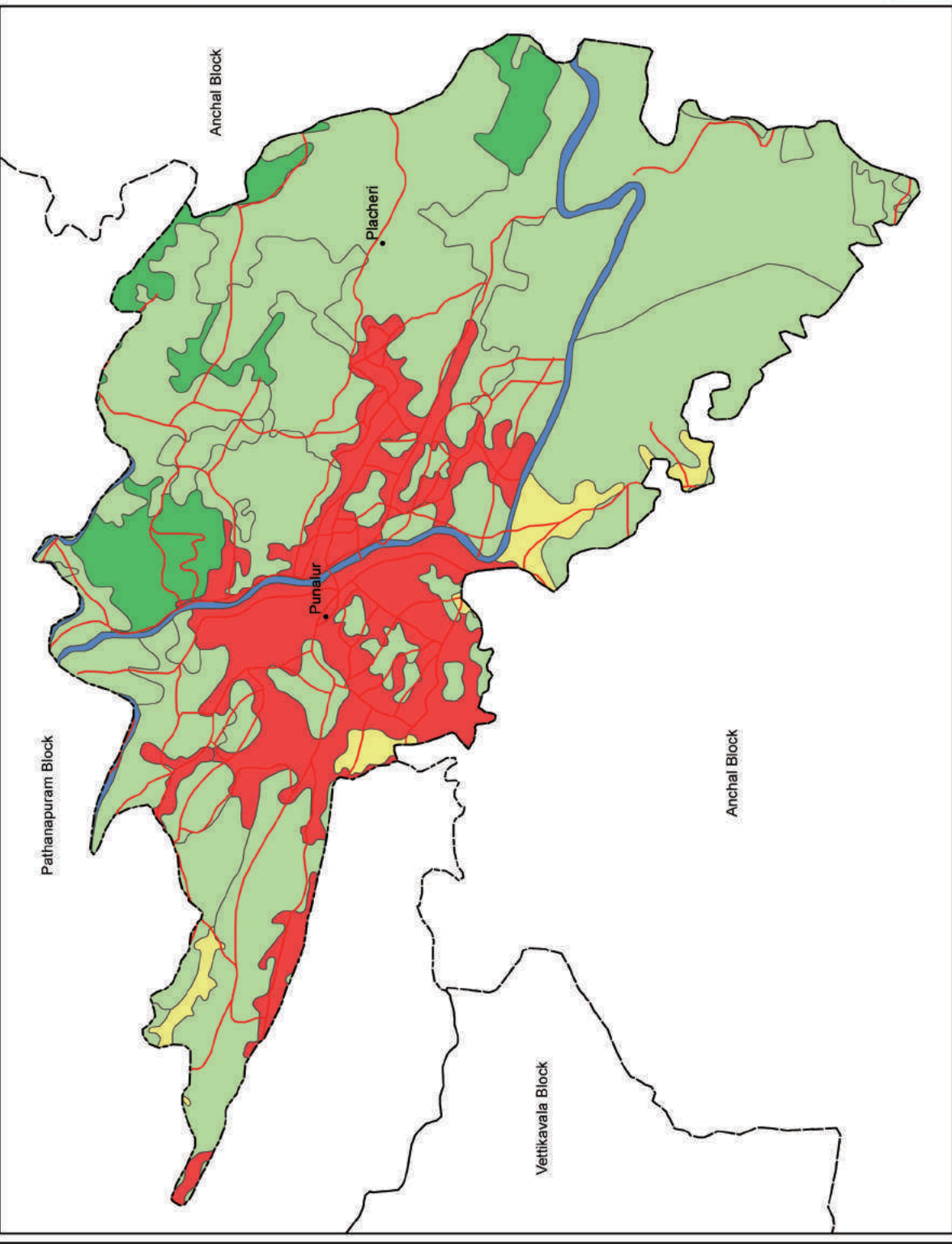
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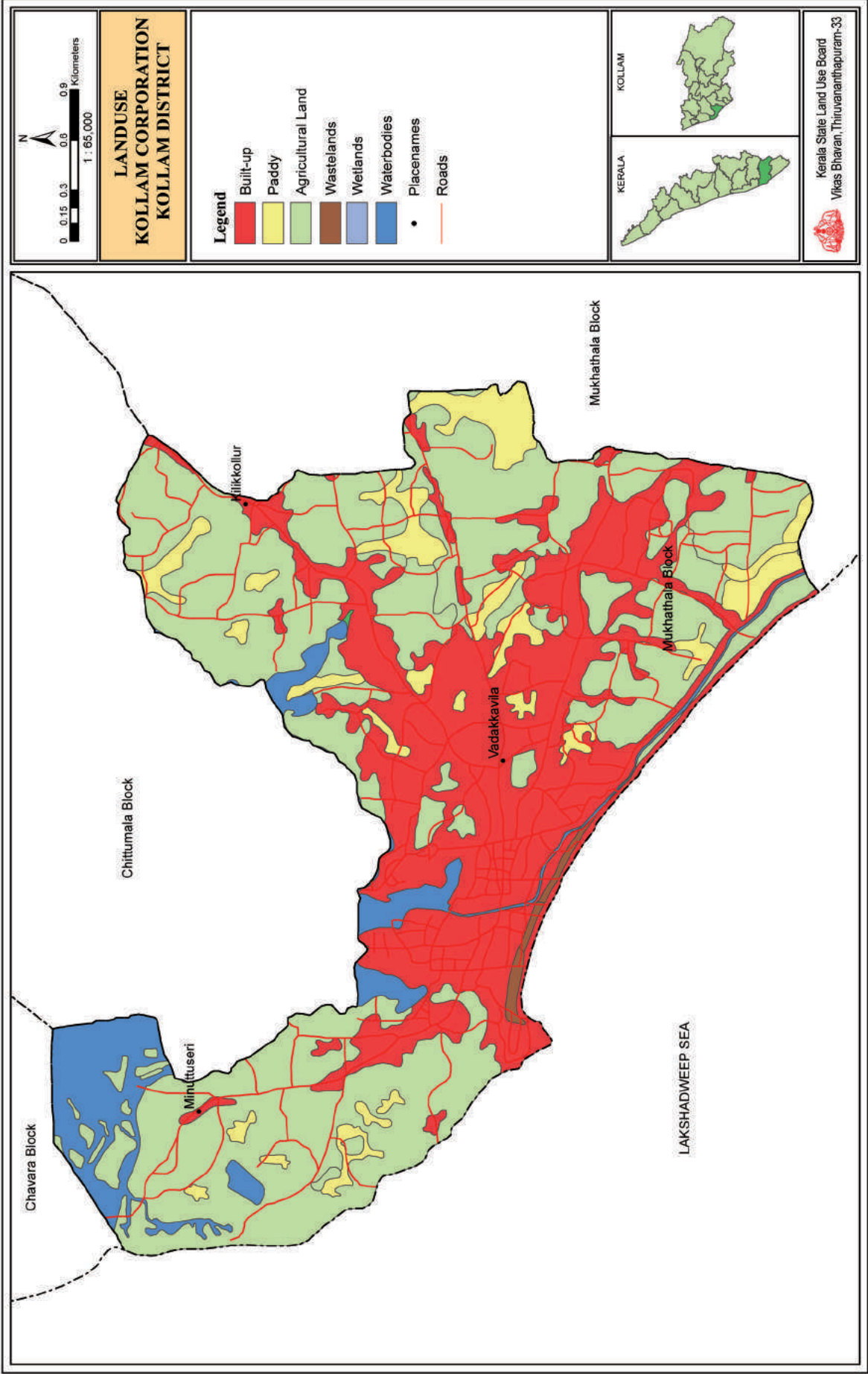
- Built-up
- Paddy
- Agricultural Land
- Plantation Crops
- Wastelands
- Wetlands
- Waterbodies
- Placenames
- Roads

KERALA

KOLLAM

Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33





BIODIVERSITY

Biodiversity refers to the variety and variability of life on earth. It is the variety of all living organisms including all species. Biodiversity is expressed at three levels on earth viz., genetic diversity, species diversity and ecosystem diversity. Its direct and indirect services are crucial for the subsistence of life on earth. Biodiversity ensures food, fuel, shelter, medicines and other resources vital for our survival. Most of the crop pests are controlled by a variety of other organisms including insects, birds and fungi. Genetic diversity is the variety of genetic information contained in all individual plants, animals and micro organisms. Species diversity is the variety species on earth. Species diversity is usually a measure of the number of species and their relative abundances for a given area at a given point in time. Ecosystem diversity is the variety of habitats, biotic communities and ecological processes.

Western Ghats, one of the Biodiversity hot spots is running along the length of Kerala. Almost a fourth of India's 10,000 plant species are found in the State. Among the 4,000 flowering plant species (1,272 of which are endemic to Kerala and 159 threatened) almost 900 species are of medicinal plants. Its 9,400 km² of forests include tropical wet evergreen and semi-evergreen forests (lower and middle elevations-3,470 km²), tropical moist and dry deciduous forests (mid-elevations-4,100 km² and 100 km² respectively), montane subtropical and temperate (shola) forests (highest elevations-100 km²). Altogether, 29% of Kerala is forested. Two of the world's Ramsar convention listed wetland lake SasthamKotta and the Vembanad-Kol wetlands are in Kerala, as well as 1455.4 km² of the vast Nilgiri Biosphere Reserve.

Table: 12.1

PLANT DIVERSITY

Sl.No.	Items	Nos.
1	Flowering plants	4000
2	Grass species	350
3	Bamboo species	15
4	Reeds species	9
5	Orchid species	214
6	Gymnosperms	4
7	Ferns and fern allies	200
8	Liverworts	200
9	Algae	231
10	Fungi	1044
11	Lichens	800

Table: 12.2

ANIMAL DIVERSITY

Sl.No.	Items	Nos.
1	Large and medium sized mammals	48
2	Birds species	475
3	Water Birds	101
4	Reptiles Genera	60
5	Lizard (endemic) species	30
6	Snake (endemic) species	57
7	Amphibian (endemic) species	87
8	Fresh water fish (endemic) species	84
9	Butterflies	313

Source: Economic Review.

Table: 12.3

**WESTERN GHAT TALUKS, BLOCKS, GRAMA PANCHAYATS OF
KOLLAM DISTRICT**

Taluk	Block	Panchayath		
Kunnathoor	Sasthamkotta	Kunnathoor		
		Poruvazhy		
		Sasthamkotta		
		Sooranad North		
		Sooranad South		
		West Kallada		
Pathanapuram	Pathanapuram	Pathanapuram		
		Pattazhy North		
		Pattazhy South		
		Piravanthoor		
		Thalavoor		
		Vilakkudy		
	Anchal	Alayamon		
		Anchal		
		Aryancavu		
		Edamulakkal		
		Karavalloor		
		Kulathupuzha		
		Thenmala		
		Eroor		
		Kottarakkara	Vettikkavala	Kulakkada
				Melila
				Mylam
				Pavithreswaram
Ummannoor				
Vettikkavala				
Kottarakkara	Ezhukone			
	Kareepra			
	Kottarakkara			
	Neduvathoor			
	Pooyappally			
	Veliyam			
Chadayamangalam	Chadayamangalam			
	Chithara			
	Elamadu			
	Ittiva			
	Kadakkal			
	Nllamel			
	Vellinalloor			

Source: Western Ghat Development Programme

FOREST

Kerala has a total recorded forest cover of 11309.47 Sq.Km which is 29.09% of the total geographical area of the State (38863 Sq.Km). 11309.47sq.km of forest cover includes reserve forest (9107.20 sq.km), proposed reserve (364.47 sq.km), vested forest (1837.79 sq.km) and EFL (Ecological Fragile Land). Tropical climate favours forests with rich biodiversity and endemism. Western Ghats cover major portion of forest in Kerala. Kollam district covers 81438 ha of forest area which is 32% of the total geographical area of the district (248788). Punalur Forest Division, Thenmala Forest Division and Shendurney Wild Life Division fall wholly within the district. Konni, Achenkovil and Thiruvananthapuram Forest Divisions lie partly with in the district. The forest area in the district is confined to Pathanapuram and Kottarakkara taluks. The important species of timber available in the district are Teak, Rosewood, Jack, Manjakadambu, White cedar (akil), Vengai, Indian laurel (thembavu), Maruthu, Venthekku, Mulluvengai, Irul, Iron wood (Kambakom), Wild jack (anjili), Karanjily, Unnam, Mullilavu, Karincha, Red silk cotton tree (ilavu), Tamarind, Poonspar (kallupunna), Black dammar (kunthirippayni), Black fish tree (cheru), Marotty, Mavu, Kolamavu, Malakayala, Mathi, Cheeni etc.

Table: 13.1

CLASSIFICATION OF FOREST TYPES AS ON 31-03-2011

Sl.No.	Type	Area (km ²)	% of total
1	Tropical Wet Evergreen and Semi Evergreen	3877.44	34.28
2	Tropical Moist Deciduous	3615.98	31.97
3	Tropical Dry Deciduous	391.36	3.46
4	Montane Sub-tropical Temperate sholas	386.42	3.42
5	Plantations	1492.91	13.20
6	Grass Lands	501.08	4.43
7	Others	1044.26	9.24
	Total	11309.47	100.00

Table: 13.2

CLASSIFICATION OF FOREST AREA ACCORDING TO UTILIZATION AS ON 31-03-2011

Sl.No.	Mode of Utilisation	Area (km ²)	% of total
1	Dense Forests/Degraded Forest	8982.97	79.43
2	Plantation	1492.91	13.20
3	Area under lease	423.22	3.74
4	Forest land diverted under FCA	410.35	3.63
	Total	11309.47	100.00

Table: 13.3

DISTRICT WISE FOREST AREA (APPROX) BY LEGAL STATUS AS ON 31-03-2011**(KM²)**

District	Division	Reserve Forest/ Proposed Reserve	Vested Forest + EFL	Total (km ²)
Kollam	Trivandrum	116.76		116.76
	Thenmala	123.43	7.73	131.16
	Punalur	280.05	0.16	280.22
	Konni	78.39		78.39
	Achenkovil	62.81	0.20	63.02
	Shendurney	166.42	4.58	171.00
	Total	827.87	12.69	840.56

Table: 13.4

DIVISION WISE AREA OF FORESTS AS ON 31-03-2011**(Km²)**

Sl. No.	Division	Reserve Forests	Proposed Reserve	Vested Forest + EFL	Total	Percentage of total
Southern Circle, Kollam						
1	Thiruvananthapuram	359.12	5.82	3.65	368.60	3.26
2	Thenmala	123.43	-	7.73	131.16	1.16
3	Achenkovil	284.32	-	0.20	284.53	2.52
4	Ranni	1050.33	7.16	1.56	1,059.06	9.36
5	Punalur	280.05	-	0.16	280.22	2.48
6	Konni	320.64	11.02	-	331.66	2.93
	Total	2417.91	24.00	13.33	2455.25	21.71

Table: 13.5

DISTRICT WISE FOREST AREA (APPROX) AS ON 31-03-2011

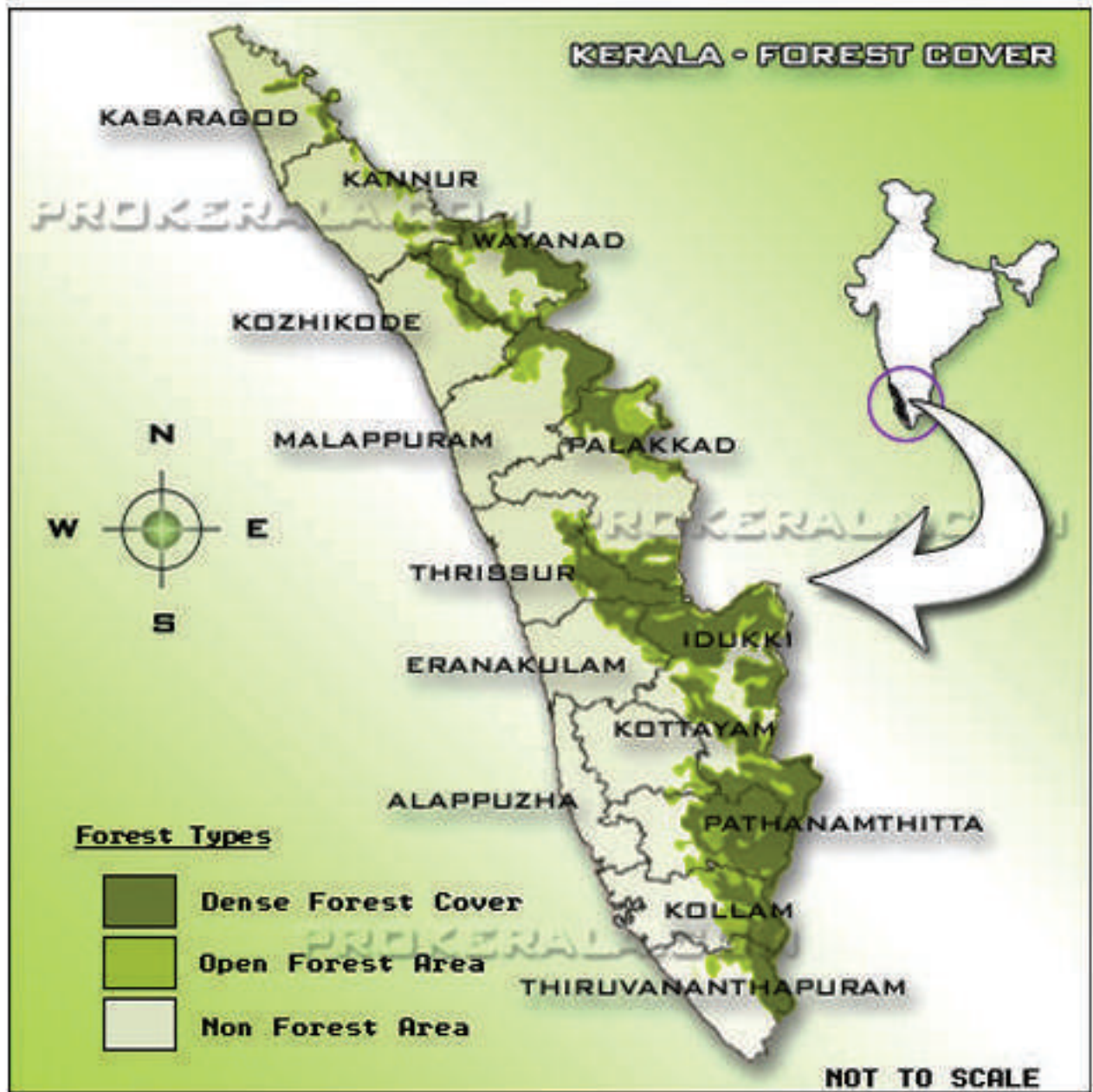
Sl.No.	Districts	Area (Km ²)
1	Thiruvananthapuram	463.83
2	Kollam	840.56
3	Pathanamthitta	1533.79
4	Kottayam	100.84
5	Ernakulam	823.83
6	Idukki	2713.72
7	Thrissur	1022.75
8	Palakkad	1527.35
9	Malappuram	723.91
10	Kozhikode	290.45
11	Wayanad	907.04
12	Kannur	241.45
13	Kasaragod	119.84
	Total	11309.41

Table: 13.6

DISTRICT WISE ECOLOGICALLY FRAGILE LAND (EFL) AREA

Sl.No.	Districts	Area (ha)
1	Thiruvananthapuram	881.75
2	Kollam	273.72
3	Idukki	1255.55
4	Thrissur	70.79
5	Palakkad	5177.56
6	Malappuram	1265.12
7	Kozhikode	1531.90
8	Wayanad	2673.03
9	Kannur	777.13
10	Kasaragod	94.88
	Total	14001.46

Source: Forest Statistics, Forest Department



AGRICULTURE

The agricultural sector is the important sub-sector of the primary sector in Kerala. Agriculture has been a way of life and continues to be the single most important livelihood of the masses. Stabilization and augmentation of productivity assume critical importance, given the limited scope for increasing area under cultivation of various crops. Agricultural crops in the State are broadly classified as food crops and non-food crops. Food crops are cereals & condiments, fresh fruits, vegetables etc. The major non-food crops are rubber, betel leaves, lemon grass etc. Another classification of crops is seasonal crops, annual crops and perennial crops which are based on their life time.

The district has a prominent place in the field of agriculture. The principal crops in the district are paddy, tapioca, coconut, rubber, pepper, banana, mango and cashew. During the period 2000-01 an area of 14939 ha was under paddy and it has declined to 21172 ha during 2011-12 period. Tapioca is another crop which is cultivated in an area of 16859 ha of land and stands 1st position in Kerala during 2011-12 periods. This cultivation is most commonly seen in Vettikkavala, Sasthamkotta, Chadayamangalam blocks. Area under coconut cultivation is 55304 ha and production is 426 million numbers during the same period. Cashew is a perennial crop which is cultivated in an area of 3352 ha and production is 914 and is cultivated in Sasthamkotta, Chadayamangalam, Chittumala, Ithikara blocks. Banana, mango, pineapple etc. are the some of the main fruit crops intensively grown in the district. Total cropped area during 2010-11 is 159706 ha as against 157343 ha in 2011-12 period.

Table: 14.1

CLASSIFICATION OF AREA ON THE BASIS OF LAND UTILISATION**(Area in Ha)**

Year	Total Geographical area	Forest	Land put to non agricultural use	Barren & uncultivable land	Permanent pastures & other grazing land
1	2	3	4	5	6
2011-2012	248788	81438	26567	222	2
2010-2011	248788	81438	25199	231	0
2009-2010	248788	81438	24860	201	0

Year	Land under misc. tree crops	Cultivable waste	Fallow other than current fallow	Current fallow	Marshy land
1	7	8	9	10	11
2011-2012	64	1583	1804	4457	13
2010-2011	85	1520	1506	4505	15
2009-2010	79	1364	1164	4714	17

Year	Still water	Water logged area	Social forestry	Net area sown	Area sown more than once	Total cropped area
1	12	13	14	15	16	17
2011-2012	7160	618	81	124779	32564	157343
2010-2011	7570	628	92	125999	33707	159706
2009-2010	7860	635	84	126372	35126	161498

Table: 14.2

BLOCK WISE AREA OF CROPS 2011-2012

Sl. No.	Name of Block	Paddy			Tapioca			Drumstick	Amaran thus	Brinjal	Ladies finger
		Autumn	Winter	Summer	Autumn	Winter	Summer				
1	2				6	7	8	9	10	11	12
1	Chittumala	18.35	72.23	.	161.30	345.22	273.01	254.89	9.12	4.56	3.12
2	Ithikkara	28.37	243.04	4.47	269.59	422.12	478.92	209.09	6.94	6.84	6.59
3	Mukhathala	48.03	109.66		257.05	392.37	396.69	191.71	8.89	4.39	3.76
4	Chavara	11.81	12.64		55.39	283.44	257.80	86.27	7.70	2.61	1.08
5	Ochira	45.88	106.57	2.23	17.26	499.12	456.32	75.84	22.95	4.00	3.33
6	Sasthamkotta	61.29	326.11	8.24	203.09	999.85	1086.52	158.36	14.16	7.14	3.88
7	Chadayamangalam	112.69	154.8	0.93	622.24	575.66	1127.13	242.45	9.00	7.61	6.11
8	Kottarakkara	41.45	85.38	0.10	302.46	435.23	538.83	99.67	7.04	3.96	3.29
9	Vettikavala	77.64	131.41		897.32	517.56	1200.80	123.7	9.57	4.10	2.88
10	Anchal	113.97	124.21	7.86	361.28	648.90	766.78	108.62	17.42	7.01	3.47
11	Pathanapuram	46.90	66.16	0.02	348.80	459.02	753.14	55.62	15.15	11.93	7.35
	Blocks Total	606.38	1432.21	23.85	3495.78	5578.49	7335.94	1606.22	127.94	64.15	44.86
	Municipalities	13.51	19.15		31.61	138.51	159.38	76.60	6.60	1.29	0.86
	Corporation		1.70		27.93	47.84	43.70	98.84	2.65	1.64	1.32
	District Total	619.89	1453.06	23.85	3555.32	5764.84	7539.02	1781.66	137.19	67.08	47.04

Table: 14.2 Continued.....

