

PREFACE

Through the proper studies of environment and natural resources like land, water, biomass etc., land can be effectively used in various aspects. To study these matters, basic information on environment and natural resources - spatial and nonspatial - is required and then only scientific planning will be fulfilled. Planning reveals the scope of resources and how they can be used in future. This publication, "Natural Resources Data Bank" will help a better understanding of the resources of the district, especially in the context of decentralized planning process.

Though many gaps are there in the publication, I hope this publication would be much helpful for, planning at microlevel.

Thiruvananthapuram
25-02-2015

Sd/-
JOSE ISSAC I.A.S
Land Use Commissioner

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N.B:- Related Maps are provided in each Chapter.

GENERAL INFORMATION

Pathanamthitta the latest district of Kerala State came into existence on 1st November 1982. District is bounded on North by Kottayam and Idukki districts, West by Alappuzha and portion of Kollam and South by Kollam and East by Tamilnadu State. Pathanamthitta covers an area of 265765 ha. consisting 8 blocks, 3 municipalities and 5 taluks. It falls between 9^o 02' 30" and 9^o 28' 30" North latitudes and 76^o 37' 30" and 77^o 17' 30" East longitudes. Based on physiographic features this area falls under five sub micro regions namely Chengannur rolling plain, Kuttanad low lying plain, Kottarakkara undulating upland, Pamba-Kakki forest hills and Adoor rolling plain. District has a tropical humid climate with an oppressive summer and plentiful seasonal rainfall. Pathanamthitta is one of the wide regions of forest area district in Kerala State covers 1533.79 sq.km. accounts more than 50% of total geographical area. Forest can be broadly classified as evergreen, semi evergreen and most deciduous. Large forest reserves favourably affect the climate and induce more rain in the district. With vast stretches of evergreen forest Pathanamthitta is blessed with natural habitat for variety of plants and animals. Kari, Alluvial, Sandy and Laterite soil cover the whole area. Agriculture plays a vital role in the district with a total cropped area of 99719 ha. during 2012-13. Pathanamthitta stands 3rd position in area under rubber cultivation during this period. Main rivers are Achankovil, Manimala and Pamba. Besides the conventional sources of irrigation like tanks, wells and private canals Pathanamthitta has major and minor irrigation schemes. Watershed has become an acceptable unit of planning for optimum use and conservation of soil and water resources. Pathanamthitta is land locked with no coastal line or back waters. Land use categories observed in this district are builtup land, agricultural land, forest, wastelands, waterbodies. Major categories of wastelands are barren rocky area, land with dense scrub and land with open scrub. Wetland has a vital role in maintaining the fragile environmental

balance. Having famous pilgrim centres, district is known as headquarters of pilgrim tourism. District is also attracted by wild life and tourist spots.

History

Pathanamthitta district, 14th and the youngest revenue district of the Kerala State, nestles its head on the slopes of the Western Ghats and stretches to the low-lying rice fields bordering Alappuzha district. It was formed with effect from the 1st November, 1982 with headquarters at Pathanamthitta. It is bounded on the north by Changanassery and Kanjirappally taluks of Kottayam district and Peerumade taluk of Idukki district, on the east by the state of Tamil Nadu, on the south by Kunnathur, Pathanapuram and Kottarakkara taluks of Kollam district and on the west by Chengannur, Mavelikkara and Kuttanad taluks of Alappuzha district. It abounds with natural splendours – undulating hills, dark mysterious forests, exotic wildlife and enchanting valleys.

This district comprised of a total of 54 villages, 21 villages of Pathanamthitta taluk and 9 villages of Kunnathur taluk of Quilon district and 4 villages of Chengannur taluk, 2 villages of Mavelikkara taluk and 18 villages of Thiruvalla taluk of Alleppey district. Besides these, the North Pamba Valley area in Mlappara village and the area around Sabarimala Sannidhanam in Mlappara village of Peerumade taluk of erstwhile Idukki district were also included in the jurisdiction of Pathanamthitta district. Taluks and divisional boundaries of Pathanamthitta district were notified and accordingly Pathanamthitta district at its inception stage comprised of five taluks viz. Thiruvalla, Mallappalli, Ranni, Kozhencherry and Adoor and two revenue divisions, namely, Adoor and Thiruvalla. Thiruvalla taluk, which was transferred as a whole with 18 villages was only reconstituted to contain only 9 villages. The remaining 8 villages, excluding one village, namely, Ayiroor already included in Ranni taluk were taken to form Mallappalli taluk. On the other hand, Ranni taluk was constituted with 8

villages of Pathanamthitta taluk and a sole village from Thiruvalla taluk of erstwhile Quilon and Alleppey districts respectively. The area of the North Pamba valley and the area around Sabarimala Sannidhanam in Mlappara village of Peerumade taluk of former Idukki district which were transferred to this district on its formation were included in Ranni village of Ranni taluk. The newly constituted Kozhencherry taluk comprised of 13 villages of Pathanamthitta taluk of former Quilon district and 4 villages of Chengannur taluk of erstwhile Alleppey district. The only taluk of the district which has headquarters different from its taluk name is Kozhencherry as its headquarters is located at Pathanamthitta. Adoor taluk was comprised of 9 villages of Kunnathur taluk and 2 villages of Mavelikkara taluk of former Quilon and Alleppey districts respectively.