Sl. No.	Name of Block	Bitter gourd	Snake gourd	Little gourd	Ash gourd	Payar	Pumpkin	Cucumber	Bottle gourd	Green chilli	Cabbage
1	2	13	14	15	16	17	18	19	20	21	22
1	Chittumala	2.76	0.35	6.60	1.04	8.28	1.68	0.22	0.11	15.89	
2	Ithikkara	7.07	3.42	7.33	2.22	10.25	3.03	0.84		27.34	
3	Mukhathala	2.08	0.28	5.18	1.76	4.78	0.74	0.11		13.17	
4	Chavara	3.20	0.26	9.47	1.70	3.64	1.75	0.42		8.93	
5	Ochira	5.94	3.95	7.99	4.21	6.79	3.37	1.50		7.40	0.02
6	Sasthamkotta	13.15	4.84	13.88	7.73	31.70	9.74	3.50		21.62	
7	Chadayamangalam	8.41	4.54	9.07	5.28	13.14	6.40	1.36	0.64	27.99	
8	Kottarakkara	7.27	3.46	5.34	2.44	10.37	1.49	1.42	0.08	16.42	
9	Vettikavala	5.58	1.94	6.04	2.45	12.00	2.68	1.40	0.36	11.62	
10	Anchal	18.57	5.62	13.33	4.29	54.02	6.96	0.46	0.35	11.49	
11	Pathanapuram	7.37	2.83	8.74	4.70	30.64	6.09	1.40	0.96	11.97	
	Blocks Total	81.40	31.49	92.97	37.82	185.61	43.93	12.63	2.50	173.84	0.02
	Municipalities	3.68	0.43	5.33	1.17	5.02	1.54	0.20		2.81	
	Corporation	1.39	0.47	3.26	0.43	5.49	0.47	0.06		4.80	
	District Total	86.47	32.39	101.56	39.42	196.12	45.94	12.89	2.50	181.45	0.02

Table: 14.2 Continued.....

Sl. No.	Name of Block	(Area in Ha)										
		Tomato	Cauli flower	Other vegetables	Elephant foot yam	Colocasia	Yam	Koorika	Sweet potato	Nana kizhangu	Other tubers	
1	2	23	24	25	26	27	28	29	30	31	32	
1	Chittumala	0.16		0.16	36.95	104.83	25.67		0.03	3.19	7.87	
2	Ithikkara	0.13		1.09	42.53	85.28	18.73	0.11	0.47	11.60	10.45	
3	Mukhathala	0.11	0.03		34.33	63.45	13.95	0.03		2.74	15.47	
4	Chavara	0.22			42.00	148.00	61.97	0.09	0.10	8.57	4.54	
5	Ochira	0.07	0.02		39.13	159.59	42.44		0.33	15.54	4.08	
6	Sasthamkotta	0.19			345.15	491.85	214.56	8.48	0.46	12.08	7.99	
7	Chadayamangalam	0.13		0.30	130.54	146.25	45.05	0.12	0.83	10.71	27.07	
8	Kottarakkara	0.13	0.02	0.07	108.18	123.91	34.57		0.48	6.42	9.78	
9	Vettikavala	0.04		0.98	100.06	108.76	20.77	0.02	0.37	3.06	13.11	
10	Anchal				188.87	155.83	28.47	0.78	0.31	1.27	4.25	
11	Pathanapuram				137.48	131.69	65.76	0.88	0.06	3.93	2.1	
	Blocks Total	1.18	0.07	2.60	1205.22	1719.44	571.94	10.51	3.44	79.11	106.71	
	Municipalities	0.02		0.04	25.32	37.45	12.85		0.09	1.99	0.76	
	Corporation	0.11		0.22	4.87	17.63	3.81		0.02	0.89	1.77	
	District Total	1.31	0.07	2.86	1235.41	1774.52	588.60	10.51	3.55	81.99	109.24	

Table: 14.2 Continued.....

Sl. No.	Name of Block	Pulses	Ginger	Turmeric	Coconut	Arecanut	Cashew	Pepper	Jack	Mango	Tamaind
1	2	33	34	35	36	37	38	39	40	41	42
1	Chittumala	14.49	10.84	12.22	5265.44	121.65	450.60	327.71	1267.91	969.08	90.23
2	Ithikkara	3.79	8.57	7.87	4663.5	77.14	443.05	281.88	690.18	604.56	79.31
3	Mukhathala	0.81	10.50	13.87	3962.90	89.94	216.77	225.56	481.42	528.03	16.13
4	Chavara		5.36	4.44	5540.35	422.05	140.25	126.88	376.17	561.18	31.86
5	Ochira	8.28	13.69	6.12	6124.65	196.26	201.00	84.46	183.49	281.19	25.50
6	Sasthamkotta	2.9	67.69	27.57	4849.73	282.88	609.04	551.59	771.80	595.69	108.75
7	Chadayamangalam		66.36	56.60	5076.78	210.46	569.19	623.12	1038.03	558.34	171.41
8	Kottarakkara	1.47	30.42	26.26	4145.06	106.77	205.81	334.08	535.77	283.95	42.90
9	Vettikavala	22.54	36.66	33.73	3668.48	131.62	199.24	313.09	597.31	341.81	29.73
10	Anchal	5.13	95.89	29.73	4726.55	587.78	118.13	633.94	764.48	424.09	34.47
11	Pathanapuram	0.28	42.45	16.57	1914.34	104.27	75.20	217.83	355.96	214.69	27.82
	Blocks Total	59.69	388.43	234.98	49937.78	2330.82	3228.28	3720.14	7062.52	5362.61	658.11
	Municipalities	5.06	7.29	4.76	2810.52	61.05	50.20	85.16	193.65	188.35	16.23
	Corporation		1.96	1.20	2555.45	51.73	73.97	79.73	263.60	269.97	10.22
	District Total	64.75	397.68	240.94	55303.75	2443.60	3352.45	3885.03	7519.77	5820.93	684.56

Table: 14.2 Continued.....

Sl. No.	Name of Block	Clove	Nutmeg	Cocoa	Pappaya	Banana	Pine apple	Plantain	Orange	Sugar cane	Sesamum
1	2	43	44	45	46	47	48	49	50	51	52
1	Chittumala	0.97	9.37	0.40	187.11	11.07	7.72	213.48	0.07	0.02	1.39
2	Ithikkara	1.74	5.48	0.74	140.89	19.82	10.26	157.54		0.18	
3	Mukhathala	0.91	6.32		138.94	16.11	2.19	250.56			
4	Chavara	1.46	5.82	1.67	79.05	5.40	2.74	370.06	0.03		3.34
5	Ochira	2.11	4.63	0.11	83.46	9.15	8.00	158.13			49.86
6	Sasthamkotta	3.09	7.59	1.59	109.81	444.61	9.00	429.92	0.06		
7	Chadayamangalam	2.96	7.66	1.45	163.72	308.77	25.35	691.04			
8	Kottarakkara	0.74	3.84	0.02	101.51	85.57	14.00	423.28			
9	Vettikavala	1.34	5.54	0.37	114.72	305.49	30.64	533.18			
10	Anchal	2.87	2.04	0.16	114.34	261.60	23.63	525.06			
11	Pathanapuram	0.96	1.98	0.10	48.30	215.61	44.34	271.92			
	Blocks Total	19.15	60.27	6.61	1281.85	1683.20	177.87	4024.17	0.16	0.20	54.59
	Municipalities	0.04	1.98	0.38	72.19	8.10	1.72	91.42		0.04	
	Corporation	0.80	2.94	0.16	82.85	2.68	0.56	119.55		0.05	
	District Total	19.99	65.19	7.15	1436.89	1693.98	180.15	4235.14	0.16	0.29	54.59

Table: 14.2 Continued.....

Sl. No.	Name of Block	Lemon grass	Fodder grass	Green Manure Plants	Vanila	Teak	(Area in Ha)	
							Medicinal Plants	
1	2	53	54	55	56	57	58	
1	Chittumala	0.10	11.81	158.40	0.20	98.13	2.51	2.51
2	Ithikkara		21.95	131.31		84.00	5.60	5.60
3	Mukhathala		2.58	70.46		85.32	2.52	2.52
4	Chavara	0.02	7.16	19.68	0.02	48.32	2.46	2.46
5	Ochira		28.76	14.60		31.29	3.10	3.10
6	Sasthamkotta		46.28	113.37	0.34	150.24	7.06	7.06
7	Chadayamangalam	0.06	20.24	141.03	0.99	145.99	7.21	7.21
8	Kottarakkara	0.06	14.74	89.45	0.04	200.88	1.92	1.92
9	Vettikavala	0.18	17.57	64.94	0.14	109.31	2.67	2.67
10	Anchal	0.19	22.76	138.12		179.23	1.07	1.07
11	Pathanapuram	0.03	12.11	62.80	0.03	111.65	2.85	2.85
	Blocks Total	0.64	205.96	1004.16	1.76	1244.36	38.97	38.97
	Municipalities		2.22	40.62	0.04	59.25	1.74	1.74
	Corporation		2.44	43.68	0.07	37.70	1.96	1.96
	District Total	0.64	210.62	1088.46	1.87	1341.31	42.67	42.67

Table: 14.3

BLOCK WISE AREA OF CROPS 2010-2011

Sl. No.	Name of Block	Paddy			Pulses	Sugar cane	Palmyrah	Pepper	Ginger	Turmeric	Arecanut
		Autumn	Winter	Summer							
1	2	3	4	5	6	7	8	9	10	11	12
1	Ithikkara	71.99	491.14	6.81	66.06	0.06	2.42	731.01	13.48	18.43	102.15
2	Mukhathala	32.91	263.87	4.14	1.32	0.02	0.02	385.18	5.17	5.59	62.56
3	Anchalummood	10.46	17.79		1.51	0.06	0.95	155.16	2.75	2.35	78.93
4	Chittumala	22.24	90.13	10.95	3.20	0.12	5.43	597.88	9.48	10.99	98.81
5	Chavara	18.44	19.10	0.35	0.27	0.04	1.14	245.35	7.21	4.77	396.23
6	Karunagappally	62.16	168.02	45.91	18.91		0.54	172.60	11.74	4.98	128.37
7	Ochira	28.12	27.11		0.45	0.04	0.01	89.88	5.50	2.58	89.81
8	Sasthamkotta	69.12	342.78		3.47		2.31	1115.55	68.90	28.53	271.58
9	Chadayamangalam	171.34	280.79	0.23	3.68	0.08	2.64	1246.20	63.49	54.12	211.74
10	Kottarakkara	122.17	127.03				3.30	701.18	31.25	29.23	78.93
11	Vettikkavala	172.27	134.44		2.26		2.45	664.67	39.83	34.95	122.18
12	Anchal	77.64	161.31		5.96		2.08	1233.00	81.23	29.21	212.07
13	Pathanapuram	82.66	138.01	12.19	0.34	0.02	1.32	444.85	42.40	16.02	108.46
	Municipalities	18.84	39.05		4.61	0.06	0.25	149.80	4.54	2.83	45.05
	District Total	960.36	2300.57	80.58	112.04	0.50	24.86	7932.31	386.97	244.58	2006.87

Table: 14.3 Continued.....

Sl. No.	Name of Block	Tamarind	Vanila	Clove	Nutmeg	Cinna mon	Jack	Mango	Banana	Plantain	Pineapple
1	2	13	14	15	16	17	18	19	20	21	22
1	Ithikkara	70.39	0.10	3.48	6.19	0.47	755.13	670.22	30.38	222.78	10.89
2	Mukhathala	8.16		0.08	2.98		434.91	333.41	42.50	279.34	2.08
3	Anchalummood	28.88	0.08	4.31	10.10	0.57	237.67	204.47	4.21	81.28	0.51
4	Chittumala	64.97	0.62	2.00	8.23		707.75	554.45	10.40	167.85	4.64
5	Chavara	26.95	0.06	2.20	6.50	0.50	319.20	446.10	8.39	157.86	2.71
6	Karunagappally	16.76	0.17	1.71	3.95	0.10	129.51	160.34	5.39	122.97	4.12
7	Ochira	14.39	0.03	1.10	2.59	0.01	76.52	124.94	2.17	85.87	4.27
8	Sasthamkotta	76.80	1.28	2.48	5.81	0.22	615.56	487.26	418.30	433.96	9.67
9	Chadayamangalam	123.54	0.84	4.03	7.53	0.77	833.64	455.33	246.77	706.09	29.37
10	Kottarakkara	39.21	0.15	1.14	3.78	0.08	441.24	237.17	295.66	539.83	12.23
11	Vettikkavala	30.17	0.30	1.58	6.23	1.03	465.58	264.82	427.51	536.49	31.51
12	Anchal	23.79	0.05	5.51	4.33	1.17	615.97	334.36	298.06	535.78	24.03
13	Pathanapuram	29.39	0.24	1.01	2.78	0.51	303.98	201.54	253.27	314.23	33.45
	Municipalities	11.53	0.06	0.31	1.25	0.37	206.64	191.48	10.95	152.24	1.04
	District Total	564.93	3.98	30.94	72.25	5.80	6143.30	4665.89	2053.96	4336.57	170.52

Table: 14.3 Continued.....

Sl. No.	Name of Block	Pappaya	Orange	Lemon (big)	Lemon (small)	Cashew	Tapioca	Elephant foot yam	Colocasia	Yam	Sweet potato
1	2	23	24	25	26	27	28	29	30	31	32
1	Ithikkara	223.55	0.08	2.45	2.97	460.95	1491.20	57.56	106.03	25.14	0.83
2	Mukhathala	104.83		1.14	0.98	137.39	682.27	19.89	44.67	8.03	0.06
3	Anchalummood	95.35	0.02	0.97	1.95	102.97	147.72	6.73	19.80	3.48	
4	Chittumala	162.28	0.02	2.95	5.20	323.83	696.01	33.42	91.17	25.11	0.15
5	Chavara	79.74		2.25	4.10	105.80	642.34	40.31	175.91	64.86	0.11
6	Karunagappally	62.32		0.16	0.93	121.33	824.47	36.68	110.37	32.91	0.23
7	Ochira	27.74		0.74	2.04	104.15	352.21	15.07	74.46	24.98	0.31
8	Sasthamkotta	107.13	0.06	2.39	7.89	442.39	2284.78	339.49	471.16	222.55	0.29
9	Chadayamangalam	162.48	0.04	17.12	12.42	455.38	2028.58	153.31	151.39	50.47	1.44
10	Kottarakkara	105.44		9.71	10.43	146.65	1394.51	108.12	132.63	37.17	0.39
11	Vettikkavala	102.76		7.20	5.62	142.88	2289.79	118.61	127.85	25.74	0.55
12	Anchal	101.29		4.20	2.03	105.19	1706.11	178.03	141.20	24.13	0.10
13	Pathanapuram	56.86	0.02	3.72	3.23	89.71	1363.37	148.48	155.93	76.42	0.17
	Municipalities	78.17		0.99	0.57	36.33	269.12	15.82	27.94	6.82	0.06
	District Total	1469.94	0.24	55.99	60.36	2774.95	16172.48	1271.52	1830.51	627.81	4.69

Table: 14.3 Continued.....

Sl. No.	Name of Block	Koorika	Nana kizhangu	Other tubers	Drum stick	Amaran thus	Bitter gourd	Snake gourd	Ladies finger	Brinjal	Green chilli
1	2	33	34	35	36	37	38	39	40	41	42
1	Ithikkara		13.46	23.71	314.87	8.87	7.00	3.00	9.43	8.60	30.71
2	Mukhathala	0.30	1.22	6.31	126.70	9.87	2.02	0.40	2.14	2.74	10.28
3	Anchalummood	0.05	0.80	2.30	97.50	8.62	2.04	0.15	1.14	2.31	8.43
4	Chittumala		2.78	5.72	196.61	8.38	2.33	0.64	2.25	3.61	11.81
5	Chavara	0.24	9.29	5.58	99.38	7.17	4.13	0.42	1.37	3.27	7.71
6	Karunagappally		7.40	3.43	65.32	17.46	6.03	2.25	1.47	2.04	4.89
7	Ochira	0.04	10.35	0.76	61.67	11.38	2.71	1.74	1.18	1.69	3.60
8	Sasthamkotta	12.94	13.07	10.80	145.02	11.59	12.58	6.13	4.68	6.95	23.34
9	Chadayamangalam	0.12	11.93	28.74	258.17	8.73	7.76	1.15	6.35	8.55	27.01
10	Kottarakkara		6.29	9.92	108.21	7.58	9.97	7.59	4.18	5.26	18.00
11	Vettikkavala	0.84	4.23	14.74	126.88	7.79	5.13	2.67	2.91	5.09	15.80
12	Anchal	1.05	2.49	3.75	95.93	15.78	19.97	3.84	3.01	6.58	15.31
13	Pathanapuram	0.55	3.48	7.75	64.87	16.29	12.69	5.36	6.30	15.38	12.77
	Municipalities	0.09	0.77	1.99	114.19	4.20	1.86	0.24	0.85	1.52	3.85
	District Total	16.22	87.56	125.50	1875.32	143.71	96.22	35.58	47.26	73.59	193.51

Table: 14.3 Continued.....

Sl. No.	Name of Block	Bottle gourd	Little gourd	Ash gourd	Pumpkin	Cucumber	Payar	Cabbage	Tomato	Other Vegetables	Sesamum
1	2	43	44	45	46	47	48	49	50	51	52
1	Ithikkara	0.22	7.94	2.67	4.15	1.35	10.84		0.36	1.42	
2	Mukhathala		4.22	1.69	1.54	0.31	4.80	0.03	0.17	1.50	
3	Anchalummood		6.51	0.31	0.66	0.13	3.62		0.11	0.03	2.42
4	Chittumala	0.15	3.68	0.96	1.59	0.17	6.23		0.39	0.20	
5	Chavara		8.05	2.45	2.77	0.61	5.47		0.25		4.30
6	Karunagappally		8.04	1.71	1.81	1.76	7.02		0.12	0.14	159.82
7	Ochira		3.77	2.52	2.57	1.26	3.09		0.19		23.34
8	Sasthamkotta		15.68	8.17	11.10	7.66	34.10		0.20		0.45
9	Chadayamangalam	0.71	9.88	6.21	5.63	1.81	17.25		0.54	1.16	0.52
10	Kottarakkara	0.82	6.41	2.34	2.79	0.69	11.37	0.19	0.18	0.44	
11	Vettikkavala	0.04	6.43	2.42	3.42	1.76	11.15		0.04	2.03	
12	Anchal	0.31	9.18	4.80	5.70	0.50	31.07				
13	Pathanapuram	1.07	9.76	6.01	6.31	1.93	23.17				
	Municipalities		3.01	0.79	1.66	0.12	3.78		0.04	0.05	
	District Total	3.32	102.56	43.05	51.70	20.06	172.96	0.22	2.59	6.97	190.85

Table: 14.3 Continued.....

Sl. No.	Name of Block	Coconut	Betel leaves	Lemon grass	Cocoa	Fodder grass	Green Manure Plants	Teak
1	2	53	54	55	56	57	58	59
1	Ithikkara	6107.80	0.16		0.71	16.81	124.07	112.38
2	Mukhathala	3418.76	0.31		0.05	4.97	77.55	41.45
3	Anchalummood	3090.91	0.08		0.90	3.96	38.64	73.89
4	Chittumala	3788.02	0.21		0.07	9.27	102.41	67.45
5	Chavara	5717.24	0.82		1.47	7.88	21.21	43.01
6	Karunagappally	3997.88	1.31		0.24	24.60	9.54	22.41
7	Ochira	3145.79	0.73		0.10	6.71	6.75	15.61
8	Sasthamkotta	4797.51	5.16		1.25	46.00	111.51	152.84
9	Chadayamangalam	5284.23	6.20		1.37	19.26	137.12	144.76
10	Kottarakkara	4396.50	1.39		0.10	11.75	78.35	167.38
11	Vettikkavala	3698.36	5.44		0.07	16.22	71.14	103.35
12	Anchal	4553.13	3.75	0.49	0.62	19.55	139.12	235.20
13	Pathanapuram	1959.46	9.08	0.16	0.70	12.64	75.94	104.87
	Municipalities	2103.91	0.78		0.11	1.11	53.73	75.55
	District Total	56059.50	35.42	0.65	7.76	200.73	1047.08	1360.15

Table: 14.4

BLOCK WISE PRODUCTION OF CROPS 2011-12

Sl. No.	Name of Block	Rice			Black Pepper	Cured Ginger	Cured Turmeric	Arecanut	Tamarind	Jack (million no.)	Banana
		Autumn	Winter	Summer							
1	2	3	4	5	6	7	8	9	10	11	12
1	Chittumala	53.62	171.03		137.63	19.82	17.69	58.14	79.39	5.56	46.35
2	Ithikkara	59.23	501.73	6.89	124.59	14.29	11.28	22.84	32.71	1.59	93.01
3	Mukhathala	95.45	235.34		107.59	17.08	14.34	49.47	19.46	1.39	91.86
4	Chavara	23.99	9.75		39.96	7.86	3.82	124.87	33.02	0.68	27.64
5	Ochira	81.80	179.55	6.75	25.92	15.85	5.20	66.64	49.06	0.41	32.20
6	Sasthamkotta	161.05	831.57	5.45	140.10	120.55	34.35	282.16	146.93	2.12	2861.23
7	Chadayamangalam	258.68	395.30	2.07	267.94	120.84	71.31	169.09	74.11	3.78	2763.19
8	Kottarakkara	100.62	216.56	0.20	164.36	60.65	36.44	89.79	25.22	1.95	428.88
9	Vettikavala	178.89	312.17		94.86	67.56	46.78	98.26	38.99	3.16	2121.26
10	Anchal	246.35	282.43	15.48	167.94	287.47	58.39	879.39	15.60	4.24	1827.35
11	Pathanapuram	103.77	154.50	0.03	62.51	129.81	36.62	120.93	11.70	2.00	1973.14
	Blocks Total	1363.45	3289.93	36.87	1333.40	861.78	336.22	1961.58	526.19	26.88	12266.11
	Municipalities	32.78	41.71		25.25	19.61	7.89	28.98	14.69	0.64	45.58
	Corporation		3.48		36.35	3.54	1.75	15.19	5.09	0.56	13.82
	District Total	1396.23	3335.12	36.87	1395.06	884.93	345.86	2005.75	545.97	28.08	12325.51

Table: 14.4 Continued.....

Sl. No.	Name of Block	(Production in Tonnes)									
		Other Plantain	Pine apple	Tapioca	Pappaya	Sesamum	Coconut (million no.)	Nutmeg	Cashew	Cocoa	Betel leaves
1	2	13	14	15	16	17	18	19	20	21	22
1	Chittumala	714.73	70.09	27283.55	1172.99	0.46	46.33	2.56	171.67		8.28
2	Ithikkara	694.59	100.79	37557.32	536.65		49.41	0.91	100.57		1.50
3	Mukhathala	1850.38	16.95	25716.52	783.20		26.73	3.36	63.94		6.72
4	Chavara	1922.46	14.20	15164.54	520.54	1.84	52.52	1.37	26.92	0.53	11.40
5	Ochira	753.17	33.20	20061.93	354.20	29.92	41.55	0.59	21.30		52.53
6	Sasthamkotta	3895.50	47.49	71545.62	652.71		40.05	1.50	133.98		148.83
7	Chadayamangalam	6459.15	220.46	57544.49	646.53		33.06	3.45	144.57		46.98
8	Kottarakkara	3157.24	89.30	33827.78	686.00		26.19	1.00	67.09		72.08
9	Vettikavala	4052.16	238.10	70623.36	383.96		22.03	1.79	66.54		110.50
10	Anchal	3493.74	171.29	78630.48	446.95		26.46	0.53	40.04		100.80
11	Pathanapuram	1770.19	273.13	76487.04	194.02		10.10	0.75	41.43		296.37
	Blocks Total	28763.31	1275.00	514442.60	6377.75	32.22	374.43	17.81	878.05	0.53	855.99
	Municipalities	458.77	16.59	7937.30	310.45		24.41	0.48	14.81		10.46
	Corporation	763.20	5.22	3106.22	301.49		27.73	0.70	21.52		0.80
	District Total	29985.28	1296.81	525486.12	6989.69	32.22	426.57	18.99	914.38	0.53	867.25

Table: 14.5

BLOCK WISE PRODUCTION OF CROPS 2010-11

Sl. No.	Name of Block	Rice			(Production in Tonnes)							
		Autumn	Winter	Summer	Black Pepper	Cured Ginger	Cured Turmeric	Areca nut	Tamarind	Jack (Million No.)	Banana	
		3	4	5	6	7	8	9	10	11	12	
1	Ithikkara	172.02	1149.13	5.97	107.22	25.05	29.09	32.08	69.68	2.35	138.73	
2	Mukhathala	84.60	526.31	1.59	104.27	11.32	7.91	44.32	16.28	2.12	299.50	
3	Anchalummood	21.48	33.56		24.16	4.95	2.93	31.91	31.55	0.61	14.07	
4	Chittumala	60.97	167.63	15.28	122.20	16.51	14.90	51.82	69.19	2.45	56.81	
5	Chavara	32.39	24.86		39.66	9.58	4.22	154.95	128.80	0.86	53.52	
6	Karunagappally	114.00	301.20	97.57	28.37	17.91	4.83	54.24	53.25	0.41	29.37	
7	Ochira	49.47	53.24		12.55	6.05	2.09	24.48	63.61	0.14	3.40	
8	Sasthamkotta	138.55	646.78		187.08	116.76	30.11	149.85	147.07	2.11	2259.58	
9	Chadayamangalam	398.37	691.89	0.54	193.44	145.96	75.55	133.94	281.04	3.91	2383.05	
10	Kottarakkara	306.61	313.19		105.67	56.89	40.93	105.24	51.89	2.09	2135.66	
11	Vettikavala	403.92	310.61		145.55	84.12	44.71	106.88	64.80	3.94	3971.01	
12	Anchal	172.89	340.21		172.51	239.01	53.38	162.16	33.99	4.28	2159.52	
13	Pathanapuram	153.90	282.99	15.75	60.55	134.44	33.15	99.71	31.77	2.00	2307.69	
	Municipalities	48.28	17.78		8.68	9.31	3.19	12.82	2.41	0.61	90.12	
	District Total	2157.45	4859.38	136.70	1311.91	877.86	346.99	1164.40	1045.33	27.88	15902.03	

Table: 14.5 Continued.....

Sl. No.	Name of Block	(Production in Tonnes)										
		Other Plantain	Pine apple	Tapioca	Pappaya	Sesamum	Coconut (Million No.)	Nut meg	Cocoa	Raw Cashew nuts	Betel leaves	
1	2	13	14	15	16	17	18	19	20	21	22	
1	Ithikkara	1163.13	90.44	34988.02	1100.76		58.82	1.14		154.93	4.16	
2	Mukhathala	1641.12	15.58	12763.90	714.83		26.33	1.73		42.64	5.89	
3	Anchalummood	294.31	3.25	2031.15	334.01	1.08	18.39	3.09		28.17	1.60	
4	Chittumala	1163.70	39.07	20097.28	937.16		22.11	2.06		96.89	4.20	
5	Chavara	979.52	23.13	12846.80	408.34	3.39	43.74	1.45	0.33	27.95	13.94	
6	Karunagappally	478.35	17.85	18206.77	267.10	107.07	34.21	0.45		24.49	20.96	
7	Ochira	357.04	20.72	6603.93	282.64	17.50	22.54	0.47		16.25	13.14	
8	Sasthamkotta	3023.39	44.84	58550.05	1013.97	0.14	31.81	0.88		140.46	149.64	
9	Chadayamangalam	2910.50	178.74	51501.58	903.87		32.72	5.67	0.85	165.75	260.40	
10	Kottarakara	1235.67	57.33	36675.61	621.34		26.47	2.29		59.58	68.11	
11	Vetikavala	2928.16	180.48	60594.71	476.70		20.29	4.10		55.33	239.36	
12	Anchal	5115.62	164.89	70846.21	431.59		22.65	0.57		65.18	146.25	
13	Pathanapuram	2604.33	235.78	63567.12	254.84		11.72	0.49	0.30	41.60	426.76	
	Municipalities	565.61	4.57	5606.43	171.21		5.88	0.22		7.16	21.57	
	District Total	24460.45	1076.67	454879.56	7918.36	129.18	377.68	24.61	1.48	926.38	1375.98	

Table: 14.6

PRODUCTION OF IMPORTANT CROPS

Year	Rice			(Production in Tonnes)										
	Autumn	Winter	Summer	Black pepper	Green chillies	Pulses including Tur	Cured Ginger	Cured Turmeric	Arecanut	Tamarind				
1	2	3	4	5	6	7	8	9	10	11				
2011-12	1396	3335	37	1395	164	52	885	346	2006	546				
2010-11	2159	4859	137	1312	176	82	878	347	1164	1045				
2009-10	2060	5693	194	1501	188	149	898	341	1587	1228				

Year	Mango	Jack (Million Nos)	Banana	Other plantain	Pineapple	Tapioca	Sweet potato	Pappaya	Drumstick
1	12	13	14	15	16	17	18	19	20
2011-12	37727	28	12326	29985	1297	525486	44	6990	2008
2010-11	30241	28	15902	24461	1077	454880	55	7918	2114
2009-10	29724	22	13624	26735	1187	503095	132	7572	1725

Year	Sesamum	Coconut (Million Nuts)	Nutmeg	Tea	Rubber	Cocoa	Raw cashew nuts	Betel leaves	Clove
1	21	22	23	24	25	26	27	28	29
2011-12	32	427	19	130	55600	1	914	867	1
2010-11	129	378	25	115	54130	1	926	1376	2
2009-10	86	412	22	95	50830	2	1271	1745	2

Source: Agricultural Statistics

SEED RATE FOR IMPORTANT CROPS OF KERALA

1. Rice	Transplanting	-	60-85kg/ha
	Broadcasting	-	80-100kg/ha
	Dibbling	-	80-90kg/ha
2. Maize		-	20kg/ha
3. Ragi	Direct sown	-	5kg/ha
	Transplanted crop	-	4-5kg/ha
4. Sorghum		-	12-15kg/ha
5. Black gram	Pure crop	-	20kg/ha
	Mixed crop	-	6kg/ha
6. Cowpea			
1. For vegetable type			
	a. Bush	-	20-25kg/ha
	b. Trailing	-	4-5kg/ha
2. For grain and dual purpose			
	a. Broadcasting	-	60-65kg/ha
	b. Dibbling	-	50-60kg/ha
7. Green gram			
	Pure crop	-	20-25kg/ha
	Mixed crop	-	6kg/ha
8. Green pea		-	60kg/ha
9. Horse gram		-	25-30kg/ha
10. Red gram			
	Pure crop	-	15-20kg/ha
	Mixed crop	-	6-7kg/ha
11. Amorphophallus		-	9-12tonnes/ha
12. Colocasia		-	800-1200kg/ha
13. Greater yam (Kachil)		-	3000-3700kg/ha
14. Lesser yam (Nanakizhangu)		-	1800-2700kg/ha
15. Sweet potato		-	80kg tubers/ha
16. Tapioca		-	2000 stems/ha
17. Rubber		-	450-500plants/ha
18. Ground nut			
	Pure crop	-	100kg kernels/ha
	Inter crop in coconut	-	80kg kernel/ha
	Inter crop in Tapioca	-	40-50kg kernel/ha
19. Sesamum		-	4-5kg/ha
20. Mango ginger		-	1500kg/ha
21. Ginger		-	1500kg/ha
22. Turmeric		-	2000-2500kg/ha
23. Betel vine		-	20000to25000cuttings/ha
24. Okra		-	7-8.5kg/ha
25. Bitter gourd		-	5-6kg/ha
26. Coleus		-	75-100kg/tubers/ha
27. Snake gourd		-	3-4kg/ha

28. Cucumber	-	0.5-0.75kg/ha
29. Watermelon	-	1-1.5kg/ha
30. Bottle gourd	-	3-4kg/ha
31. Pumpkin	-	1-1.5kg/ha
32. Ash gourd	-	0.75-1kg/ha
33. Brinjal	-	370-500g/ha
34. Chilli	-	1kg/ha
35. Tomato	-	400g/ha
36. Cabbage	-	500-750g/ha
37. Cauliflower	-	600-750g/ha
38. Carrot	-	5-6kg/ha
39. Beetroot	-	7-8kg/ha
40. Radish	-	7-8kg/ha
41. Potato	-	1000-2000kg seed tuber/ha
42. Garlic	-	500kg of cloves/ha
43. Winged bean	-	15-20kg/ha
44. Cluster bean	-	10-12kg/ha
45. Clove bean	-	6-7kg/ha
46. Smooth gourd	-	2.5-3kg/ha
47. Ridge gourd	-	2.5-3kg/ha
48. Bell pepper	-	400-600g/ha

CONVERSION RATES BETWEEN RAW MATERIALS AND PROCESSED PRODUCTS

Paddy	Rice	Cleaned 2/3 by weight of paddy
Groundnut	Kernels to nuts in shell	70 percent
	Oil to nuts in shell	28 percent
	Oil to Kernels crushed	40 percent
	Cake to Kernels crushed	60 percent
Sesamum	Oil to seeds crushed	40 percent
	Cake to seeds crushed	60 percent
Coconut	Copra to nuts	6,773 nuts gives one tone of copra (average), presently it is 7250-7500 nuts due to mite attack
	Cake to copra	38 percent
Pepper	Green to dry	21-39 percent by weight
Sugarcane	Gur from cane	10 percent
	Crystal sugar from gur	62.4 percent
	Crystal sugar from cane	9.9 percent
	Molasses from cane	3.5 percent
Cashew	Cashew Kernel	25 percent of nuts
Arecanut	Husked Champan to unhusked	35 percent by weight
	(Processed tender nut to Unhusked champan)	12 percent
Tapioca	Starch	28-30 percent on the weight of fresh tubers

Turmeric	Cured to raw (Dry 17-25% of the raw stuff)	16-20 percent of the weight
Ginger	Dry Ginger	21-30 percent by weight
Cocoa	Pod to wet beans	40 percent by weight
	Wet beans to dried beans	35-40 percent by weight
Coffee	Robusta-Berried to clean coffee	4.5 to 3.6:1
	Wet beans to dried beans	5.0 to 3.3:1
Cardamom	Green to dry	25-35 percent
Oil Palm	Palm Oil	20% by weight of Bunch
Soyabean seed	Oil to soyabean seed crushed	18 percent
	Meal to soyabean seed crushed	73 percent
	Hull from soyabean seed crushed	8 percent
Neem seed	Oil to kernel crushed	45-50 percent
	Cake to kernel crushed	50-55 percent

CONVERSION FACTORS FOR COCONUT

A. Number of Coconuts to a tonne of Copra:

Kerala	6,250 to 6,850 (at present it is 7250-7500 nuts due to mite attack)
Andrapradesh	8,820
Tamilnadu	7,000
Laccadives	12,000

B. Copra yield from coconut in different months in Kerala at 6% moisture level/1000 nuts

January	163kg
February	181kg
March	178kg
April	176kg
May	179kg
June	165kg
July	152kg
August	139kg
September	147kg
October	148kg
November	155kg
December	158kg

C. Nuts to shell, Coconut water etc.

1000 nuts	114kg shell
1000 nuts	100 litres of coconut water
1000 nuts	35kg of charcoal

D. Coconut Oil from Copra

Chekkus	58-60%
Rotories	62-63%
Expellers	63-65%

E. Ball copra from coconut (per 1000 nuts)

1.5tonne (grade 1)
1.3tonne (average)

F. Desiccated coconut (per 1000 nuts)

1 tonne of DC

G. Cake yield as percentage of copra crushed

Chekkus	38%
Rottories	36%
Expellers	34%

H. Coconut to Fibre (per 1000 nuts)

81.8kg - Kerala
68.3kg - Andhrapradesh
90.0kg - Tamilnadu
81.9kg - Karnataka
56.9kg - Others

I. Composition of Coconut (Husked)

Shell	27.9% (23.5 to 32.8)
Kernel	55.2% (48.2 to 62.0)
Water	17.0% (8.2 to 25.1)

J. Composition of Standard Copra

Moisture	6%
Oil	68 to 71%
Free Fatty Acids	2%

<u>Composition</u>	<u>Kernel (%)</u>	<u>Copra%</u>	<u>Cake%</u>
Moisture	46.3	5.8	10.7
Protein	4.1	8.9	19.1
Fat	37.3	67.0	11.1
Carbohydrates	7.9	12.4	40.9
Crude Fibre	3.4	4.1	14.1
Ash	1.0	1.8	4.1

K. Fatty Acid Composition of Coconut Oil

Saturated Fatty Acids	Un-Saturated Fatty Acids
Lauric Acid	Palmitoleic Acid
Caprylic Acid	Oleic Acid
Myristic Acid	Linoleic Acid
Straric Acid	Arachidonic Acid
Arachidic Acid	

L. Coir pith per 10000 husk

2 tonnes

M. Charcoal yield from shell (per 3 tonnes of shell)

1 tonne

N. Processed coconut cream/1000 coconut

200kg cream

O. Coconut Vinegar (per 100 litres coconut water)

110 litre vinegar

Source:- Farm Guide.

PLANTATION CROPS

Plantation crops are perennial crops which are grown in larger areas and commercially important. Plantation crops in general are either export oriented or import substituting and therefore assume special significance from the national point of view. Kerala has a substantial share in the four plantation crops of rubber, tea, coffee and cocoa.

Rubber: - Natural Rubber occupies the prime position in Kerala among plantation crops. In Kerala the coverage under the crop in 2011-12 was 5.39 lakh ha. higher by 5335 ha over the previous year. The production of natural rubber in Kerala during the period was 7.89 lakh tonnes indicating 2.4% increase over the previous year. In 2011-12, the productivity increased slightly to 1462 kg/ha from 1442 kg/ha in 2010-11. 87.3% of total rubber production in the country was from Kerala in the current year. The total area of rubber cultivation in the district during 2011-12 is 36840 ha. and production is 55600 tonnes.

Tea: - Tea is greater significant to Kerala because of high land productivity relative to other crops, exports earnings and employment in rural and backward areas. The share of Kerala in tea production is 6.9% in 2011-12. There is slight increase in production of tea in Kerala and it ranged from .57 lakh MT in 2010-11 to .58 lakh MT in 2011-12. The total tea production in the district during 2010-11 is 115 tonnes increased to 130 tonnes during 2011-12. The district is having an area of 1258 ha under tea plantation.

Coffee: - Area under coffee production in Kerala was 0.84 lakh ha and share of production in the State is nearly 22% during 2011-12. The total area during 2011-12 is 37,028 ha and district is having no area under coffee plantation.

Cocoa: - The total area of cocoa production in the Kerala State is 12,764 ha. and only 7 ha of land is under cocoa production in district during 2011-12 period.

Table: 15.1

RUBBER STATISTICS

Type- wise Production & Consumption of NR & SR	(Metric Tonnes)					
	January 2013	January 2012	April 2012 to January 2013	April 2011 to January 2012	April 2011 to March 2012	Percentage increase (+)/ decrease (-) of (3) & (4)
	1	2	3	4	5	6
PRODUCTION						
Natural Rubber (NR)						
Ribbed Smoked Sheet (RSS)	74690	77923	588920	575424	658200	
Solid Block Rubber	12905	11851	101255	101085	119815	
Latex Concentrates (drc)	7820	7506	61795	63896	76490	
Others	5585	5220	46230	43995	49195	
Total	101000	102500	798200	784400	903700	1.8
Synthetic Rubber (SR)						
Styrene Butadiene (SBR)	1774	2137	15705	16015	18791	
Poly Butadiene (BR)	6420	6780	64798	66030	78745	
Others	809	1497	10039	10850	13063	
Total	9003	10414	90542	92895	110599	-2.5
Total NR & SR	110003	112914	888742	877295	1014299	1.3
CONSUMPTION						
Natural Rubber (NR)						
Ribbed Smoked Sheet (RSS)	44090	51080	483215	512835	616215	
Solid Block Rubber	22980	23625	248940	204910	248285	
Latex Concentrates (drc)	6920	5850	64070	61155	73190	
Others	1820	1980	22065	22850	26725	
Total	75810	82535	818290	801750	964415	2.1
Out of which Auto Tyre Manufactures	47419	54293	534372	525702	631410	1.6

Type- wise Production & Consumption of NR & SR	January 2013	January 2012	April 2012 to January 2013	April 2011 to January 2012	April 2011 to March 2012	Percentage increase (+)/ decrease (-) of (3) & (4)
Synthetic Rubber (SR)						
Styrene Butadiene (SBR)	16390	15605	163530	152985	185265	
Poly Butadiene (BR)	11865	11620	122100	110825	134630	
Others	8870	7160	85430	88585	103455	
Total	37125	34385	371060	352395	423350	5.3
Out of which Auto Tyre Manufactures	26337	24914	270231	256287	307365	5.4
Total NR & SR	112935	116920	1189350	1154145	1387765	3.1
Out of which Auto Tyre Manufactures	73756	79207	804603	781989	938775	2.9

Production Consumption and stock of RR	(Metric Tonnes)				
	January 2013	January 2012	April 2012 to January 2013	April 2011 to January 2012	April 2011 to March 2012
Reclaimed Rubber (RR)	1	2	3	4	5
Production	9225	8915	96695	84990	103565
Consumption	9055	8785	95925	84410	102435
Out of which Auto Tyre Manufactures	3545	3650	38929	35679	43178
Stock with Manufactures (end of month/year)	6850	5530			

Source:- Rubber Board

ANIMAL HUSBANDRY

Animal husbandry plays an important role in generating employment and income to the weaker sections of the population. The preservation and the development of cattle wealth and poultry are also significant to the production of major livestock products of nutritional standard and the district is covered by the Integrated Dairy Development Project. District has one of the largest cattle stock populations and there were 255773 live stock population and 766412 poultry population during 2010-11 Animal husbandry reports.

Table: 16.1

NUMBER OF CASES TREATED UNDER IMPORTANT CATEGORIES OF DISEASES IN VARIOUS DEPARTMENT INSTITUTIONS DURING 2010-11

Digestive disorders	Cattle	63436
	Buffaloe	1755
	Goat	32544
	Others	19681
Respiratory Diseases	Cattle	13444
	Buffaloe	204
	Goat	9074
	Others	29122
Metabolic Diseases	Cattle	8501
	Buffaloe	24
	Goat	667
	Others	76
Deficiency Diseases	Cattle	4868
	Buffaloe	47
	Goat	2018
	Others	3137
Coccidiosis	Cattle	4523
	Buffaloe	130
	Goat	1068
	Others	12145
Babesiosis	Cattle	718
	Buffaloe	0
	Goat	136
	Others	5
Other endoparasites	Cattle	2570
	Buffaloe	64
	Goat	1216
	Others	5722

Table: 16.1 Continued.....

Ectoparasitic conditions	Cattle	7127
	Buffaloe	319
	Goat	3950
	Others	11270
Abortion	Cattle	746
	Buffaloe	4
	Goat	475
	Others	887
Dystocia	Cattle	1682
	Buffaloe	7
	Goat	674
	Others	0
Other reproductive disorder	Cattle	745
	Buffaloe	0
	Goat	125
	Others	0
Poisoning	Cattle	676
	Buffaloe	0
	Goat	241
	Others	0
Mastitis	Cattle	8535
	Buffaloe	23
	Goat	1984
	Others	3

Table: 16.2

ANTI RABIES VACCINATION DONE IN 2010-11

Prophylactic in dogs	Post Exposure Vaccinations					Number of deaths due to rabies				
	Cattle	Buffalo	Goat	Canine	Other Animals	Cattle	Buffalo	Goat	Canine	Other Animals
9,602	79	2	422	0	0	0	0	0	0	0

Table: 16.3

DAIRY CO-OPERATIVE SOCIETIES AS ON 31-03-2011

Primary Societies	334
Regional Unions	
Total	334
Anand Mode (APCOS)	270
Traditional	64
Total	334

Table: 16.4

OUTBREAKS, ATTACKS, DEATHS ETC.DUE TO CONTAGIOUS DISEASES AND NUMBER OF ANIMALS PROTECTED/VACCINATED DURING THE YEAR 2010-11

Foot and Mouth				Anthrax				Black Quarter			
Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated
0	0	0	109752	3	3	3	0	0	0	0	300
Hemorrhagic Septicemia				Canine Distemper				Parvo Virus			
Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated
3	5	5	889	0	0	0	691	0	0	0	691
Ranikhet				Fowl Pox				Infectious Bursal Disease			
Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated
4	229	128	573741	5	259	212	26400	0	0	0	0
Duck Plague				Others				Total			
Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated
0	0	0	65741	0	0	0	12122	15	496	348	790327

Source: Bulletin 2011, AHD.

Table: 16.5

ACTIVITIES IN THE ANIMAL HUSBANDRY SECTOR IN KERALA (2003-04 to 2010-12)

Sl. No.	Activities	Unit ('000)	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
1	Cases treated	Nos.	4629	4879	5029	5260	5015	4873	4663	4 287	4830
2	Operations Performed	Nos.	136	135	125	120	121	116	122	86	78
3	Castration done	Nos.	6	6	5	5	4.8	5.6	4.7	4.37	3.94
4	Vaccination done										
	1. Livestock	Nos.	4414	1334	3440	2723	2517	2282	3653	1636	1681
	2. Poultry	Nos.	4554	6170	9603	8752	7251	7008	8829	8903	10222
5	Anti Rabies Vaccinations done in Dogs	Nos.	132	113	101	197	173	207	176	141.04	167.8
6	Artificial Insemination done	Nos.	1231	1176	1180	1204	1075	1196.96	1298.55	1387.46	1485.17
7	Calvings recorded	Nos.	354	358	355	383	358	346.90	326.70	368.92	413
8	Chicks hatched out in Department Poultry Farms	Nos.	977	747	515	859	369	603	792	1054.77	1388
9	Vaccines produced in Veterinary Biologicals										
	1. Poultry	Doses	17967	13488	10948	20892	11103	19285	138.49	23661.1	18908
	2. Livestock	Doses	534	329	184	440	678	494	227	326	456

Source: Economic Review 2012

FISHERIES

In Kerala fishing industry occupies an important position in its economy. With a coastal line of about 590 Km long, Kerala offers immense possibilities for fishing both marine and inland. The activities covered in this sector are (i) fishing in ocean, coastal, offshore and inland waters for commercial purposes (ii) Subsistence fishing in inland waters (iii) Gathering of sea weeds, seashells and other ocean and coastal water products (iv) Fish curing. The important factor that has a decisive note in the fishery potential of the State is the existence of mud-banks, locally known as 'Chakara', closed to the coast. Kollam is an important maritime district of the State with a coastal line of 37Km. Neendakara on the South-West coast, situated closed to the Ashtamudi Lake and Sakthikulangara are the two villages which thrive in fishing. The lighterage port at Neendakara through not envisaged as a fishing harbour is at present the most important fishing centre of the State using mechanised boats. There are 27 marine and 26 inland fishing villages. Based on 2011-12 report, annual fish production was 112085MT from marine and 15577MT from inland sector. The fisher folk population was 123100 with a breakup of 89466 from marine and 33634 from inland sector during the same year. There are 45 Fishermen Development Welfare Cooperative Societies functioning at this district extends all basic support and assistance in the development of inland fish farming.

Table: 17.1

FRESH WATER RESOURCES IN KOLLAM DISTRICT

Year	Panchayat ponds		Holy ponds and streams		Village ponds and other water holds		Irrigation tanks	
	No	Area (Ha)	No	Area (Ha)	No	Area (Ha)	No	Area (Ha)
2009	589	62.93	188	24.96	16	35.55	17	150.26
2010	589	62.93	188	24.96	16	35.55	17	150.26

Table: 17.2

DETAILS OF DISTRICT WISE PADASEKHARAMS IN KERALA

Sl. No.	Name of District	No. of Panchayats	No. of Padasekharams	Area in	
				Acre	Cent
1	Kollam	17	104	6837	31.5
2	Alappuzha	52	557	68173	67
3	Kottayam	18	206	15810	40
4	Ernakulam	40	257	10432	20
5	Thrissur	10	92	6002	30
6	Palakkad	11	44	1638	16
7	Malappuram	15	85	580	34
8	Kozhikode	3	8	173	
9	Kannur	41	117	3381	69
10	Kasaragod	11	80	2479	78
	Total	218	1550	115505	85.5

Total: 17.3

DISTRICT WISE SPECIES WISE INLAND FISH LANDINGS IN KOLLAM (QTY in MT)

2008-2009		
Sl. No.	Name of Fish	Quantity
1	Prawn	708
2	Etroplus	565
3	Murrels	517
4	Mulletts	746
5	Cat fish	778
6	Jew fish	370
7	Tilapia	1366
8	Labeo fimbriatus	0
9	Barbus	76
10	Mrigal	674
11	Crabs	98
12	Common crabs	1027
13	Catla	1189
14	Gourami	0
15	Chamos	73
16	Eels	8
17	Labeo Rohitha	1598
18	Shrimp	0
19	Mussel	476
20	Edible Oyster	307
21	Miscellaneous	316
	Total	10892

2009-2010		
Sl. No.	Name of Fish	Quantity
1	Prawn	722
2	Etroplus	564
3	Murrels	521
4	Mulletts	743
5	Cat fish	782
6	Jew fish	366
7	Tilapia	1349
8	Labeo fimbriatus	0
9	Barbus	76
10	Mrigal	846
11	Crabs	121
12	Common crabs	1229
13	Catla	1584
14	Gourami	0
15	Chamos	73
16	Eels	8
17	Labeo Rohitha	1854
18	Shrimp	87
19	Mussel	635
20	Edible Oyster	192
21	Miscellaneous	294
	Total	12046

Total: 17.4

DISTRICT WISE SPECIES WISE VALUES OF INLAND FISHES IN KOLLAM (Rs in 000's)

2008-2009		
Sl. No.	Name of Fish	Value
1	Prawn	155760
2	Etroplus	42375
3	Murrels	25850
4	Mulletts	70870
5	Cat fish	36566
6	Jew fish	13320
7	Tilapia	47810
8	Labeo fimbriatus	0
9	Barbus	2128
10	Mrigal	28308
11	Crabs	29890
12	Common crabs	46215
13	Catla	53505
14	Gourami	0
15	Chamos	4380
16	Eels	288
17	Labeo Rohitha	71910
18	Shrimp	0
19	Mussel	8568
20	Edible Oyster	4298
21	Miscellaneous	15168
	Total	657209

2009-2010		
Sl. No.	Name of Fish	Value
1	Prawn	158840
2	Etroplus	73320
3	Murrels	26050
4	Mulletts	70585
5	Cat fish	36754
6	Jew fish	13176
7	Tilapia	47215
8	Labeo fimbriatus	0
9	Barbus	2128
10	Mrigal	35532
11	Crabs	36905
12	Common crabs	55305
13	Catla	71280
14	Gourami	0
15	Chamos	4380
16	Eels	288
17	Labeo Rohitha	83430
18	Shrimp	16095
19	Mussel	11430
20	Edible Oyster	2688
21	Miscellaneous	14112
	Total	759513

Source: Inland Fisheries Statistics, Dept of Fisheries

WETLAND

Wetlands play a vital role in maintaining the fragile environmental balance. Wetlands serve as sinks, sources and transformers of innumerable chemical, biological and genetic materials. They offer a unique habitat for a wide variety of flora and fauna as well. Wetlands are lands transitional between terrestrial and aquatic ecosystem where the water table is usually at or near the surface or the land is covered by shallow water. This definition, given by Cowardin et al (1979), is widely accepted by wetland scientists of the United States and is also used in India (Mitsch and Gosselink, 1989). Wetlands include the swamps, bogs, marshes, mires, fens and other wet ecosystems found throughout the world under different names. Wetland is an area of ground that is saturated with water either permanently or seasonally. Wetlands are categorized by their characteristic vegetation, which is adapted to these unique soil conditions.

Wetlands are found on every continent except Antarctica. The main functions of wetlands are as water purification systems flood control, shoreline stability and as reservoirs of biodiversity. Wetlands may be converted to agriculture or development or constructed as a water management tool as in the recent developing field of water sensitive urban design.

Wetlands have been categorized both biomes and ecosystem. A patch of land that develops pools of water after a rain storm would not be considered as a 'wetland' though the land is wet. Wetlands have unique characteristics. They are generally distinguished from other water bodies or landforms based on their water level and on the types of plants that thrive within their specifically wetlands are characterized as having a water table that stands at or near the land surface either permanently or seasonally for a large enough period each year to support aquatic plants.

Wetlands vary widely due to local and regional differences in topography, hydrology, vegetation and other factors including human interference. Wetlands can be divided into two main classes, tidal and non-tidal areas.

Wetland hydrology is associated with the spatial and dispersion, flow, and physio chemical attributes of surface and ground water in its reservoirs. Based on hydrology wetlands can be categorized as riverine (associated with streams) lacustrine (associated with lakes and reservoirs) and palustrine (isolated). Salinity

has a very strong influence on wetland water chemistry. In non-reverine wetlands natural salinity is regulated by interaction between ground and surface water, which may be influenced by human activity.

Carbon is the major nutrient cycled within wetlands. Most nutrients such as carbon, sulfur, phosphorus and nitrogen are found within the soil of wetlands. The biota of a wetland system includes its vegetation zones and structure as well as animal population and distribution which are highly dependent of water chemistry. The chemistry of water flowing into wetlands depends on the source of water and the geological material in which it flows through as well as the nutrients discharged from organic matter in the soils and plants at higher elevation as the slope wetlands.

There are four main groups of hydrophytes that found in wetland systems. Submerged water plants - found completely underwater, floating water plants usually small although it may take up a large surface area in wetland systems, emergent water plants seen above the surface of water but whose roots are completely submerged.

Fish are more dependent on wetland ecosystems than any other type of habitant. Frogs are the most crucial amphibian species in wetland systems.

Temperatures vary greatly depending on the location of the wetland. Rainfall also varies according its location.

Wetland reservoirs are very rich in our country which exhibit significant ecological diversity because of variability in climate conditions and topography.

Though small in size Kerala is land of affluent in water sources. 44 rivers drain the land of, which are west flowing and 3 flows east. Apart from these 44 rivers their tributaries and a countless number of streams and rivulets crisscross the land making it green and fertile and also serve as inland waterways.

Besides these rivers Kerala is bestowed with a number of lakes and backwater lagoon which add to the beauty of the land. The important wetlands of Kerala are Ashtamudi Lake, Vembanadu Lake and Sasthamkotta Lake. In the State of Kerala 1762 wetlands have been delineated. Total wetlands area estimated to 160590ha. The major wetland types are River/stream (65162ha) Lagoons (38442 ha) Reservoirs (26167 ha) and Waterlogged (20305 ha). Analysis of wetland status in terms of open water and aquatic vegetation showed that around 88 and 83% of wetland area is under open water category during post monsoon and pre monsoon

respectively. Aquatic vegetation (floating/emergent) occupies around 8 and 6% of wetland area during post and pre monsoon respectively.

The wetlands can be broadly classified into inland fresh and saline as well as coastal fresh and saline areas. The coastal wetland ecosystems are often classified as tidal salt marshes, tidal freshwater marshes and mangrove wetlands; the inland wetland ecosystems, as inland fresh water marshes, peatlands, deepwater swamps and riparian wetlands. Examples of artificial wetlands are those of wild-life sanctuaries of Bharathpur and Kaziranga in India and the extensive man-managed rice fields in different parts of Asia.

The wetlands are among the most important ecosystems of the Earth. On a short-time scale, wetlands are useful as sources, sinks and transformers of a multitude of chemical, biological and genetic materials. They have been found to cleanse polluted waters, prevent floods, protect shorelines and recharge groundwater aquifers; further more wetlands provide unique habitats for a wide variety of flora and fauna. In a long-time scale, the swampy environment of the carboniferous Period produced and preserved many of the fossil fuels on which we depend now. Some scientists have rightly called the wetlands as 'nature's kidneys' because of the natural functions they perform.

Wetlands are the most productive life-supports system in the world and are of immense socio-economic and ecological importance to mankind. The management of these wetlands has become the most important concern of mankind today. The paddy wetlands are a potential source for the food security of the State. The area of these wetlands is shrinking at an alarming rate due to the shift from rice to cash crops and non-agricultural use. Scientific Management coupled with socioeconomic considerations will provide an effective tool to the planner for recognizing wetlands as one of the prime life-sustaining ecosystems. To save this unique inter-tidal ecosystem from being endangered its conservation and management as well as in river basin management policies/programmes.

Table:18.1

ANCHAL BLOCK

Sl. No.	Category	Area (Ha)									
		Alayamon	Anchal	Aryankavu	Edamulackal	Eroor	Karavaloor	Kulathoo puzha	Thenmala		
1	Paddy Converted to Arecanut		9.27		3.78		3.81				
2	Paddy Converted to Banana	1.97	50.03		61	4.53	40.10				
3	Paddy Converted to Built up + Mixed Crops							11.13			
4	Paddy Converted to Built up Land	78.56	147.13		87.85	14.6	52.13				
5	Paddy Converted to Clay Mining										
6	Paddy Converted to Coconut	29.71	98.74		48.72	52.76	48.6				
7	Paddy Converted to Coconut + Built up Land										
8	Paddy Converted to Coconut + Arecanut										
9	Paddy Converted to Coconut + Mixed Trees										
10	Paddy Converted to Cultivable Waste Land	1.44	1.24		0.81		3.78				
11	Paddy Converted to Mixed crop	24.67	35.17		43.77	10.53	23.64				
12	Paddy Converted to Mixed Trees	12.88	2.28		9.36	149.34	45.61			26.47	
13	Paddy Converted to Rubber	58.81	19.47		28.47	30.54	2.71				
14	Virippu	71.96	181.98		196.80	86.99	121.37				
15	Virippu + Puncta										
16	Water Bodies			32.13		13.55		1140.96		71.26	
17	Mundakan										
18	Other Land Uses	5303.25	2158.95	21513.95	3170.5	3886.05	2273.84	38687.42		12783.26	
	Panchayath Total	5583.25	2704.26	21546.08	3651.06	4248.89	2615.59	39839.51		12880.99	
	Block Total				93069.63						

Table:18.2

CHADAYAMANGALAM BLOCK

Sl. No.	Category	Area (Ha)													
		Chadaya mangalam	Chithara	Elamadu	Ittiva	Kadakkal	Nilamel	Veinalloor							
1	Paddy Converted to Arecanut														
2	Paddy Converted to Banana	4.81		1.96		4.89				2.45		9.07			
3	Paddy Converted to Built up + Mixed Crops		33.21												
4	Paddy Converted to Built up Land	17.01	25.23	20.62	15.32	48.68				19.28		41.10			
5	Paddy Converted to Clay Mining														
6	Paddy Converted to Coconut	25.98		30.40	18.46	12.18				2.94		48.25			
7	Paddy Converted to Coconut + Built up Land			5.46								25.97			
8	Paddy Converted to Coconut + Arecanut														
9	Paddy Converted to Coconut + Mixed Trees														
10	Paddy Converted to Cultivable Waste Land	22.7		2.95	4.66	4.79				1.86		3.29			
11	Paddy Converted to Mixed crop	10.61		13.23	7.52	21.05				59.52		73.31			
12	Paddy Converted to Mixed Trees		155.43	61.71	301.31	68.95				1.41		13.75			
13	Paddy Converted to Rubber	117.10	126.86	187.57	9.00	109.44				64.08		143.94			
14	Virippu	177.11	44.45	160.64	105.05	99.00				23.76		108.5			
15	Virippu + Puncha														
16	Water Bodies	44.46		1.83	28.5	1.24						10.11			
17	Mundakan														
18	Other Land Uses	2109.99	5551.11	2472.16	3743.43	4532.31				1722.49		2046.52			
	Panchayath Total	2529.77	5936.29	2958.53	4233.25	4902.53				1897.79		2523.81			
	Block Total				24981.97										

Table:18.3

CHAVARA BLOCK

Sl.No.	Category	Area (Ha)					
		Chavara	Neendakara	Panmana	Thekkumbhagom	Thevalakkara	
1	Paddy Converted to Arecanut			1.51			
2	Paddy Converted to Banana	4.13	2.45	1.15			
3	Paddy Converted to Built up + Mixed Crops						
4	Paddy Converted to Built up Land	14.09		48.38	2.31	4.16	
5	Paddy Converted to Clay Mining					0.35	
6	Paddy Converted to Coconut	24.42	4.47	145.70	4.02	61.57	
7	Paddy Converted to Coconut + Built up Land	163.55		179.91	2.49	108.45	
8	Paddy Converted to Coconut + Arecanut	8.74		15.24		35.53	
9	Paddy Converted to Coconut + Mixed Trees						
10	Paddy Converted to Cultivable Waste Land	47.75	7.38	27.46	12.37	72.28	
11	Paddy Converted to Mixed crop	54.81	8.06	82.22	46.77	53.08	
12	Paddy Converted to Mixed Trees	10.91		16.48		6.51	
13	Paddy Converted to Rubber						
14	Virippu	4.06		14.24		10.69	
15	Virippu + Puncta					8.63	
16	Water Bodies	18.55	269.47	13.87	908.57	189.77	
17	Mundakan						
18	Other Land Uses	857.77	400.83	1129.54	415.45	1136.89	
	Panchayath Total	1208.78	692.66	1675.70	1391.98	1687.91	
	Block Total			6657.03			

Table:18.4

CHITTUMALA BLOCK

Sl. No.	Category	East Kallada	Kundara	Manthro thuruthu	Panayam	Perayam	Perinadu	Thrikkada voor	Thrikkaruva
1	Paddy Converted to Arecanut							3.16	
2	Paddy Converted to Banana		11.16		1.36				
3	Paddy Converted to Built up + Mixed Crops	91.64	26.85						
4	Paddy Converted to Built up Land	9.14	9.93		24.44	1.07		34.75	9.49
5	Paddy Converted to Clay Mining								
6	Paddy Converted to Coconut	11.48		65.96	159.04		43.29	63.57	53.05
7	Paddy Converted to Coconut + Built up Land	10.33						12.17	28.46
8	Paddy Converted to Coconut + Arecanut								
9	Paddy Converted to Coconut + Mixed Trees								
10	Paddy Converted to Cultivable Waste Land	131.81	18.50			2.26		10.96	8.42
11	Paddy Converted to Mixed crop	13.32	26.25		4.89		26.95	3.23	3.31
12	Paddy Converted to Mixed Trees							3.52	1.11
13	Paddy Converted to Rubber							5.58	
14	Virippu	130.50	20.25						
15	Virippu + Puncta	12.91	71.83	22.26	40.21	13.32	62.89		15.20
16	Water Bodies	69.67	1.17	699.49	266.78	777.96	415.43	610.24	1098.11
17	Mundakan								
18	Other Land Uses	822.39	1128.57	527.49	446.88	665.78	1031.32	722.36	584.13
	Panchayath Total	1303.19	1314.51	1315.20	943.60	1460.39	1579.88	1469.54	1801.28
	Block Total					11187.59			

Table:18.5

ITHIKKARA BLOCK

Sl.No.	Category	Adichanalloor	Chathannoor	Kalluvathukkal	Poothakulam	Area (Ha)
1	Paddy Converted to Arecanut		0.58	4.14		
2	Paddy Converted to Banana	3.07	12.83	9.31		3.66
3	Paddy Converted to Built up + Mixed Crops	23.79	7.87	55.3		
4	Paddy Converted to Built up Land	16.28	20.36			2.15
5	Paddy Converted to Clay Mining					
6	Paddy Converted to Coconut	164.69	203.36	78.97		18.03
7	Paddy Converted to Coconut + Built up Land	100.79	43.29	12.04		59.7
8	Paddy Converted to Coconut + Arecanut	37.94	55.14	19.36		17.57
9	Paddy Converted to Coconut + Mixed Trees					
10	Paddy Converted to Cultivable Waste Land	126.03	27.94	32.77		96.94
11	Paddy Converted to Mixed crop	26.74	89.27	71.35		72.62
12	Paddy Converted to Mixed Trees	36.58	20.27	89.34		
13	Paddy Converted to Rubber	16.06				
14	Virippu	74.97	195.39	223.56		46.88
15	Virippu + Puncha	95.42				
16	Water Bodies	105.38	49.97	5.49		264.52
17	Mundakan					
18	Other Land Uses	1536.96	2201.37	3204.24		1119.25
	Panchayath Total	2364.70	2927.64	3805.87		1701.32
	Block Total		10799.53			

Table:18.6

KOTTARAKKARA BLOCK

Sl.No.	Category	Area (Ha)						
		Ezhukone	Kareepra	Kottarakkara	Neduvathoor	Pooyappally	Veliyam	
1	Paddy Converted to Arecanut	0.57	22.12	0.78	4.57	12.71	1.33	
2	Paddy Converted to Banana	6.85	9.81	19.88	24.10	3.35	6.52	
3	Paddy Converted to Built up + Mixed Crops	3.07	25.93	62.16	26.39		9.46	
4	Paddy Converted to Built up Land	33.07	19.08	77.10	67.35	35.84	47.50	
5	Paddy Converted to Clay Mining							
6	Paddy Converted to Coconut	55.58	48.01	47.40	25.36	31.61	48.87	
7	Paddy Converted to Coconut + Built up Land						5.95	
8	Paddy Converted to Coconut + Arecanut	4.79	7.54	13.30		11.31	81.26	
9	Paddy Converted to Coconut + Mixed Trees							
10	Paddy Converted to Cultivable Waste Land	2.97	6.92	18.68	70.21	11.72	43.23	
11	Paddy Converted to Mixed crop	117.45	84.23	40.26	101.47	31.06	82.65	
12	Paddy Converted to Mixed Trees	26.81	78.86	50.74	48.35	52.43	109.33	
13	Paddy Converted to Rubber	0.82		32.65	6.26	54.98		
14	Virippu	33.65	237.20	80.99	4.62	275.52	143.15	
15	Virippu + Puncha							
16	Water Bodies					20.99		
17	Mundakan							
18	Other Land Uses	1496.36	1732.60	1385.86	1859.21	1807.63	2489.77	
	Panchayath Total	1781.99	2272.30	1829.80	2237.89	2349.15	3069.02	
	Block Total			13540.15				

Table:18.7

MUKHATHALA BLOCK

Sl.No.	Category	Area (Ha)					
		Elampalloor	Kottankara	Mayyanadu	Nedumpana	Thrikkovilvattom	
1	Paddy Converted to Arecanut				13.75		
2	Paddy Converted to Banana	7.99	15.94		27.65		
3	Paddy Converted to Built up + Mixed Crops						
4	Paddy Converted to Built up Land	4.65	3.03	7.88	31.17	19.15	
5	Paddy Converted to Clay Mining				0.50	2.05	
6	Paddy Converted to Coconut	27.08	52.21	70.52	67.08	86.42	
7	Paddy Converted to Coconut + Built up Land	37.27	24.66	62.35	24.1	8.35	
8	Paddy Converted to Coconut + Arecanut	5.19			19.71	156.92	
9	Paddy Converted to Coconut + Mixed Trees						
10	Paddy Converted to Cultivable Waste Land			4.56	34.36		
11	Paddy Converted to Mixed crop	84.47	58.07	52.84	33.81	31.04	
12	Paddy Converted to Mixed Trees		3.79	6.07	93.98		
13	Paddy Converted to Rubber						
14	Virippu	104.63	111.84	16.42	63.16	89.05	
15	Virippu + Puncha			55.38	143.09	110.93	
16	Water Bodies			188	35.7		
17	Mundakan						
18	Other Land Uses	945.79	996.04	1516.86	1917.76	1381.46	
	Panchayath Total	1217.07	1265.58	1980.88	2505.82	1885.37	
	Block Total		8854.72				

Table:18.8

OCHIRA BLOCK

Sl.No.	Category	Alappad	Klapana	Kulasekhara puram	Ochira	Thazhava	Area (Ha)	
							Thodiyoor	
1	Paddy Converted to Arecanut							
2	Paddy Converted to Banana	2.50			1.48	3.56		19.17
3	Paddy Converted to Built up + Mixed Crops							17.63
4	Paddy Converted to Built up Land	9.71	66.58	94.30	83.61	121.1		65.01
5	Paddy Converted to Clay Mining				0.36	0.61		
6	Paddy Converted to Coconut	17.26	163.71	137.33	117	193.79		115.14
7	Paddy Converted to Coconut + Built up Land	41.6	66.69	329.55	226.02	309.48		234.27
8	Paddy Converted to Coconut + Arecanut							1.14
9	Paddy Converted to Coconut + Mixed Trees							8.95
10	Paddy Converted to Cultivable Waste Land	3.95	14.64	17.96	21.84	160.93		2.10
11	Paddy Converted to Mixed crop	15.83	8.59	79.93	43.53	21.72		19.41
12	Paddy Converted to Mixed Trees							2.08
13	Paddy Converted to Rubber							
14	Virippu	49.73	37.15	8.93	24.19			227.60
15	Virippu + Puncta		85.73					
16	Water Bodies	316.50	36.31	0.35		78.06		87.27
17	Mundakan							
18	Other Land Uses	426.20	559.96	1047.15	808.50	1390.26		1271.72
	Panchayath Total	883.28	1039.36	1715.50	1326.53	2279.51		2071.49
	Block Total			9315.67				

Table:18.9

PATHANAPURAM BLOCK

Sl.No.	Category	Area (Ha)						
		Pathanapuram	Pattazhi	Pattazhi Vadakkekara	Piravanthoor	Thalavoor	Vilakkudy	
1	Paddy Converted to Arecanut		0.63		0.33	9.35	8.25	
2	Paddy Converted to Banana	33.44	14.2	1.49	23.34	33.66	23.76	
3	Paddy Converted to Built up + Mixed Crops							
4	Paddy Converted to Built up Land	27.47	14.16	18.54	37.31	185.36	151.16	
5	Paddy Converted to Clay Mining		1.55			0.53	0.47	
6	Paddy Converted to Coconut	12.56	9.91	10.35	9.22	189.10	103.32	
7	Paddy Converted to Coconut + Built up Land							
8	Paddy Converted to Coconut + Arecanut							
9	Paddy Converted to Coconut + Mixed Trees							
10	Paddy Converted to Cultivable Waste Land	4.23	2.39	3.15	5.46	8.34	0.68	
11	Paddy Converted to Mixed crop	13.71	4.68	7.14	32.38	29.13	11.89	
12	Paddy Converted to Mixed Trees	100.82	6.41	8.47	54.05	54.62	68.80	
13	Paddy Converted to Rubber	18.83		0.98	30.96	139.98	71.37	
14	Virippu	38.34	108.28	118.33	125.69	89.36	73.78	
15	Virippu + Puncta					44.42	29.24	
16	Water Bodies	26.00	26.01	59.44	26.67	43.72	6.93	
17	Mundakan							
18	Other Land Uses	3816.79	1662.02	1470.21	12800.74	2601.12	1464.69	
	Panchayath Total	4092.19	1850.24	1698.10	13146.15	3428.69	2014.34	
	Block Total			26229.71				

Table:18.10

SASTHAMKOTTA BLOCK

Sl. No.	Category	Kunna thoor	Mynaga ppally	Poruvazhi	Sasthamkotta	Area (Ha)				
						Sooranadu South	Sooranadu North	West Kallada		
1	Paddy Converted to Arecanut									
2	Paddy Converted to Banana			1.15	18.63	26.17	9.75	63.04		
3	Paddy Converted to Built up + Mixed Crops	102.98		3.23	3.29	153.55	76.36	24.62		
4	Paddy Converted to Built up Land	25.72	29.01	3.98	23.91	19.01	4.90	0.27		
5	Paddy Converted to Clay Mining									
6	Paddy Converted to Coconut	128.88	18.05	89.53	99.96	130.94	72.58	192.46		
7	Paddy Converted to Coconut + Built up Land		88.14		1.70					
8	Paddy Converted to Coconut + Arecanut	21.58			68.81	32.24	24.27	43.42		
9	Paddy Converted to Coconut + Mixed Trees									
10	Paddy Converted to Cultivable Waste Land	29.62		6.27	14.94	51.85	149.15	34.54		
11	Paddy Converted to Mixed crop	118.32	16.00	55.82	65.93	54.38	177.62	108.79		
12	Paddy Converted to Mixed Trees	121.36	2.69	41.01	27.80	44.65	186.58	95.44		
13	Paddy Converted to Rubber									
14	Virippu	16.67	499.08	46.95	25.10	25.68	48.61			
15	Virippu + Puncha	28.37		187.29	7.45	75.22	160.29	153.72		
16	Water Bodies	70.33	21.30	5.63	517.41		2.28	140.63		
17	Mundakan									
18	Other Land Uses	1483.67	1372.00	1450.67	1626.39	1124.28	1369.79	480.80		
	Panchayath Total	2147.50	2046.27	1891.53	2501.32	1737.97	2282.18	1337.73		
	Block Total				13944.50					

Table:18.11

VETTIKAVALA BLOCK

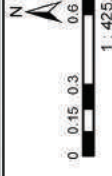
Sl.No.	Category	Kulakkada	Meilila	Mylam	Pavithreswaram	Ummannoor	Vettikavala
1	Paddy Converted to Arecanut	10.52	37.98	0.13	21.35	23.53	30.90
2	Paddy Converted to Banana	9.76	2.38		7.31	11.97	21.72
3	Paddy Converted to Built up + Mixed Crops						
4	Paddy Converted to Built up Land	69.99	103.54	153.7	116.22	89.22	150.72
5	Paddy Converted to Clay Mining	0.52		1.18	1.73		
6	Paddy Converted to Coconut	194.33	321.06	270.61	57.18	117.08	388.44
7	Paddy Converted to Coconut + Built up Land				8.05		
8	Paddy Converted to Coconut + Arecanut						
9	Paddy Converted to Coconut + Mixed Trees						
10	Paddy Converted to Cultivable Waste Land	41.89		20.01	119.14	32.57	9.30
11	Paddy Converted to Mixed crop	168.21	277.14	105.08	167.60	129.42	256.87
12	Paddy Converted to Mixed Trees			51.12		66.86	33.80
13	Paddy Converted to Rubber					35.18	41.57
14	Virippu	184.32	5.88	4.46	112.86	74.91	23.78
15	Virippu + Puncha				28.15	5.43	
16	Water Bodies	68.17		6.48	15.21		
17	Mundakan					4.16	
18	Other Land Uses	2406.34	1153.21	1675.92	1779.71	2904.24	2520.64
	Panchayath Total	3154.05	1901.19	2288.69	2434.51	3494.57	3477.74
	Block Total				16750.75		

Area (Ha)

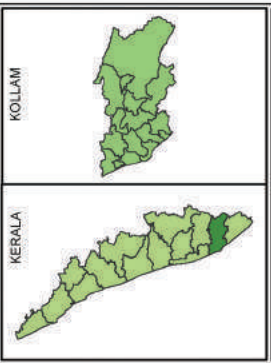
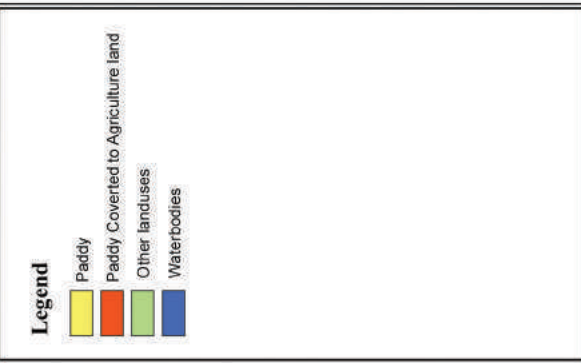
Table:18.12

MUNICIPALITY/CORPORATION

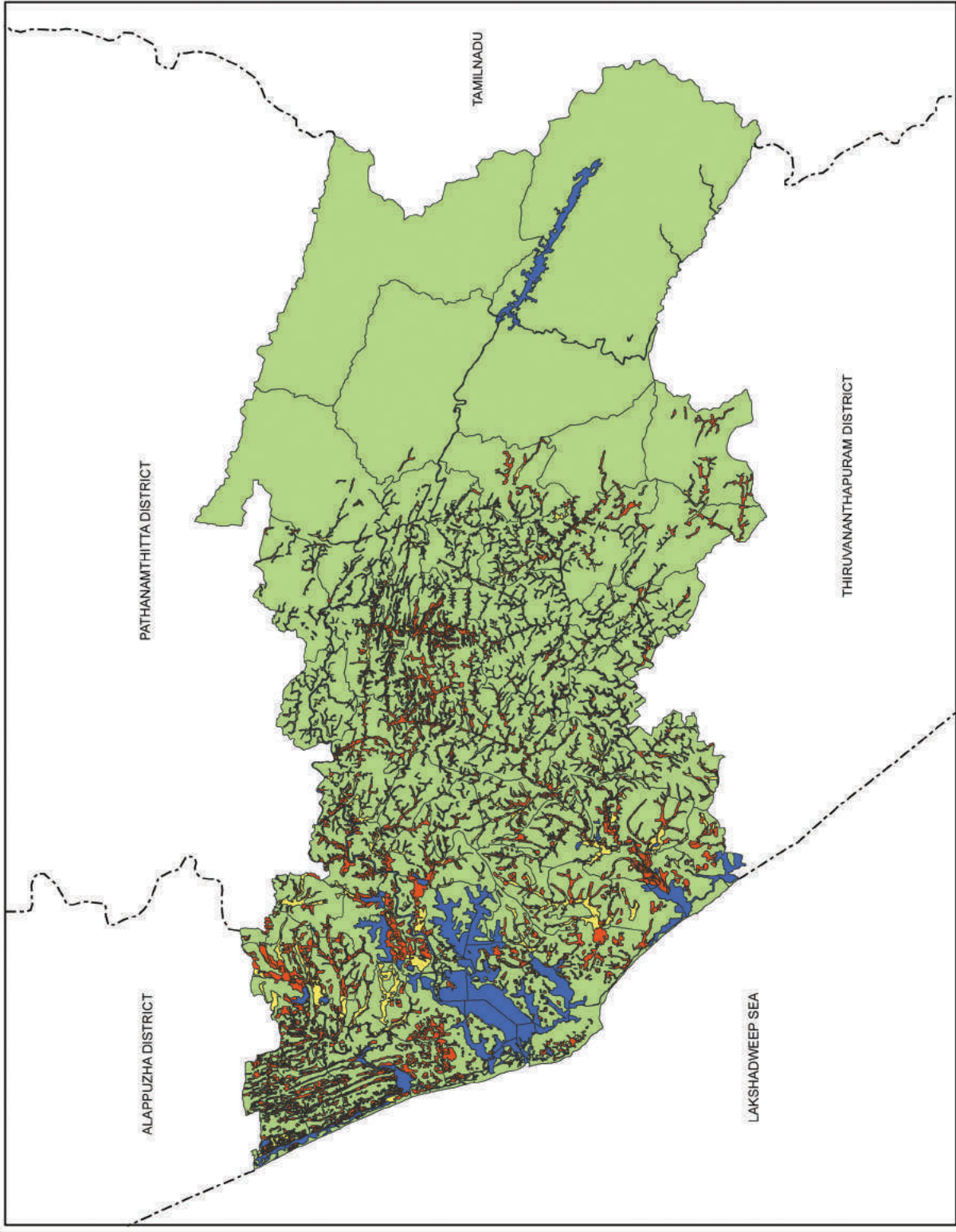
Sl.No.	Category	Area (Ha)			
		Karunagappally (M)	Paravoor (M)	Punalur (M)	Kollam (C)
1	Paddy Converted to Arecanut			2.13	
2	Paddy Converted to Banana	16.51	1.79	19.46	0.46
3	Paddy Converted to Built up + Mixed Crops		39.46		618.43
4	Paddy Converted to Built up Land	69.52	10.26	87.77	29.46
5	Paddy Converted to Clay Mining				
6	Paddy Converted to Coconut	185	31.49	2.65	177.79
7	Paddy Converted to Coconut + Built up Land	227.29			
8	Paddy Converted to Coconut + Arecanut				7.88
9	Paddy Converted to Coconut + Mixed Trees				
10	Paddy Converted to Cultivable Waste Land	1.08	123.01	4.39	2.89
11	Paddy Converted to Mixed crop	36.7	14.57	11.76	72.82
12	Paddy Converted to Mixed Trees	1.05	19.79	23.16	
13	Paddy Converted to Rubber		25.31	95.58	
14	Virippu	111.58		34.29	64.35
15	Virippu + Puncha		8.98		93.04
16	Water Bodies	250.58	421.15	81.91	436.76
17	Mundakan				
18	Other Land Uses	934.14	1219.03	3257.11	4184.87
	Total	1833.45	1914.84	3620.21	5688.75



**WETLAND
KOLLAM DISTRICT**



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



WASTELAND

Land is a critical natural resource

Land is one of the most important critical resources which determine the success of development planning of any region. Promoting optimum land use is an essential purpose in achieving the planned goals of economic efficiency and ecological activity. Identification of prime and unique lands for agriculture and prevention of its misuse, assume utmost importance for food, security and self-reliance. It is therefore imperative that for sustainable development, effort should be made to ensure that the available land in the state is put to wise and optimum use.

Wasteland in Kerala

It is not an exaggeration to say that wasteland exist in Kerala, where the per capita availability of land is only 0.13 hectare and the average size of holding is 0.33 hectare. The studies by National Remote Sensing Agency (1985) using satellite imageries has revealed that cultivable and uncultivable wasteland exists in Kerala, and it amounts to 5.2 percent of the total geographical area. The State Land Use Board made an attempt to estimate the extent of wasteland in the State utilizing the primary data available from the Department of Economics and Statistics; the only source on land utilization statistics in the State (Extent of Wasteland in Kerala State Land Use Board, 1986). This study has shown that 8.15 percent of the geographical area or 11.09 percent of the non-forest area of the State is categorized as wasteland. Though the two figures are from two different methodologies and classifications, the area involved is much significant in the small State like ours, where the density of population and pressure on land are so high.

The National Wasteland Development Board has undertaken the mapping of wasteland in India on 1:50,000 scale during 1987-88. They have identified six districts having maximum area of wastelands, viz, Kasargod, Kannur, Wayanad, Malappuram, Palakkad and Idukki under Wasteland mapping Project Phase II at national level. Kerala State Land use Board undertook the task of identifying and mapping and completed the project, Later the remaining eight districts, viz. Alapuzha, Ernakulam, Kollam, Kottayam, Kozhikode, Pathanamthitta, Thiruvananthapuram and Thrissur were taken up under the project, Wasteland Mapping Phase V. The study revealed that there is a total area of 1457 sq.km (3.73 percent) under wasteland in the State.

Presently under this project, the updation of the wastelands was done using the LISS III satellite imagery of 2003. The data gathered by this task is presented for the use of various departments/agencies in the State engaged in the programme of reclamation of wastelands in the State.

Wasteland defined

Wasteland is defined as "degraded land which can be brought under vegetative cover with reasonable effort and which is currently under utilized and land which is deteriorating for lack of appropriate water and soil management or on account of natural causes." Wastelands can result from inherent/imposed disabilities such as by location, environment, chemical and physical properties of the soil or financial or management constraints. These lands could fall under Government occupation, private occupation or forest lands. 13 categories of wasteland have been standardized and State and Central Government departments are using the same.

Wasteland classification

The wasteland categories standardized by National Remote Sensing Centre, Hyderabad for Kerala for this project is as follows:

1. Land with scrub
2. Land without scrub
3. Waterlogged –permanent
4. Waterlogged – seasonal
5. Under utilized/degraded notified forest land - scrub dominated
6. Degraded pastures/grazing land
7. Degraded land under plantation crop
8. Sands (riverine/coastal/desertic) - flood plain
9. Coastal sand
10. Mining/Industrial - Mining
11. Mining/Industrial – Industrial
12. Barren Rocky/Stony waste/Sheet rock
13. Steep slopping area

Brief description on spatial distribution and physical condition of wastelands in Kollam district

Area and percentage to total of major categories of wasteland in the district are given below:-

Table: 19.1

Sl. No.	Wasteland categories	Area in Ha.	Percentage to total Geographical area (Total area 248788 ha)
1	Barren rocky area	47.11	0.01
2	Land with dense scrub	824.51	0.33
3	Land with open scrub	2353.06	0.94
4	Scrub dominated forest	3645.00	1.46
5	Miscellaneous polygon	241617.9	97.11

- 1. Barren rocky area:** - It covers an area of 47.11 ha. which comes to 0.01% of the total geographical area of the district. It is mainly distributed in Elamadu (18.24 ha.), Melila (9.4 ha.), Vettikavala (8.12 ha.) Panchayats.
- 2. Land with dense scrub:** - Land with dense scrub identified and mapped 824.51 ha. area which covers 0.03% of the total geographical area of the district. This is mainly distributed in Kulathoopuzha (303.39 ha.), Punalur (263.20 ha.), Chadayamangalam (224.12 ha.) Panchayats.
- 3. Land with open scrub:** - This is the third major category wasteland identified in the district. It covers in an area of 2353.06 ha. which comes to 0.94% of the total geographical area of the district. It is mainly identified in Kudakkal (224.12 ha.), Chathannoor (198.55 ha.) and Eroor (99.42 ha.) Panchayats.
- 4. Scrub dominated forest:** - This category of wasteland mapped an area of 3645 ha. area which covers 1.46% of the total geographical area. It is distributed mainly in Pooyappally (2310.81 ha.), Kulathupuzha (492.16 ha.), Piravanthur (324.08 ha.) Panchayats.
- 5. Miscellaneous Polygon:** - This is the major category of wasteland mapped an area of 241617.9 ha. covering 97.11% of the total geographical area. These are seen in Kulathoopuzha (38979.53 ha.), Pathanapuram (12639.31ha.), Chithara (5772.51ha.) Panchayats.

Table: 19.2

ANCHAL BLOCK

Sl.No.	Category	Alayamon	Anchal	Aryankavu	Edamulackal	Eroor	Karavaloor	Kulathoopuzha	Thenmala	Area (Ha)
1	Barren rocky area								6.11	
2	Coastal sands									
3	Land with dense scrub	36.03	24.12	122.41	55.55	209.03	49.15	303.39	257.01	
4	Land with open scrub		4.29	29.23		99.42		64.43	48.84	
5	Miscellaneous polygon	5539.46	2675.84	21050.64	3595.50	3940.42	2566.45	38979.53	12487.88	
6	Scrub dominated forest	7.75		318.08		0.01		492.16	81.14	
	Panchayath Total	5583.24	2704.25	21520.36	3651.05	4248.88	2615.60	39839.51	12880.98	
	Block Total				93043.87					

Table:19.3

CHITTUMALA BLOCK

Sl.No.	Category	East Kallada	Kundara	Manthro thuruthu	Panayam	Perayam	Perinadu	Thrikkadavoor	Thrikkaruva	Area (Ha)
1	Barren rocky area									
2	Coastal sands									
3	Land with dense scrub									
4	Land with open scrub									
5	Miscellaneous polygon	1303.19	1314.51	1315.20	943.59	1460.40	1579.88	1469.54	1801.27	
6	Scrub dominated forest									
	Panchayath Total	1303.19	1314.51	1315.20	943.59	1460.40	1579.88	1469.54	1801.27	
	Block Total				11187.58					

Table:19.4

CHADAYAMANGALAM BLOCK

Sl.No.	Category	Chadaya mangalam	Chithara	Elamadu	Ittiva	Kadakkal	Nilamel	Velinalloor	Area (Ha)
1	Barren rocky area			18.24					3.57
2	Coastal sands								
3	Land with dense scrub	58.41	61.81	35.80	54.93	224.12	65.02	9.91	
4	Land with open scrub		88.56	3.95				11.97	
5	Miscellaneous polygon	2471.38	5772.51	2900.56	4178.32	4625.46	1832.78	2498.37	
6	Scrub dominated forest		13.42			52.96			
	Panchayath Total	2529.79	5936.30	2958.55	4233.25	4902.54	1897.80	2523.82	
	Block Total				24982.05				

Table:19.5

SASTHAMKOTTA BLOCK

Sl.No.	Category	Kunnathoor	Mynagappally	Poruvazhi	Sasthamkotta	Sooranadu South	Sooranadu North	West Kallada	Area (Ha)
1	Barren rocky area								
2	Coastal sands								
3	Land with dense scrub	11.4							
4	Land with open scrub			9.36			2.73		
5	Miscellaneous polygon	2136.09	2046.28	1882.17	2501.32	1737.97	2279.46	1337.73	
6	Scrub dominated forest								
	Panchayath Total	2147.49	2046.28	1891.53	2501.32	1737.97	2282.19	1337.73	
	Block Total				13944.51				

Table:19.6

KOTTARAKKARA BLOCK

Sl.No.	Category	Ezhukone	Kareepra	Kottarakkara	Neduvathoor	Pooyappally	Veliyam
1	Barren rocky area						
2	Coastal sands						
3	Land with dense scrub			1.07		23.63	18.68
4	Land with open scrub					14.71	
5	Miscellaneous polygon	1782.00	2272.30	1828.71	2237.90	2310.81	3050.34
6	Scrub dominated forest						
	Panchayath Total	1782.00	2272.30	1829.78	2237.90	2349.15	3069.02
	Block Total			13540.15			

Table:19.7

OCHIRA BLOCK

Sl.No.	Category	Alappad	Klapana	Kulasekhara puram	Ochira	Thazhava	Thodiyoor
1	Barren rocky area						
2	Coastal sands						
3	Land with dense scrub						
4	Land with open scrub						
5	Miscellaneous polygon	888.81	1039.38	1715.50	1326.52	2379.47	2071.48
6	Scrub dominated forest						
	Panchayath Total	888.81	1039.38	1715.50	1326.52	2379.47	2071.48
	Block Total			9421.16			

Table:19.8

PATHANAPURAM BLOCK

SI.No.	Category	Area (Ha)					
		Pathanapuram	Pattazhi	Pattazhi Vadamkakkara	Piravanthoor	Thalavoor	Vilakkudy
1	Barren rocky area						1.67
2	Coastal sands						
3	Land with dense scrub	39.31	11.83	41.13	152.49	8.79	7.07
4	Land with open scrub	7.84			30.27		
5	Miscellaneous polygon	4007.62	1838.43	1656.99	12639.31	3419.9	2005.60
6	Scrub dominated forest	37.43			324.08		
	Panchayath Total	4092.20	1850.26	1698.12	13146.15	3428.69	2014.34
	Block Total	26229.76					

Table:19.9

VETTIKAVALA BLOCK

SI.No.	Category	Area (Ha)					
		Kulakkada	Meilla	Mylam	Pavithreswaram	Ummannoor	Vettikavala
1	Barren rocky area		9.40				8.12
2	Coastal sands						
3	Land with dense scrub		10.55	6.47		49.63	77.05
4	Land with open scrub						
5	Miscellaneous polygon	3154.06	1881.24	2282.20	2434.52	3444.95	3392.58
6	Scrub dominated forest						
	Panchayath Total	3154.06	1901.19	2288.67	2434.52	3494.58	3477.75
	Block Total	16750.77					

Table: 19.10

CHAVARA BLOCK

SI.No.	Category	Chavara	Neendakara	Panmana	Thekkumbhagom	Thevalakkara	Area (Ha)
1	Barren rocky area						
2	Coastal sands						
3	Land with dense scrub						
4	Land with open scrub						
5	Miscellaneous polygon	1212.70	694.26	1676.50	1391.99	1687.91	
6	Scrub dominated forest						
	Panchayath Total	1212.70	694.26	1676.50	1391.99	1687.91	
	Block Total			6663.36			

Table:19.11

MUKHATHALA BLOCK

SI.No.	Category	Elampalloor	Kottankara	Mayyanadu	Nedumpana	Thrikkovilvattom	Area (Ha)
1	Barren rocky area						
2	Coastal sands						
3	Land with dense scrub						
4	Land with open scrub				24.58		
5	Miscellaneous polygon	1217.07	1265.58	1987.61	2481.24	1885.37	
6	Scrub dominated forest						
	Panchayath Total	1217.07	1265.58	1987.61	2505.82	1885.37	
	Block Total			8861.45			

Table:19.12

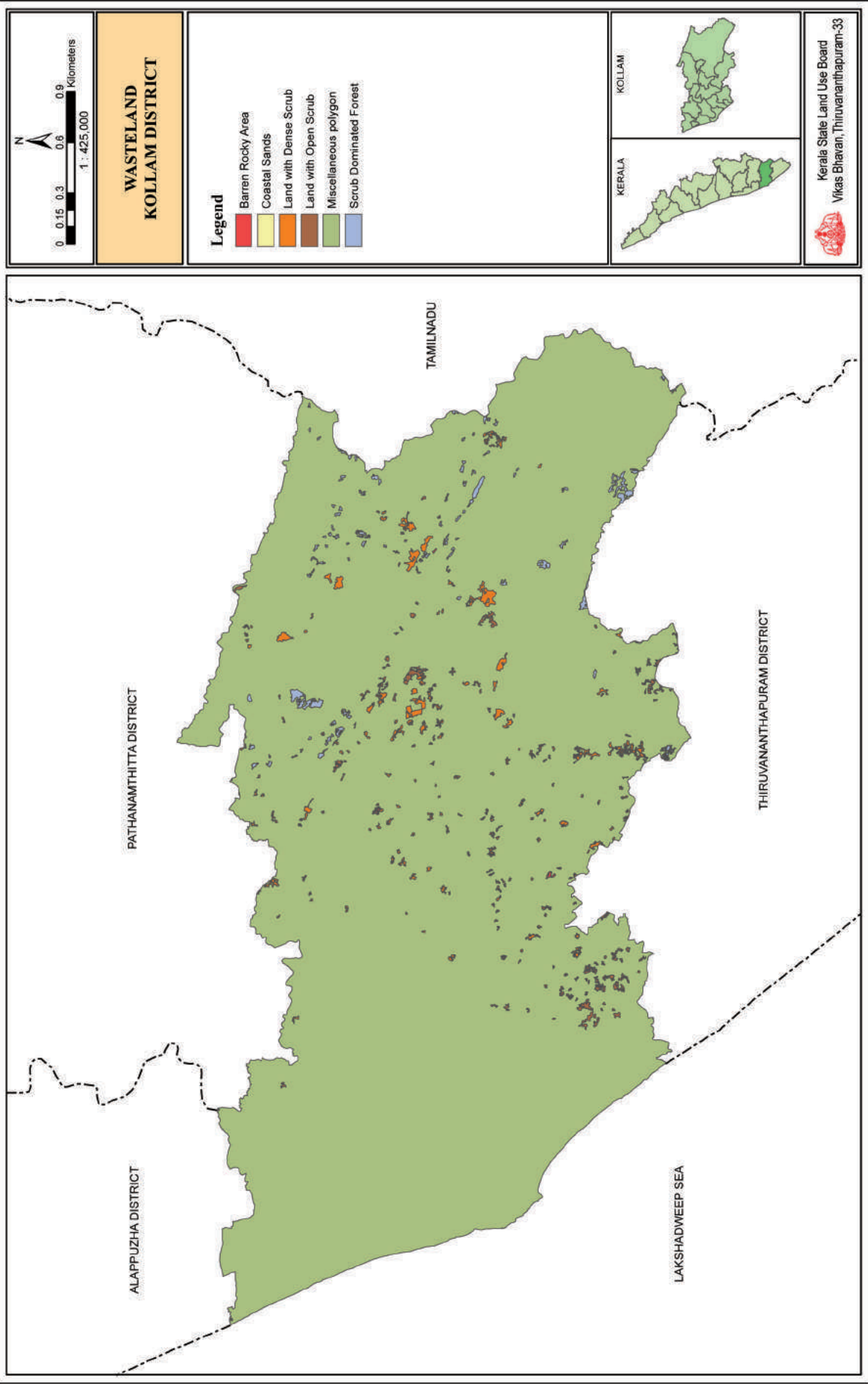
ITHIKKARA BLOCK

SI.No.	Category	Adichanalloor	Chathannoor	Kalluvathukkal	Poothakulam	Area (Ha)
1	Barren rocky area					
2	Coastal sands					
3	Land with dense scrub	3.68	5.83	54.56		
4	Land with open scrub	2.47	198.55	173.98		1.36
5	Miscellaneous polygon	2358.55	2723.27	3577.33		1699.97
6	Scrub dominated forest					
	Panchayath Total	2364.70	2927.65	3805.87		1701.33
	Block Total		10799.55			

Table:19.13

MUNICIPALITY/CORPORATION

SI.No.	Category	Karunagappally (M)	Paravoor (M)	Punalur (M)	Kollam (C)	Area (Ha)
1	Barren rocky area					
2	Coastal sands					0.45
3	Land with dense scrub			263.20		
4	Land with open scrub			7.97		
5	Miscellaneous polygon	1833.46	1918.64	3341.17		5691.61
6	Scrub dominated forest			7.89		
	Total	1833.46	1918.64	3620.23		5692.06



WATERSHED

Watershed development and management is an integration of technology within the natural boundary of a drainage area for optimum development of land, water and plant resources to meet the basic minimum needs of the people in a sustained manner. The poor in the rural areas who are struggling for survival cannot be expected to pay heed to the conservation strategy unless their daily needs of food, fiber and fuel are met with. A still more urgent need is for assured and full employment for all. Integrated watershed development and management is not only the most effective solutions to many of the problems mentioned above, but also effective solution to many other common problems like drought, floods etc. It includes the integration of many scattered programs of soil conservation, afforestation, minor irrigation, crop production, tree plantation, fodder development and other development activities into a well prepared micro watershed project based on study of climate, land, water & plant resources on the one hand and man, animal resources on the other, offers hope for bringing about sustained natural resources development.

It also provides solution to many environmental problems like soil erosion, siltation, improper land use, lowering ground water table etc. Once these are solved the overall productivity, income of the family and employment opportunity in the villages could be increased and thereby the living conditions of the rural population can be enhanced.

The rain water after absorbed by the soil, flows as runoff in small gullies, rivulets and joins the stream and form river system. This represents a natural drainage system. The river basin at macro level and watershed /sub watershed at microlevel represent the Natural Drainage System.

A watershed is an area from which runoff, resulting from precipitation flows past a single point into a large stream, river, lake or an ocean. In other words a watershed is that area in which all the precipitation converges and drains past a particular point. The term watershed, catchment area of drainage basin can be used interchangeably. A watershed may be only a few hectares as in the case of small ponds, or hundreds of square kilometers as in the case of rivers or big reservoirs. For convenience watershed are classified in terms of size into: Basins, Catchments,

Sub catchments, Watershed, Sub watershed, Mini & Micro watersheds. Each watershed is an independent hydrological unit; any modification of the land use in the watershed will be reflected on the water as well as in the sediment yield of the watershed.

The watershed can be demarcated from the topo sheet. But for a small (micro) watershed a detailed topographical survey has to be made and a contour map may have to be prepared. The ridge points are marked and the area below the ridge line is known as the watershed area. This contour map can be imposed with the village map. In case of small watershed, it could be demarcated by walking over the ridge point.

Watershed has become an acceptable unit of planning for optimum use and conservation of soil and water resources. A watershed is hydrological units which produce water as an end product by interaction of rainfall and watershed factor.

Table:20.1

WATERSHED DETAILS

Block	Panchayath	WS code	Area (Ha)		
Anchal	Alayamon	6l10a	162.86		
		6l10b	510.30		
		6l10c	145.98		
		6l11a	1449.31		
		6l12a	511.63		
		6l12b	1122.27		
		6l12c	233.66		
		6l12d	511.31		
		6l12e	282.15		
		6l12f	211.01		
		6l14b	23.46		
		6l8c	5.49		
		6l9a	283.42		
		7K33c	6.97		
		7K35a	88.37		
		7K40c	35.05		
			5583.24		
		Anchal	Anchal	6l13a	0.38
				6l7a	76.21
				6l8a	896.08
6l8b	892.10				
6l8c	223.45				
6l9a	91.64				
7K40b	14.62				
7K40d	302.05				
7K40e	207.73				
	2704.25				
Aryankavu	Aryankavu	7K14e	1161.88		
		7K17a	672.34		
		7K17b	1156.55		
		7K17c	2616.82		
		7K17d	2978.35		
		7K17e	692.39		
		7K17f	118.16		
		7K18a	765.96		
		7K18b	37.57		
		9A24c	1.45		
		9A25a	0.96		
		9A25c	0.92		
	9A26h	0.44			

Block	Panchayath	WS code	Area (Ha)
		9A27a	24.80
		9A28a	27.61
		9A28b	1205.53
		9A28c	2760.87
		9A29a	1650.07
		9A29b	1540.14
		9A29c	828.93
		9A30a	705.45
		9A30b	1421.38
		9A30c	830.70
		9A31a	321.08
			21520.36
	Edamulackal	6I15a	7.55
		6I17a	0.08
		6I6a	15.25
		6I6b	1611.71
		6I6c	522.41
		6I7a	1106.70
		6I8a	31.50
		7K40e	163.76
		7K43b	192.08
			3651.05
	Eroor	6I10a	167.38
		6I10b	879.86
		6I10c	156.52
		6I11a	17.19
		6I8b	375.60
		6I9a	16.14
		7K16a	5.62
		7K38b	17.02
		7K38c	59.60
		7K39a	751.73
		7K40a	451.68
		7K40b	155.45
		7K40c	956.24
		7K40d	238.85
			4248.88
	Karavaloor	6I8a	12.32
		6I8b	14.82
		7K40a	301.61
		7K40b	184.11
		7K40d	212.87
		7K40e	1125.96

Block	Panchayath	WS code	Area (Ha)
		7K40f	440.64
		7K41a	214.22
		7K43b	109.06
			2615.59
	Kulathooppuzha	6l12b	22.31
		6l12c	922.88
		7K16a	9.35
		7K17a	1.21
		7K17d	15.66
		7K17f	135.29
		7K18a	1342.88
		7K18b	1279.40
		7K18c	1686.05
		7K18d	1707.80
		7K18e	3053.88
		7K18f	1974.44
		7K18g	1194.66
		7K18h	464.10
		7K18i	871.17
		7K19a	867.75
		7K20a	505.62
		7K20b	1567.32
		7K20c	1485.63
		7K21a	1753.43
		7K22a	838.67
		7K23a	1436.14
		7K24a	420.22
		7K24b	1678.42
		7K24c	400.03
		7K25a	576.05
		7K26a	571.36
		7K27a	1368.69
		7K27b	1508.01
		7K28a	543.17
		7K29a	314.87
		7K29b	24.09
		7K29c	0.53
		7K30a	6.81
		7K32a	84.48
		7K33a	45.27
		7K33c	131.77
		7K34a	545.71
		7K35a	1443.20

Block	Panchayath	WS code	Area (Ha)
		7K36a	795.87
		7K36b	805.20
		7K37a	623.85
		7K37b	1037.37
		7K38a	712.22
		7K38b	2561.52
		7K38c	292.41
		7K39a	73.54
		7K40c	139.21
			39839.50
	Thenmala	7K14d	20.68
		7K14e	1042.33
		7K14f	955.05
		7K14g	304.48
		7K14h	3828.67
		7K14i	1317.35
		7K14j	1.12
		7K15a	48.08
		7K16a	3203.88
		7K17a	1982.60
		7K17f	11.15
		7K37a	3.06
		7K37b	12.71
		7K38a	0.68
		7K38c	0.32
		7K39a	1.00
		9A29b	147.82
			12880.99
			93043.88
Chadayamangalam	Chadayamangalam	6I15a	711.23
		6I16a	500.73
		6I17a	470.01
		6I18a	361.28
		6I18c	263.08
		6I19a	5.16
		6I5a	205.62
		6I6a	0.06
		6I7a	12.62
			2529.79
	Chithara	4V11c	57.55
		4V12b	1607.08
		4V7d	1898.78
		6I12c	2.05

Block	Panchayath	WS code	Area (Ha)
		6l12d	3.08
		6l12e	1560.42
		6l12f	41.54
		6l14b	565.66
		7K33c	200.12
			5936.28
	Elamadu	6l17a	3.25
		6l2i	1115.83
		6l2j	15.89
		6l5a	706.40
		6l6a	1114.33
		6l6c	2.80
		6l7a	0.04
			2958.54
	Ittiva	6l10a	1.24
		6l10c	2.72
		6l11a	57.39
		6l12a	17.29
		6l12b	20.55
		6l12f	179.31
		6l13a	850.27
		6l14a	883.96
		6l14b	533.81
		6l14c	906.17
		6l15a	730.17
		6l16a	1.28
		6l7a	20.37
		6l8a	0.47
		6l8c	1.51
		6l9a	26.73
			4233.25
	Kadakkal	4V7c	180.49
		4V7d	209.76
		6l14b	1282.96
		6l14c	24.22
		6l15a	205.42
		6l16a	827.08
		6l18b	395.11
			3125.04
	Kummil	4V7c	366.19
		4V7d	1322.11
		6l14b	88.24
		6l18b	0.96

Block	Panchayath	WS code	Area (Ha)
			1777.50
	Nilamel	4V6a	19.26
		4V7c	23.82
		6I16a	272.50
		6I18a	315.99
		6I18b	900.14
		6I18c	365.39
		6I19a	0.69
			1897.80
	Velinalloor	6I19a	5.76
		6I20a	32.43
		6I21a	2.61
		6I22a	0.44
		6I2i	317.28
		6I2j	19.48
		6I3a	405.49
		6I4a	1226.04
		6I5a	437.34
		6I6a	76.94
			2523.81
			24982.02
Chavara	Chavara	7K1a	1202.11
		8P14a	1.30
		8P1a	9.28
			1212.70
	Neendakara	7K1a	171.09
		7K2a	21.07
		7K51a	502.10
			694.26
	Panmana	7K1a	240.66
		8P14a	1308.19
		8P1a	98.30
		8P4a	1.82
		999	27.53
			1676.50
	Thekkumbhagam	7K1a	363.34
		7K2a	861.00
		7K49a	136.28
		7K51a	31.36
			1391.99
	Thevalakkara	7K1a	886.26
		7K3b	3.21
		7K49a	0.79

Block	Panchayath	WS code	Area (Ha)
		8P14a	797.65
			1687.91
			6663.36
Chittumala	East Kallada	7K48a	903.48
		7K49a	399.68
		7K4a	0.03
			1303.19
	Kundara	7K48a	716.70
		7K49a	597.12
		7K49b	0.68
			1314.51
	Mantrothuruthu	7K1a	101.43
		7K3b	98.74
		7K49a	1115.03
			1315.20
	Panayam	7K49a	709.41
		7K49b	234.18
			943.59
	Perayam	7K49a	1460.40
			1460.40
	Perinadu	7K49a	1029.98
		7K49b	549.89
		7K50b	0.01
			1579.88
	Thrikkadavoor	7K49a	497.86
		7K49b	684.28
		7K50a	53.39
		7K50c	164.13
		7K51a	69.89
			1469.54
	Thrikkaruva	7K49a	1782.58
		7K49b	18.69
			1801.27
			11187.57
Ithikkara	Adichanalloor	6I1b	704.98
		6I22a	26.94
		6I24a	154.89
		6I2a	292.31
		6I2j	5.25
		6I2k	500.59
		6I3a	669.88
		7K50b	9.86
			2364.70
	Chathannoor	6I22a	882.33

Block	Panchayath	WS code	Area (Ha)
		6I23a	441.34
		6I23b	8.59
		6I3a	1.65
			1333.91
	Chirakkara	5A1a	0.01
		5A2a	41.03
		6I1b	0.02
		6I22a	24.29
		6I23a	255.40
		6I23b	876.16
		6I23c	315.60
		6I24a	81.24
			1593.74
	Kalluvathukkal	5A2a	29.41
		5A3b	540.14
		5a3c	366.73
		5a4b	129.66
		6I20a	169.63
		6I21a	1667.68
		6I22a	558.32
		6I23b	344.24
		6I3a	0.06
			3805.87
	Poothakulam	5A1a	582.05
		5A2a	1014.69
		5A3b	2.56
		5A5a	18.36
		5A6a	39.32
		6I23b	0.88
		6I23c	43.47
			1701.33
			10799.55
Karunagapally Municipality		8P14a	27.80
		8P1a	1.80
		8P2a	889.55
		8P3a	480.13
		8P4a	242.85
		999	191.32
			1833.46
			1833.46
Kollam Corporation		6I1a	1146.68
		7K49a	57.10
		7K49b	287.94

Block	Panchayath	WS code	Area (Ha)
		7K50a	834.49
		7K50c	1404.14
		7K51a	1961.72
			5692.07
			5692.07
Kottarakkara	Ezhukone	6I2b	3.96
		6I2d	259.52
		6I2e	356.28
		6I2h	16.97
		7K47b	102.42
		7K48a	1042.84
			1782.00
	Kareepra	6I2b	80.95
		6I2c	18.13
		6I2d	1029.87
		6I2e	484.80
		6I2f	651.52
		6I2g	3.07
		6I2j	3.95
			2272.30
	Kottarakkara	6I2e	63.01
		6I2g	48.40
		6I2h	1054.30
		7K45a	77.32
		7K45b	586.75
			1829.78
	Neduvathoor	6I2e	110.67
		6I2h	476.16
		7K45b	185.06
		7K46a	10.23
		7K47a	138.46
		7K47b	1253.39
		7K47c	63.93
			2237.90
	Pooyappally	6I22a	21.08
		6I2c	2.29
		6I2f	2.06
		6I2j	641.90
		6I2k	150.02
		6I3a	1531.72
		6I4a	0.10
			2349.16
	Veliyam	6I2e	211.57

Block	Panchayath	WS code	Area (Ha)
		6I2f	268.10
		6I2g	502.62
		6I2h	0.06
		6I2i	1049.22
		6I2j	1037.45
			3069.02
			13540.15
Mukhathala	Elampalloor	6I2b	607.26
		7K48a	3.69
		7K49a	26.06
		7K49b	7.18
		7K50b	572.88
			1217.07
	Kottankara	6I2b	245.22
		7K49b	11.24
		7K50a	328.14
		7K50b	680.97
			1265.58
	Mayyanadu	6I1a	1500.91
		6I1b	92.11
		6I24a	78.37
		7K50b	43.93
		7K50c	272.29
			1987.61
	Nedumpana	6I2a	621.01
		6I2b	646.54
		6I2c	916.78
		6I2d	75.39
		6I2k	236.10
		7K50b	10.02
			2505.82
	Thrikovilvattom	6I1b	36.94
		6I2a	52.47
		6I2b	0.07
		7K50a	169.88
		7K50b	1320.10
		7K50c	305.91
			1885.37
			8861.45
Paravoor Municipality		5A1a	530.69
		6I1a	10.09
		6I23a	0.13
		6I23c	129.17
		6I24a	1098.71

Block	Panchayath	WS code	Area (Ha)
		6l25a	149.84
			1918.64
			1918.64
Ochira	Alappad	8P1a	229.02
		8P2a	42.14
		999	215.85
		9A1a	269.42
		9A47a	132.38
			888.81
	Klapana	8P2a	144.24
		8P3a	7.93
		999	6.75
		9A47a	880.47
			1039.38
	Kulasekharapuram	8P2a	871.50
		8P3a	558.34
		8P4a	271.79
		999	13.87
			1715.50
	Ochira	8P3a	454.18
		8P4a	153.83
		9A46b	368.46
		9A46c	136.00
		9A47a	214.05
			1326.52
	Thazhava	8P12a	1.73
		8P4a	454.98
		8P5a	548.22
		8P6a	667.14
		8P6c	324.47
		8P7a	381.08
		8P7c	0.40
		9A46b	1.46
			2379.47
	Thodiyoor	8P12a	21.16
		8P13a	3.02
		8P14a	37.30
		8P4a	717.02
		8P5a	1174.16
		8P6a	117.84
		8P7a	0.98
			2071.48
			9421.17

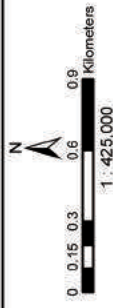
Block	Panchayath	WS code	Area (Ha)		
Pathanapuram	Pathanapuram	7K10a	89.50		
		7K10c	124.11		
		7K10e	1.14		
		7K10f	668.05		
		7K10g	957.40		
		7K11a	443.86		
		7k12a	1022.81		
		7K12b	378.31		
		7K12c	99.91		
		7k13a	0.27		
		7K42a	10.67		
		7K43a	4.67		
		7K43c	3.80		
		7K44a	3.97		
		9A34b	283.74		
			4092.19		
		Pattazhi	Pattazhi	7K11a	0.00
				7K43a	0.73
				7K43c	57.60
				7K44a	1695.03
7K45a	92.50				
7k8a	0.89				
7K9a	3.52				
	1850.26				
Pattazhi Vadakkekara	Pattazhi Vadakkekara			7K10a	97.26
				7K10g	41.16
		7K44a	19.47		
		7k8a	8.86		
		7K9a	1531.37		
			1698.12		
Piravanthoor	Piravanthoor	7K11a	0.16		
		7k12a	39.78		
		7K12b	1154.95		
		7K12c	874.98		
		7k13a	1442.00		
		7K14a	1068.23		
		7K14b	1615.04		
		7K14c	493.94		
		7K14d	1234.16		
		7K14e	614.99		
		7K14f	74.69		
	74.69				
	7K14g	0.64			
	7K14i	39.63			

Block	Panchayath	WS code	Area (Ha)
		7K14j	171.68
		7K15a	0.17
		7K41a	12.62
		7K42a	8.99
		9A23a	3.80
		9A24a	0.54
		9A24c	0.88
		9A30c	20.16
		9A31a	976.06
		9A32a	2229.44
		9A33a	455.45
		9A34a	441.32
		9A34b	171.46
		9A34c	0.39
			13146.16
	Thalavoor	7K11a	3.07
		7k13a	18.59
		7K42a	408.48
		7K43a	530.42
		7K43c	1850.73
		7K44a	149.33
		7K45a	287.94
		7K45b	180.14
			3428.69
	Vilakkudy	7k13a	7.45
		7K41a	299.64
		7K42a	231.00
		7K43a	1102.22
		7K43b	109.03
		7K43c	264.43
		7K45b	0.58
			2014.34
			26229.77
Punalur Municipality		7k13a	0.10
		7K14a	7.24
		7K14i	11.79
		7K14j	284.88
		7K15a	1438.39
		7K16a	52.19
		7K39a	433.27
		7K40a	413.94
		7K40f	6.47
		7K41a	845.68
		7K42a	23.24

Block	Panchayath	WS code	Area (Ha)
		7K43a	103.03
			3620.23
			3620.23
Sasthamkotta	Kunnathoor	7K46a	42.25
		7K47a	8.79
		7K4a	367.51
		7K5a	1697.93
		7K6a	30.28
		8P11a	0.73
			2147.49
	Mynagapally	7K1a	46.44
		8P13a	135.26
		8P14a	1854.53
		8P5a	10.04
			2046.28
	Poruvazhi	7K4a	214.48
		8P11a	1321.12
		8P12a	86.64
		8P13a	268.63
		8P8c	0.00
		8P9a	0.67
			1891.54
	Sasthamkotta	7K1a	114.46
		7K3a	418.27
		7K3b	288.94
		7K47a	3.46
		7K47c	2.14
		7K48a	26.44
		7K4a	757.30
		7K5a	56.43
		8P13a	718.26
		8P14a	115.61
			2501.32
	Sooranadu South	8P12a	415.11
		8P13a	1292.52
		8P14a	17.18
		8P5a	13.03
		8P6a	0.00
		8P7a	0.12
			1737.97
	Sooranadu North	8P11a	4.23
		8P12a	1636.03
		8P13a	12.98

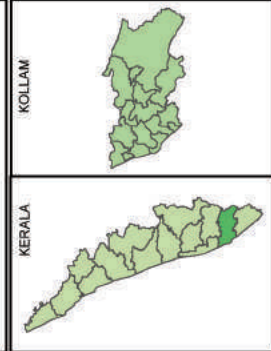
Block	Panchayath	WS code	Area (Ha)
		8P7a	30.77
		8P7b	31.55
		8P7c	522.79
		8P8a	43.83
		8P8c	0.00
			2282.18
	West Kallada	7K1a	506.09
		7K3b	757.36
		7K48a	40.11
		7K49a	30.43
		7K4a	1.76
		8P14a	1.98
			1337.73
			13944.50
Vettikavala	Kulakkada	7K45a	17.06
		7K45b	211.66
		7K45c	833.59
		7K46a	2036.24
		7K47a	20.43
		7K47b	2.67
		7K5a	16.50
		7K6c	0.73
		7K7a	5.00
		7k8a	10.18
			3154.06
	Melila	6I2h	0.01
		7K43a	180.80
		7K43b	447.57
		7K43c	67.53
		7K45a	149.49
		7K45b	1055.78
			1901.18
	Mylam	7K43c	0.83
		7K44a	39.28
		7K45a	1449.72
		7K45b	549.74
		7K45c	240.20
		7k8a	8.90
			2288.68
	Pavithreswaram		0.00
		7K46a	337.85
		7K47a	393.09
		7K47b	316.80

Block	Panchayath	WS code	Area (Ha)
		7K47c	754.95
		7K48a	631.83
			2434.52
	Ummannoor	6l2g	51.47
		6l2h	745.32
		6l2i	1405.41
		6l6a	700.14
		6l6b	572.51
		6l6c	3.99
		7K43b	15.74
			3494.58
	Vettikkavala	6l2h	836.51
		6l2i	0.66
		6l6b	53.99
		7K40e	13.07
		7K41a	3.71
		7K43a	32.62
		7K43b	1949.95
		7K45b	587.23
			3477.74
			16750.76
			248488.55

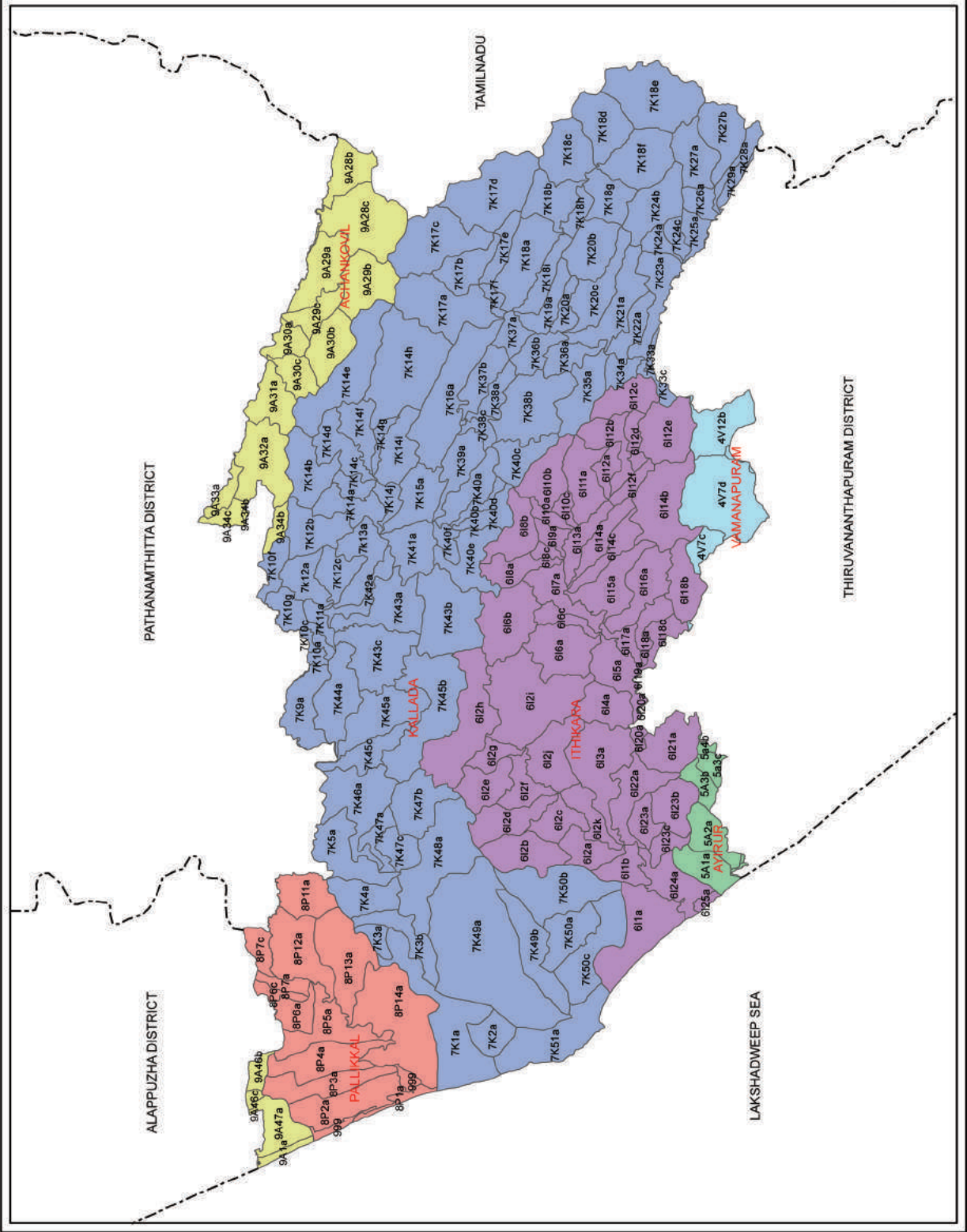


WATERSHED KOLLAM DISTRICT

- Legend**
- ACHANKOVIL
 - AYIRUR
 - ITTIKARA
 - KALLADA
 - PALLIKKAL
 - VAMANAPURAM



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



IRRIGATION

Development patterns, increasing population pressure and the demand for better livelihoods across the globe are contributing to a looming global water crisis. Addressing this crisis will require maintaining a sustainable relationship between water and development, one that balances current needs against the prospects for future generations. Only 3% of the world's water supply is fresh water and two-thirds of that is locked in glacier ice or buried in deep underground aquifers, leaving only 1% readily available for human use.

In most developing countries, agriculture is the dominant user of water, accounting for more than 85% of all water use. Agriculture water use rise significant issues for water resource management like issues dealing with water scarcity, competing demands from other sectors, irrigation service delivery and system management, water use efficiencies are so forth. The primary objectives in coming years will be to balance water supply and demand among users to ensure adequate water for agriculture and sustainable irrigation system management while satisfying other needs.

MAJOR IRRIGATION PROJECT

KALLADA PROJECT (ONGOING)

Kallada Irrigation and Tree Crop Development Project is the largest Irrigation Project in the State of Kerala. It comprises a straight, gravity, masonry dam across the Kallada river, at Parappan near Thenmala in Kollam district and also a weir at Ottakkal, 5 Km downstream of the dam to divert the water let out from the reservoir to the right and the left bank main canals. The project also envisages generation of 15 MW power in addition to flood control, drinking water supply, fish-culture and other economical and social benefits. The project also envisages generation of 15 MW power in addition to flood control, drinking water supply, fish-culture and other economical and social benefits. The project proposes composite irrigation over a Cultivable Command Area (CCA) of 61,630 ha (at 151% Intensity of Irrigation) with paddy cultivation in Valley bottom lands and plantation crops in the Valley slopes in Kollam, Alappuzha and Pathanamthitta districts. This is considered to be the first project in the country to adopt

micro-distribution system at the block level through PVC pipes to increase water management efficiency.

PHYSICAL PROGRESS

The construction of the main dam at Parappar has been completed. The construction of weir at Ottakkal and construction of saddle dam at Pallamvetty are completed. The construction of an ungated labyrinth type auxiliary spillway is nearly completed. The work of most of the branches, distributaries and minors are nearing completion. The details of works that remain to be completed and are ongoing/ being taken up are given in the section on 'Physical Progress'. The irrigation potential created by the project up to 3/2000 is 35602 ha. net, gross is 53602 ha.

MINOR CONVEYANCE SYSTEM

In irrigation projects, water is usually conveyed upto the boundary of farmer's plot through field channels/field bothies. Kallada Irrigation Project is the first project in India, to adopt Minor Conveyance System of irrigation in the ayacut. The main principle of this system is to irrigate maximum area with minimum water loss. In this system, the distribution of water is effected through a network of buried PVC pipes from a spout in the main or branch canal upto the hydrant in the farmer's plot and then through hoses. The main advantages are:

- i) Loss of precious irrigation water through field channels/bothies by percolation or seepage is prevented completely.
- ii) As water distribution is effected through underground pipe system, valuable agriculture land is not wasted thereby increasing the effective area of cultivation.
- iii) Construction of very expensive field channels and field bothies is avoided.
- iv) Irrigation water is given to each and every tree crop thereby ensuring correct and optimum use of water.

DETAILS OF MINOR CONVEYANCE SYSTEM WORK

Minor Conveyance (MCS) of Irrigation works under gravity. A minimum slope of 3% is necessary for effecting working of the system. The system consists of the following parts:-

a) Spout:

A spout is constructed in the bank of the main canal/branch canal/distributory from where water is let in the system. It consists of an inlet chamber control valve leading channel, measuring device and an outlet channel. These are covered at top with covering slab and locking arrangements. The water from the canal is let in the inlet chamber through pipe of required diameter with a control valve. The inlet end of the pipe is protected with G.I mesh to prevent entry of floating materials. The water thus entered in the inlet chamber flows to the outlet chamber through a leading channel. This is fixed with a 'V-Notch' to measure discharge into the outlet chamber. The supply of water to the ayacut will be through pipes of lesser diameter as per the design. The inlet ends of the pipes are covered with welded mesh to prevent entry of debris.

b) Pipeline System:

The pipelines are so aligned to form a network of pipes so as to command the entire ayacut by gravity flow. The pipes and specials used under this system are of PVC type varying in dia from 200 mm to 90 mm depending on the water requirement at each delivery points. For releasing pressure created in the pipeline, necessary pressure release arrangements (rises) should be provided at suitable points.

c) Delivery Points:

There are two types of delivery points in the system. These are described below:

Hydrants: This is a pipe connection taken from the end of the buried pipe above ground level using G.I pipe of 100 mm with two 50 mm wheel valve outlets. These are encased in a concrete shell called hydrant having a dia of 60 cm and height of 1.2m with cover and locking arrangement to regulate the opening of valves. Two 50 mm dia G.I pipe outlets from the 50 mm wheel valves protrude outside the shell above ground level, so as to connect delivery hoses having a length of 45 m long. The hydrants are located at about 90 m apart. The discharge of water from each outlet is 2.5 litres/sec making the total discharge from one hydrant as 5 litres/sec. These hydrants are located at places in the ayacut where there is sufficient pressure head of water to command the area with two hoses 45 m long each. For the efficient functioning of the system, the pressure head should not be less than 1.2 m.

BASIC INFORMATION

District	:	Kollam
Ayacut Area in ha (Potential)	:	61630 (Net) 92800 (Gross)
(Achievement)	:	35602 (Net) 53608 (Gross)
Classification		Major
Benefited District	:	Kollam, Pathanamthitta, Alleppey
Year of Starting	:	1961
Year of Commission (Partial)		
1 st stage	:	1986
2 nd stage	:	1992

SALIENT FEATURES

Location

State	:	Kerala
District	:	Kollam
River	:	Kallada
Latitude	:	8 ^o 57' N
Longitude	:	77 ^o 4' 20"E
Route	:	65 kms from Kollam (By NH 208) 72 kms from Thiruvananthapuram (By SH 2)

Hydrology

Annual rainfall	:	305 cms
Catchment area of the reservoir	:	549 sq. km
Name of the dam	:	Kallada (Parappara)
Construction started	:	1972
Partially commissioned	:	24.05.1986
Type of dam	:	Masonry straight gravity with spillway
Length of dam	:	335 m
Length of overflow section	:	42 m
Length of non-overflow section	:	293 m
Maximum height above Deepest Foundation:		7.62 m
Top Width of Dam	:	85.35 m
Top of Dam (Roadway)	:	+118.87

Top Level of Parapet	:	+119.87
Full Reservoir Level	:	+115.82m
Maximum Water Level	:	+116.77 m
Low Water Level	:	+70.25 m
Tail Water Level	:	+69.65 m
Gross Storage at FRL	:	524 Mm ³
Gross Storage at MWL	:	536 Mm ³
Live Storage at FRL	:	507 Mm ³
Dead Storage Capacity	:	17.0 Mm ³
Water Spread at Full Reservoir Level	:	23.sq.km

SPILLWAY

Type	:	Gated Ogee Type
Type of Crest Gates and Size	:	Radial 12.19mX9.14 m
Number of Crest Gates	:	3 nos.
Crest Level	:	+106.68 m
Head over Crest	:	9.14 m
Design Discharge	:	2830 Cumecs
Capacity of Low Level Outlets	:	3.75 m diameter conduit with sill Level +70.25 m discharge capacity 60 Cumecs

AUXILIARY SPILLWAY WITHOUT CONTROL GATE

Location	:	On right flank of masonry dam
Length	:	56 m
Crest Level	:	+116.73 cm
Design Discharge	:	698 m ³ /sec
Type	:	Labyrinth weir
Gates	:	No gates- free flow

SADDLE DAM

Length	:	225.70m
Maximum height	:	12.51

Pick-up weir

River sluice	:	1 no (2.44 m x1.83 m size)
Length of weir	:	120.69 m
Crest Level	:	+63.09 m
Deepest bed level	:	+57.50 m

Width of roadway over weir	:	4.27 m
No: of span	:	7
Maximum upstream flood level	:	+68.45 m
Maximum downstream flood level	:	+65.84 m

CANAL SYSTEM

Right Bank Main Canal

Length	:	69 km
Width at starting	:	4.65 m
Capacity	:	39.08 m ³ /sec
Cultivable command area	:	39530 ha.

Left Bank Main Canal

Length	:	56 km
Width at starting	:	4.00 m
Capacity	:	22.00 m ³ /sec
Cultivable command area	:	22100 ha

Table:21.1

MINOR IRRIGATION CENSUS (2006-07)

MINOR IRRIGATION SCHEMES AT A GLANCE

Sl.No.	Name of Block/Mun./Cor.	No. of Villages	Total Number of Schemes										Grand Total (7+10)	No. of Village Schedules
			Ground Water				Surface Water							
			Dugwell	Shallow Tubewell	Deep Tubewell	Total (4+5+6)	S. Flow Scheme	S. Lift Scheme	Total (8+9)					
1	2	3	4	5	6	7	8	9	10	11	12			
1	Anchal	8	780	1	0	781	75	5	80	861	8			
2	Anchalamoodu	2	192	2	0	194	0	0	0	194	2			
3	Chadayamangalam	8	910	0	0	910	72	0	72	982	8			
4	Chavara	5	235	0	0	235	0	0	0	235	5			
5	Chittumala	6	676	2	0	678	22	1	23	701	6			
6	Ithikkara	6	645	4	0	649	28	2	30	679	6			
7	Karunagappally	4	303	1	0	304	36	0	36	340	4			
8	Kollam Corporation	1	155	0	0	155	0	0	0	155	1			
9	Kottarakkara	6	643	0	0	643	76	0	76	719	6			
10	Mukhathala	4	324	4	0	328	29	0	29	357	4			
11	Ochira	4	309	6	0	315	3	0	3	318	4			
12	Paravoor	1	119	0	0	119	10	0	10	129	1			
13	Pathanapuram	6	960	0	0	960	85	1	86	1046	6			
14	Punalur	1	105	0	0	105	22	1	23	128	1			
15	Sasthamkotta	6	642	1	0	643	26	8	34	677	6			
16	Vettikkavala	6	611	6	0	617	81	0	81	698	6			
	District Total	74	7609	27	0	7636	565	18	583	8219	74			

Table:21.2

NUMBER OF GROUND WATER SCHEMES AND IRRIGATION POTENTIAL CREATED AND POTENTIAL UTILISED

Sl.No.	Name of Block/Mun./Cor.	Dugwell			Shallow Tubewell			Deep Tubewell			Total Ground Water		
		No.	Potential Created	Potential Utilised	No.	Potential Created	Potential Utilised	No.	Potential Created	Potential Utilised	No.	Potential Created	Potential Utilised
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Anchal	780	164	164	1	0	0	0	0	0	781	164	164
2	Anchalamoodu	192	73	73	2	1	1	0	0	0	194	74	74
3	Chadayamangalam	910	288	287	0	0	0	0	0	0	910	288	287
4	Chavara	235	67	67	0	0	0	0	0	0	235	67	67
5	Chittumala	676	120	120	2	25	25	0	0	0	678	145	145
6	Ithikkara	645	80	80	4	1	1	0	0	0	649	81	81
7	Karunagappally	303	90	90	1	0	0	0	0	0	304	91	91
8	Kollam Corporation	155	1219	1218	0	0	0	0	0	0	155	1219	1218
9	Kottarakkara	643	152	151	0	0	0	0	0	0	643	152	151
10	Mukhathala	324	84	84	4	100	100	0	0	0	328	184	184
11	Ochira	309	100	96	6	2	2	0	0	0	315	102	98
12	Paravoor	119	27	27	0	0	0	0	0	0	119	27	27
13	Pathanapuram	960	299	299	0	0	0	0	0	0	960	299	299
14	Punalur	105	24	24	0	0	0	0	0	0	105	24	24
15	Sasthamkotta	642	100	99	1	0	0	0	0	0	643	100	99
16	Vettikkavala	611	133	132	6	1	1	0	0	0	617	135	133
	District Total	7609	3020	3011	27	130	130	0	0	0	7636	3152	3142

Table:21.3

NUMBER OF SURFACE WATER SCHEMES AND IRRIGATION POTENTIAL CREATED AND POTENTIAL UTILISED

Sl.No.	Name of Block/Mun./Cor.	Surface Flow Schemes			Surface Lift Schemes			Total Surface Water		
		No.	Potential Created	Potential Utilised	No.	Potential Created	Potential Utilised	No.	Potential Created	Potential Utilised
1	2	3	4	5	6	7	8	9	10	11
1	Anchal	75	631	386	5	49	49	80	680	436
2	Anchalamoodu	0	0	0	0	0	0	0	0	0
3	Chadayamangalam	72	334	301	0	0	0	72	334	301
4	Chavara	0	0	0	0	0	0	0	0	0
5	Chittumala	22	241	241	1	135	135	23	376	376
6	Ithikkara	28	229	229	2	87	87	30	316	316
7	Karunagappally	36	300	61	0	0	0	36	300	61
8	Kollam Corporation	0	0	0	0	0	0	0	0	0
9	Kottarakkara	76	1147	837	0	0	0	76	1147	837
10	Mukhathala	29	199	198	0	0	0	29	199	198
11	Ochira	3	20	20	0	0	0	3	20	20
12	Paravoor	10	66	66	0	0	0	10	66	66
13	Pathanapuram	85	1885	1793	1	159	159	86	2044	1952
14	Punalur	22	364	161	1	31	31	23	395	192
15	Sasthamkotta	26	508	432	8	333	333	34	841	765
16	Vettikkavala	81	999	849	0	0	0	81	999	849
	District Total	565	6923	5574	18	794	794	583	7717	6369

Table:21.4

MINOR IRRIGATION SCHEMES ACCORDING TO SOURCE OF ENERGY

Sl. No.	Name of Block/Mun./Cor.	Ground Water Schemes							Surface Water Schemes (Surface Lift Scheme Only)						
		Electric Pump	Diesel Pump	Wind Mills	Solar Pumps	Manual/ Annual	Others	Total (3-8)	Electric Pump	Diesel Pump	Wind Mills	Solar Pumps	Manual/ Annual	Others	Total (10-15)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Anchal	508	6	1	0	265	1	781	5	0	0	0	0	0	5
2	Anchalamoodu	166	0	0	0	28	0	194							
3	Chadayamangalam	608	2	1	0	299	0	910							
4	Chavara	231	4	0	0	0	0	235							
5	Chittumala	422	3	0	0	252	1	678	1	0	0	0	0	0	1
6	Ithikkara	454	0	0	0	195	0	649	1	0	0	0	0	1	2
7	Karunagappally	248	0	0	0	56	0	304							
8	Kollam Corporation	479	1	0	0	163	0	643							
9	Kottarakkara	236	1	0	0	91	0	328							
10	Mukhathala	285	3	0	0	27	0	315							
11	Ochira	686	39	0	0	235	0	960	1	0	0	0	0	0	1
12	Paravoor	429	0	0	0	212	2	643	8	0	0	0	0	0	8
13	Pathanapuram	574	2	0	0	41	0	617							
14	Punalur	147	0	0	0	7	1	155							
15	Sasthamkotta	99	2	0	0	18	0	119							
16	Vettikkavala	83	0	0	0	22	0	105	1	0	0	0	0	0	1
	District Total	5655	63	2	0	1911	5	7636	17	0	0	0	0	0	18

Table:21.5

NUMBER OF MINOR IRRIGATION SCHEMES AND IRRIGATION POTENTIAL CREATED AND POTENTIAL UTILISED

Sl.No.	Name of Block/Mun./Cor.	Ground Water Schemes			Surface Water Schemes			Total		
		No.	Potential Created	Potential Utilised	No.	Potential Created	Potential Utilised	No.	Potential Created	Potential Utilised
1	2	3	4	5	6	7	8	9	10	11
1	Anchal	781	164	164	80	680	436	861	844	599
2	Anchalamoodu	194	74	74	0	0	0	194	74	74
3	Chadayamangalam	910	288	287	72	334	301	982	622	589
4	Chavara	235	67	67	0	0	0	235	67	67
5	Chittumala	678	145	145	23	376	376	701	521	521
6	Ithikkara	649	81	81	30	316	316	679	397	397
7	Karunagappally	304	91	91	36	300	61	340	391	152
8	Kollam Corporation	155	1219	1218	0	0	0	155	1219	1218
9	Kottarakkara	643	152	151	76	1147	837	719	1299	988
10	Mukhathala	328	184	184	29	199	198	357	383	382
11	Ochira	315	102	98	3	20	20	318	123	118
12	Paravoor	119	27	27	10	66	66	129	93	93
13	Pathanapuram	960	299	299	86	2044	1952	1046	2343	2251
14	Punalur	105	24	24	23	395	192	128	419	216
15	Sasthamkotta	643	100	99	34	841	765	677	941	864
16	Vettikkavala	617	135	133	81	999	849	698	1134	982
	District Total	7636	3152	3142	583	7717	6369	8219	10870	9511

Table:21.6

MINOR IRRIGATION SCHEMES IN TRIBAL & NON TRIBAL VILLAGES

Sl. No.	Name of Block/ Mun./Cor.	Dugwell			Shallow Tubewell			Deep Tubewell			Surface Flow Schemes			Surface Lift Schemes			Total Minor Irrigation Schemes		
		Tribal	Non Tribal	Total	Tribal	Non Tribal	Total	Tribal	Non Tribal	Total	Tribal	Non Tribal	Total	Tribal	Non Tribal	Total	Tribal	Non Tribal	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Anchal	0	780	780	0	1	1	0	0	0	0	75	75	0	5	5	0	861	861
2	Anchalamoodu	0	192	192	0	2	2	0	0	0	0	0	0	0	0	0	0	194	194
3	Chadayamangalam	0	910	910	0	0	0	0	0	0	0	72	72	0	0	0	0	982	982
4	Chavara	6	229	235	0	0	0	0	0	0	0	0	0	0	0	0	6	229	235
5	Chittumala	0	676	676	0	2	2	0	0	0	0	22	22	0	1	1	0	701	701
6	Ithikkara	0	645	645	0	4	4	0	0	0	0	28	28	0	2	2	0	679	679
7	Karunagappally	0	303	303	0	1	1	0	0	0	0	36	36	0	0	0	0	340	340
8	Kottarakkara	0	643	643	0	0	0	0	0	0	0	76	76	0	0	0	0	719	719
9	Mukhathala	20	304	324	0	4	4	0	0	0	0	29	29	0	0	0	20	337	357
10	Ochira	0	309	309	0	6	6	0	0	0	0	3	3	0	0	0	0	318	318
11	Pathanapuram	0	960	960	0	0	0	0	0	0	0	85	85	0	1	1	0	1046	1046
12	Sasthamkotta	0	642	642	0	1	1	0	0	0	0	26	26	0	8	8	0	677	677
13	Vettikkavala	0	611	611	0	6	6	0	0	0	0	81	81	0	0	0	0	698	698
14	Kollam Corporation	0	155	155	0	0	0	0	0	0	0	0	0	0	0	0	0	155	155
15	Paravoor	0	119	119	0	0	0	0	0	0	0	10	10	0	0	0	0	129	129
16	Punalur	0	105	105	0	0	0	0	0	0	0	22	22	0	1	1	0	128	128
	District Total	26	7583	7609	0	27	27	0	0	0	0	565	565	0	18	18	26	8193	8219

Table:21.7

SEASON WISE AREA IRRIGATED BY MINOR IRRIGATION SCHEMES

Sl. No.	Name of Block/ Mun./Cor.	Area irrigated by Ground water schemes				Area irrigated by Surface water schemes				Area irrigated by Total minor irrigation schemes						
		Khharif	Rabi	Perennial	Others	Total (3 to 7)	Khharif	Rabi	Perennial	Others	Total (8 to 11)	Khharif	Rabi	Perennial	Others	Total (13 to 16)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Anchal	35	47	56	26	164	88	119	128	101	436	123	166	184	126	599
2	Anchalamoodu	16	16	25	16	73	0	0	0	0	0	16	16	25	16	73
3	Chadayamangalam	40	35	148	64	287	111	104	5	81	301	151	139	153	146	589
4	Chavara	12	7	38	10	67	0	0	0	0	0	12	7	38	10	67
5	Chittumala	26	40	62	17	145	232	80	25	39	376	258	120	87	56	521
6	Ithikkara	20	27	22	12	81	140	131	9	36	316	160	159	31	48	398
7	Karunagappally	12	33	38	8	91	20	19	10	12	61	32	52	48	20	152
8	Kottarakkara	4	9	106	33	152	285	283	174	96	838	289	291	279	129	988
9	Mukhathala	33	38	75	39	185	85	74	0	39	198	118	112	75	78	383
10	Ochira	8	17	43	30	98	5	5	5	5	20	13	22	49	35	119
11	Pathanapuram	37	37	165	61	300	964	964	0	23	1951	1001	1001	165	84	2251
12	Sasthamkotta	30	29	26	14	99	223	377	136	29	765	253	406	162	43	864
13	Vettikkavala	6	8	66	52	132	255	258	159	178	850	261	266	225	230	982
14	Kollam Corporation	299	304	316	300	1219	0	0	0	0	0	299	304	316	300	1219
15	Paravoor	4	9	10	4	27	29	25	0	12	66	33	34	10	16	93
16	Punalur	2	2	13	7	24	93	93	0	7	193	95	95	13	14	217
	District Total	584	658	1209	693	3144	2530	2532	651	658	6371	3114	3190	1860	1351	9515

Source: Irrigation Department

Table: 21.8

DISTRIBUTION OF DISTRICT WISE HOLDINGS RECEIVING IRRIGATION BY DIFFERENT SOURCES 2005-06

District	Canal		Tank		Well		Tube wells		Other sources		Total	
	No	%	No	%	No	%	No	%	No	%	No	%
Kollam	1203	0.73	2151	1.82	175693	9.23	814	0.37	43558	6.08	223419	7.16

Table: 21.9

4th MINOR IRRIGATION CENSUS 2006-07

District	Ground Water			Surface Water		Total Schemes	Cultivable Area (In Ha)	Net Area Sown (In Ha)	Net Area Irrigated (In Ha)
	Dug well	Shallow well	Deep tube well	Surface flow	Surface lift				
Kollam	7609	27	0	565	18	8219	144161	105471	38301

Table: 21.10

REPORT OF MINOR IRRIGATION SCHEMES 2010-11

Sl. No.	Name of Department/ Organisation	No of schemes completed		Expenditure incurred in 000's		Potential created (In Ha)		Potential utilized (In Ha)	
		GW	SW	GW	SW	GW	SW	GW	SW
1	Irrigation	7	183	7512	372398	203	4519	203	4115.89
2	District Panchayath LSGD	1	1	500	844	15	21	15	21
3	Ground Water Department	567	0	7282	4028	613	0	613	0
4	Agriculture Department	820	969	1250493	172039	404	372	349	372
5	Institutional Finance	34907	3208	1265787	549309	22882.64	34373.81	21591.5	32494.31
	Total	36302	4361	1265787	549309	24117.64	39286	22771.5	37003.2

Source: Infrastructure Statistics of Kerala 2011

POWER

Power Sector in Kerala plays a vital role in all developmental activities in Kerala. Obviously power crisis is the prime obstacle to start new initiatives in the industrial field. The need for power is increasing and the production of power should also be increased accordingly. Monsoon is essential to sustain the hydropower base in the State and the shortage in rainfall usually creates power crisis. Kerala received abundant monsoon during the current year and increased the inflow into KSEB reservoirs; the KSEB could manage the power supply situation with higher quantum of cheaper hydel power. Kerala is one among the very few states in the country where there was no load shedding and power out during 2010-11. KSEB has been responsible for the generation, transmission and supply of electricity in the State, with particular emphasis to provide electricity at affordable cost to the domestic as well as for agricultural purposes. The Board has been passing through a transitional phase of reforms in the electricity sector. The Electricity Act 2003 envisages separate organizations for Transmission and Distribution. Hydel and Thermal Projects, which form the backbone of the power sector of Kerala State, cater to needs of the various industries, which are augmented by the supply from National grids. High rainfall and terrain conditions have endowed the State with a vast potential of hydro-electricity, which is about 6% of India's total hydroelectric potential. The Small Hydro Power (SHP) units have spurred the momentum of development of wind, solar and biomass energy systems, paving the way for integrated renewable energy systems in all potential development blocks/taluks.

Kerala's power sector projections

In the past, the energy demand was presumed to be basis with load factor being used to convert the projected energy demand to peak MW demand. The projected energy demand was worked out by a combination of end use and time series analysis. This was the methodology used in the Electric Power Surveys (EPS) conducted by CEA in conjunction with the State Electricity Boards.

One of the problems with the above approach has been consistent over projection of peak demand. The annual growth of peak power demand has been assumed to be the order of 7-8% and this has resulted in projections well beyond actual demand realized.

Some of these anomalies have been corrected in the current Electric Power Surveys conducted and the projections for Kerala as continued in the 17th Survey. The figures for Kerala in terms of demand projection in the Draft 17th EPS are given below.

Table: 22.1

17th EPS ESTIMATES FOR 11th PLAN PERIOD

Year	Energy Consumption	Peak Demanded	Annual Load Factor (%)
2006-07	11147	2699	60.75
2007-08	12037	2823	61.54
2008-09	12973	2947	62.34
2009-10	13977	3078	63.14
2010-11	15112	3227	63.94
2011-12	16345	3391	64.74

It is evident from the 17th EPS Draft Report that a number of assumptions made for projections which may result in the actual demand being more than what is projected in the EPS or less. KSEB's own projections taking into account a higher growth rate and a slightly lower load factor projects the following demands for the 11th plan period.

Table: 22.2

Year	Energy Consumption	Peak Demand	Annual Load Factor (%)
2007-08	15217	2856	60.82
2008-09	16096	3004	61.17
2009-10	17025	3159	61.52
2010-11	18077	3335	61.87
2011-12	19230	3528	62.22

Source: EPA Draft Report

Table: 22.3

PLAN-WISE ACHIEVEMENTS

Sl. No.	Particulars	11 th Plan			
		1 st Year	2 nd Year	3 rd Year	4 th Year
		2007-08	2008-09	2009-10	2010-11
1	Installed Capacity (MW)	13.68	68.1	7	116.6
2	220 KV line (km)	1.01	0	18.26	0
3	110 KV line (km)	56.38	17.5	48.30	34.22
4	66 KV line (km)	11.13	0	0	0
5	33 KV line (km)	105.44	169.57	199.22	63.6
6	11 KV line (km)	1816.45	3048.00	3398.27	36659
7	LT Lines (km)	8158.18	7563.00	7837.95	6761
8	Step up transformer capacity (MVA)	0	39.8	1.6	235.11
9	No. of EHT substations including upgradation	6	2	11	6
10	No. of 33 KV substations	13	16	18	7
11	Step down transformer capacity (MVA)	469	385	1095	934
12	Distribution transformer				
	a. Nos.	2553	4109	5790	5804
	b. Capacity (MVA)	265.17	514.67	770.99	611.22
13	Consumer Nos.	482766	442895	380015	384470
14	Connected Load (MW)	912	2889.44	599.11	815.3
15	Street light installed (No)	49448	37641	61532	54768
16	Pump set connected (No)	15553	11231	10715	12467

Table: 22.4

ANNUAL GENERATION FROM RENEWABLE ENERGY SOURCES
(Small hydel up to 25 mw, wind, etc)

Sl. No.	Stations	Installed capacity (mw)	GENERATION (MU)				
			2006-07	2007-08	2008-09	2009-10	2010-11
HYDEL (KSEB)							
1	Kallada	15	76.16	73.03	46.34	60.42	72.09
2	Peppara	3	7.48	8.18	5.52	6.05	9.75
3	Mattupetty	2	5.68	6.91	5.74	1.91	2.28
4	Peringalkuthu LBE	16	107.81	59.94	109.62	108.82	120.67
5	Malampuzha	2.5	2.06	0	0	0	0
6	Lower Meenmutty	3.5	5.62	4.92	4.11	3.43	7.19
7	Urumi	6.15	14.52	13.77	11.79	11.58	15.94
8	Chembukkadavu	6.45	12.17	9.28	10.03	8.46	13.54
9	Malankara	10.5	32.22	43.7	33.49	32.46	36.93
10	Neriamangalam Extention	25	-	-	47.41	92.6	95.48
11	Kuttiyadi Tailrace	3.75	-	-	5.76	4.62	4.34
HYDEL(CPP)							
1	Maniyar	12	43.02	38.52	25.3	33.79	41.24
2	Kuthungal	21	37.52	62.88	38.42	34.25	47.05
HYDEL(IPP)							
1	Ullungal	7	-	-	3.12	19.82	24.29
2	Iruttukkanam	3	-	-	-	-	5.96
WIND (KSEB)							
1	Kanjikode	2.02	2.14	1.96	1.68	1.84	1.51
WIND (IPP)							
1	Ramakkalmedu	14.25	-	-	21.72	32.54	29.38
2	Agali	13.8	-	-	10.28	35.07	33.66
Cogeneration (IPP)							
1	MPS Steel Casting	10	-	-	10.26	49.02	34.07
Total			346.4	323.09	390.59	536.68	595.37

Table: 22.5

**ALL INDIA GENERATING INSTALLED ELECTRICITY GENERATION
CAPACITY AS ON 31-03-11**

Name of State/U.Ts	Hydro	Coal	Diesel	Gas
1	2	3	4	5
Northern Region	13822.75	24232.5	12.99	4134.76
Western Region	7447.5	30995.5	17.48	7903.81
Southern Region	11299.03	19882.5	939.32	4690.78
Eastern Region	3882.12	18747.88	17.2	190
North Eastern Region	1116	60	142.74	787
Islands	0	0	70.02	0
Total (All India)	37567.4	93918.38	1199.75	17706.35

Name of State/U.Ts	Nuclear	RES	Total
1	6	7	8
Northern Region	1620	3165.55	46988.55
Western Region	1840	5357.96	53562.25
Southern Region	1320	9341.67	47473.3
Eastern Region	0	359.64	23196.84
North Eastern Region	0	223.6	2329.34
Islands	0	6.1	76.12
Total (All India)	4780	18454.52	173626.4

Source: Kerala State Electricity Board

MISCELLANEOUS

WATER TRANSPORT

Kerala is a land with abundant water bodies. Backwater is a wonderful gift of nature to the God's Own Country. Ashtamudy and Vembanadu lake which completes the network of waterways not only provides natural beauty but inland navigation facilities also. State Water Transport Department is the main agency who provides inland water transport facilities to the people residing in the water logged areas and to enjoy the everlasting memory of backwaters. This inland Water Transport system consists of 1895 kms of waterways. This includes navigable river, backwaters and manmade cross canals. Most of these are in Travancore-Cochin region. Of the 44 rivers in Kerala, the 41 west flowing rivers together with back waters and manmade canals form the integral part of inland navigation system.

State Water Transport Department formed during 1968 with the objectives to provide Transport facilities to the people residing in the water logged areas at cheaper rates and Cargo transportation. Construction of roads, bridges and speedy transportation-roadways shortened the operation of the department to passenger transport only-in the backwaters and ferries. But in the world of speed and hurry the advantage of this pollution free, accident free and cheaper transport system beckons least preference.

Backwaters

- | | |
|---------------------|--|
| (1) Vembanattu lake | - 52 sq.kms. |
| (2) Ashtamudy lake | - 200 sq.kms. |
| (3) Ernakulam | - Vypeen ferry (Cochin port & Harbour) |
| (4) Muhamma | - Kumarakom |
| (5) Vaikom | - Thavanakkadavu |
| (6) Payyannur | - Parassinikkadavu |

Total distance operated	-	79,00 km per day
No. of passengers carried	-	80,000 per day
No. of operating centers	-	14 stations

Station Offices

- | | |
|------------------------|---|
| Kottayam District | - Kottayam, Changanassery & Vaikom |
| Capacity of boats | - 50 passenger to 150 passengers (wooden boats)
Boats are constructed in the traditional way with well seasoned teak wood. |
| Speed of boat | - 10 to 15km per hour |
| Size of boats length | - 20 mtr to 35 mtrs width - 3 to 4.5 meters depth -
2mtrs weight - 5 to 15 tonns. |
| No. of crew for a boat | - 5 persons at a time |

Source: Water Transport Department

INDUSTRIES

BLOCK WISE INDUSTRIAL DEVELOPMENT PLOTS & MINI INDUSTRIAL ESTATES

Table: 23.1

Sl. No.	Name of Blocks/ Municipalities	No. of Industries functioning	Development plots			Mini industrial estates				Total No. of Plots
			Extend of land (Acres)	No. of plots allotted	No. of industry functioning	Extend of land (Acres)	No. of plots allotted	No. of industry functioning		
1	2	3	4	5	6	7	8	9	10	
1	Kollam Corporation	50	20.667	53	50	-	-	-	53	
2	Chavara	8				1.05	10	8	10	
3	Thevalakkara	9				1.20	10	9	10	
4	Sasthamkotta	9				1.06	10	9	10	
5	Perinadu	9				1	10	9	10	
6	Kareepra	9				1	10	9	10	
	Total	94	20.667	53	50	5.31	50	44	103	

Table: 23.2

BLOCK WISE KHADI & HANDLOOM UNIT

Sl. No.	Name of Block/ Municipalities/ Corporations	Khadi					Handloom Textile Industry
		Employment	Khadi Industry	Working Khadi Societies	Co-operative Sector (No. of Units)	Co-operative Sector (No. of Workers)	
1	2	3	4	5	6	7	8
1	Oachira	7	Screw pine	3		7	2
2	Chavara	93	Masala, Khadi	2		93	
3	Vettikkavala	6	Khadi, Match	2		6	3
4	Chadayamangalam	1	Electronics	1		1	4
5	Sasthamkotta	1	Garments	1		1	1
6	Pathanapuram	2	Cane & Bamboo	1		2	1
7	Chittumala	0	Khadi	1		0	1
8	Anchal						1
9	Mukhathala						3
10	Ifhikkara						8
11	Chittumala						
12	Kottarakkara						7
13	Paravur Mun.						1
14	Karunagappally Mun.	2	Electronics	1		2	
15	Kollam Cor.	25	Match, Cashew, Garments	6		25	2
Block Total (Rural)		110		11		110	31
Muni/Corp. Total		27		7		27	1/2
District Total		137		18		137	34

Source: Panchayat Statistics (Kollam)

Table: 23.3

NEWLY REGISTERED VEHICLES FOR THE YEAR 2010-11

Sl.No.	Classification of Vehicles	Number
1	Multiaxied Articulated Vehicles	2
2	Trucks and Lorries	300
3	Four Wheelers	1878
4	Three Wheelers	607
	Total	2787
5	Stage Carriage	93
6	Contract Carriage	223
7	Private Service Vehicles	71
8	Other Buses	174
	Total	561
9	Motor Cabs	696
10	Maxi Cabs/Taxi	0
11	Other Taxis	116
	Total	812
12	LMV 3 Seater	3270
13	LMV 4 to 6 Seater	0
14	Motor Cycle Hire	0
	Total	3270
	Other TVs	99
	Total Transport	7529
15	Scooters	0
16	Mopads	0
17	Motor Cycles including above & below 95cc	41188
	Total	41188
18	Cars	17612
19	Jeeps	0
20	Omni Buses	1
21	Tractors	33
22	Trailors	1
23	Others	789
	Total	18436
	Total Non Transport	59624
	Grand Total	67153

Source: Economic Review 2011

Table: 23.4

CATEGORY-WISE LENGTH OF ROADS MAINTAINED BY PWD (R&B) AS ON 31-03-2011**(In Kms)**

District & State	State High ways	Major district Roads	Other district Roads	Village Roads	Total
Kollam	180.36	1471.94	0	0	1652.30
Kerala	4341.65	18900.05	0	0	23241.70

Table: 23.5

NUMBER OF MOTOR VEHICLE HAVING VALID REGISTRATION AS ON 2011

Goods and Vehicles	Four Wheelers and above	19610
	Three Wheelers including tempos	7500
Buses	Stage carriages	1310
	Contract Carriages/Omni Buses	7507
Four Wheelers	Cars	89810
	Taxis	8745
	Jeeps	4879
Three Wheelers	Autorickshaws	38304
	Motorized Cycle Rickshaws	12
Two Wheelers	Motorized Cycles	1004
	Scooter/Motor Cycles	275715
Tractors/Trailors	Tractors/Trailors	511
	Tillers	234
	Trailors	335
	Others	2484
Grand Total		457960

Source: Infrastructure Statistics of Kerala

HEALTH

Table:23.6

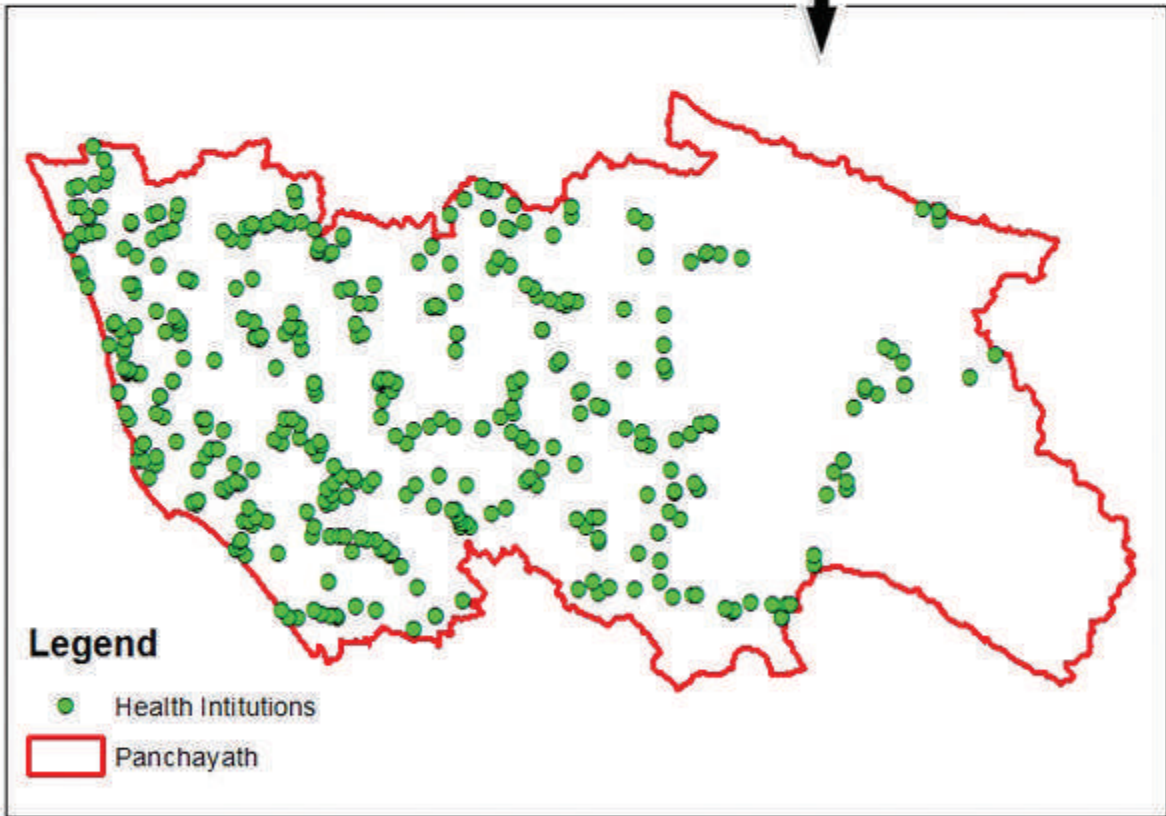
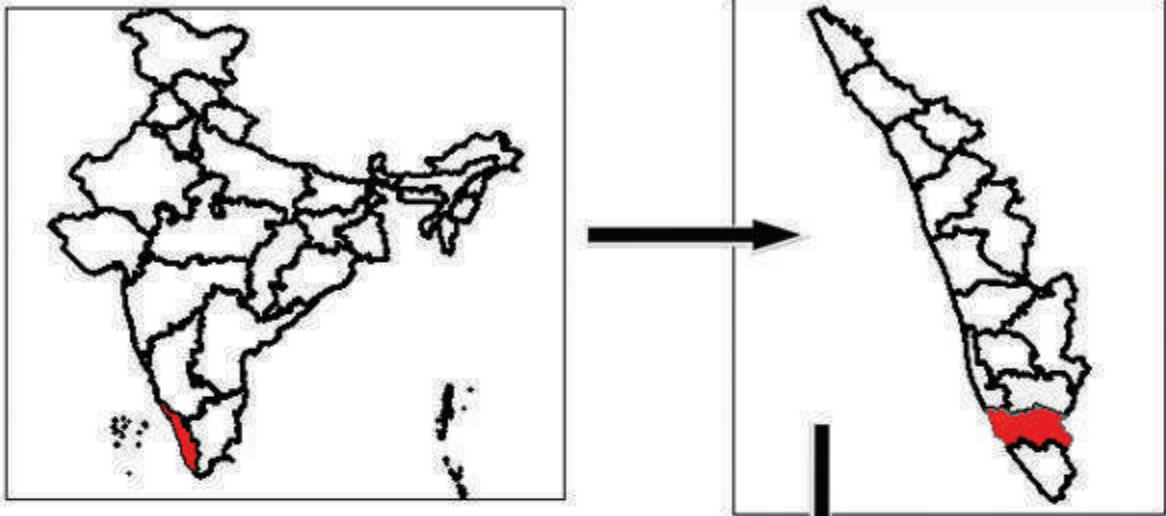
STANDARDISED LIST OF INSTITUTIONS IN KOLLAM DISTRICT

Sl. No.	Institutions	Location	No. of Beds	Health Block
1	CHC	Nedumpana	75	CHC Kalakkodu
2	CHC	Nedumancavu	16	CHC Nedumancavu
3	CHC	Pathanapuram	12	CHC Pathanapuram
4	CHC	Kalakode	24	CHC Kalakode
5	CHC	Kulathupuzha	12	CHC Kulathupuzha
6	CHC	Thekkumbhagom	18	CHC Thekkumbhagom
7	CHC	Anchal	30	CHC Anchal
8	CHC	Thrikkadavur	16	CHC Thrikkadavur
9	CHC	Sooranadu	16	CHC Sooranadu
10	CHC	Mynagappally	24	CHC Mynagappally
11	CHC	Kulakkada	24	CHC Kulakkada
12	CHC	Ochira	12	CHC Ochira
13	CHC	Chavara	46	CHC Chavara
14	CHC	Nilamel	12	CHC Nilamel
15	CHC	Velinalloor	24	CHC Velinalloor
16	CHC	Palathara	12	CHC Palathara
17	CHC	Mayyanadu	70	CHC Mayyanadu
18	24X7 PHC	Parippally	24	CHC Kalakkodu
19	24X7 PHC	Thazhava	24	CHC Mynagappally
20	24X7 PHC	Perumon	24	CHC Kundara
21	24X7 PHC	Munroe Island	0	CHC Kundara
22	24X7 PHC	Madathara	18	CHC Nilamel
23	24X7 PHC	Chadayamangalam	24	CHC Velinalloor
24	PHC	Veliyam	0	CHC Nedumancavu
25	PHC	Pooyappally	0	CHC Nedumancavu
26	PHC	Neduvathur	0	CHC Nedumancavu
27	PHC	Ezhukone	0	CHC Nedumancavu
28	PHC	Ezhukone Pavithreswaram	0	CHC Nedumancavu
29	PHC	Piravanthur	0	CHC Pathanapuram
30	PHC	Vilakudy	0	CHC Pathanapuram
31	PHC	Thalavur	0	CHC Pathanapuram
32	PHC	Pattazhy Vadakkekara	0	CHC Pathanapuram
33	PHC	Pattazhy	0	CHC Pathanapuram
34	PHC	Mancode Pathanapuram	0	CHC Pathanapuram
35	PHC	Chathanoor	0	CHC Kalakkodu
36	PHC	Adichanalloor	0	CHC Kalakkodu
37	PHC	Paravoor Pozhikkara	0	CHC Kalakkodu
38	PHC	Achenkovil	0	CHC Kulathupuzha
39	PHC	Aryancavu	0	CHC Kulathupuzha
40	PHC	Thenmala	0	CHC Kulathupuzha

Sl. No.	Institutions	Location	No. of Beds	Health Block
41	PHC	Thevalakkara	0	CHC Thekkumbhagom
42	PHC	Alayamon	0	CHC Anchal
43	PHC	Edamulakkal	0	CHC Anchal
44	PHC	Karavaloor	0	CHC Anchal
45	PHC	Eroor	0	CHC Anchal
46	PHC	Thrikaruva	0	CHC Thrikkadavur
47	PHC	Kilikalloor	0	CHC Thrikkadavur
48	PHC	Sakthikulangara	0	CHC Thrikkadavur
49	PHC	Poruvazhy	0	CHC Sooranadu
50	PHC	Kunnathoor	0	CHC Sooranadu
51	PHC	Sooranadu South	0	CHC Sooranadu
52	PHC	West Kallada	0	CHC Sooranadu
53	PHC	Alappadu	0	CHC Mynagappally
54	PHC	Azheekal	0	CHC Mynagappally
55	PHC	Thodiyoor	0	CHC Mynagappally
56	PHC	East Kallada	0	CHC Kundara
57	PHC	Perayam	0	CHC Kundara
58	PHC	Melila	0	CHC Kulakkada
59	PHC	Mylam	0	CHC Kulakkada
60	PHC	Thalachira	0	CHC Kulakkada
61	PHC	S.N.Puram	0	CHC Kulakkada
62	PHC	Ummannoor	0	CHC Kulakkada
63	PHC	K.S.Puram	0	CHC Ochira
64	PHC	Vallikavu	0	CHC Ochira
65	PHC	Chavara	0	CHC Chavara
66	PHC	Mancode Chithara	0	CHC Nilamel
67	PHC	Elamadu	0	CHC Velinalloor
68	PHC	Ittiva	0	CHC Velinalloor
69	PHC	Eravipuram	0	CHC Palathara
70	PHC	Kottamkara	0	CHC Palathara
71	PHC	Thrikkovilvattom	0	CHC Palathara

Source: DHS

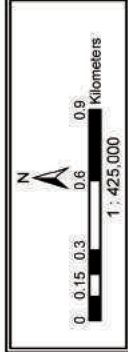
KOLLAM HEALTH INSTITUTION MAP



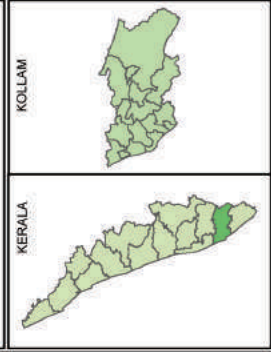
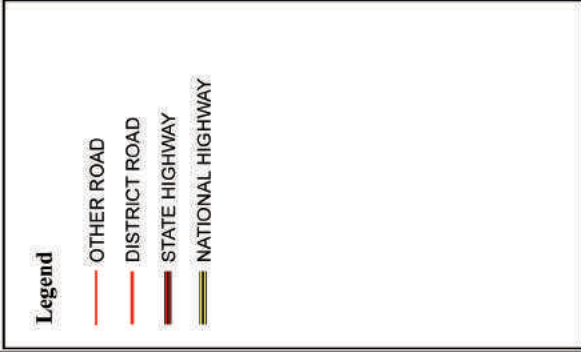
Source by :

KERALA STATE REMOTE SENSING & ENVIRONMENT CENTRE
VIKAS BHAVAN, THIRUVANANTHAPURAM





TRANSPORT NETWORK KOLLAM DISTRICT



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