Pathanamthitta is a combination of two words – Pathanam and Thitta – which mean an array of houses on the river side. It is presumed that the regions presently under the district were formerly under the Pandalam reign which had connections with the Pandya Kingdom. The history of the district is sandwiched between the history of erstwhile Quilon and Alleppey districts. The pre-historic period of the district is obscure. But some megalithic monuments such as the dolmens, found in the Ranni reserve forest and Enadimangalam village of present Adoor taluk, date back to the Neolithic period. Yet some old relics, reminiscent of pre-historic period, are found also in some areas of Thiruvalla and Kadapra. Some archaeological antiquities in the form of architecture, inscriptions, mural paintings, historical monuments, etc, found in the temples, rock-cut caves, churches, etc. show clear picture about the historic period. During the 1st century A.D, almost all the portions of Quilon district formed a part of Ay Kingdom. The South-Eastern portions upto Thiruvalla of erstwhile Aleppy district were ruled by Aky Kingdom with their headquarters at South Travancore. The Kaviyoor cave Temple of Pallava style of architecture is some of the earliest specimen of stone sculpture supposed to be made in the 7th to the 9th century A.D. The inscriptions engraved on the central shrine of Kaviyoor temple depict details of the area in the

Kali era of 4051 and 4052. There are some epigraphical records assigned to post-Portuguese period in the Orthodox Syrian church at Niranam.

It is significant to note that Pliny, the famous traveler of the 1st century A.D had described in his famous book 'Pereplus' about Niranam (Neleynda), the river Pamba (Baris) and about the exporting pepper from Thiruvalla. Christianity had a strong foothold in the district from the middle of the 1st century. In A.D 52, St. Thomas, one of the twelve Apostles of Jesus Christ, landed a Mallankara and founded seven churches in Malabar coast, one of which is located at Niranam.

From the 9th to the 12th century A.D, Thiruvalla taluk of Alleppey district was a part of Nantuzhainad and later it was merged to Odanad and subsequently with Thekkumkur. In the early 19th century during the reign of Balarama Varma, Velu Thampi Dalava, who took keen interest in uplifting Quilon as an administrative as well as commercial centre, organized a rebellion at Quilon against the British force. As result of Kundara Proclamation issued by the Dalava on the 16th January 1809, thousands of people marched under the banner of Velu Thampi Dalava. The British defeated the local force and captured the fort of Udayagiri and Padmanahbapuram. The ruler of Travancore became helpless and ordered to capture Dalava. Velu Thampi Dalava decided not to surrender alive and committed suicide at Mannadi in Kadampanadu village of present Adoor taluk. During the reign of Rani Parvathy Bai, Pandalam was annexed to Travancore in 1812 AD. The old principality here was known as Airur Swarupam. The palace of Pandalam Raja is closely associated with Sabarimala temple. It is believed that Sree Ayyappan was brought up by ruling Raja of Pandalam. Even now the ornaments of Sabarimala temple are kept in this palace. It is worth mentioning that in the 9th century A.D, the district had flourished in the field of culture and literature. The famous Niranam poets who had made great contributions to Malayalam literature belonged to this district. Marthanda Varma Maharaja, the maker of modern Travancore, played a remarkable role in the history of the state. During the reign of Dharmaraja, a notable event was the

invasion of Tippu Sultan and the alliance Travancore made with the East India Company.

The District has prominent role in the freedom struggle of the Country. Shri. K.E Maman and Shri. K.A Mathew are among the well-known freedom fighters who hail from Thiruvalla which belongs to Pathanamthitta district. After India became independent, the popular ministry was installed in Travancore on the 24th March 1948. On the 1st July 1949 Travancore-Cochin State and this position continued till the formation of Kerala State on the 1st November, 1956, as per the States Reorganization Act, 1956. The District came into existence as separate administrative unit on the 1st November, 1982 as stated earlier.

PATHANAMTHITTA AT A GLANCE

Table: 1.1

ADMINISTRATIVE SET UP

Sl. No.	Particulars	Pathanamthitta	Kerala
1	No. of Revenue Divisions	2	21
2	No. of Taluks	5	63
3	No. of Revenue Villages	68	1478
4	No. of Corporations	0	5
5	No. of Corporation Wards	0	359
6	No. of Municipalities	3	60
7	No. of Municipality Wards	99	2216
8	No. of Block Panchayat	8	152
9	No. of Block Panchayat Wards	106	2095
10	No. of Grama Panchayat	54	978
11	No. of Grama Panchayat Wards	811	16680
12	No. of Assembly Constituencies	5	140
13	No. of Parliament Constituencies	1	20
14	No. of District Panchayat Wards	17	332

Table: 1.2

DEMOGRAPHY

Sl. No.	Particulars	Pathanamthitta	Kerala
1	Total Population	1195537	33387677
2	No. of Literates	1070120	28234227
3	No. of Migrant	98354	1625653

Table: 1.3

GEOGRAPHICAL PARTICULARS

Sl. No.	Area Categorization	Pathanamthitta	Kerala
1	Total Area (Ha)	265765	3886287
2	Forest Area (Ha)	155214	1081509
3	Length of Coastal Line (Kms)	0	590

Table: 1.4

AGRICULTURE

Sl. No.	Land Utilization Pattern	Pathanamthitta (ha.)	Kerala (ha.)
1	Total geographical area	265765	3886287
2	Forest area	155214	1081509
3	Land put to non agricultural use	16126	402577
4	Barren & uncultivable land	180	16354
5	Permanent pastures and other grazing land	0	118
6	Land under misc. tree crops	125	2799
7	Cultivable waste	1784	96596
8	Fallow other than current fallow	2631	55835
9	Current fallow	4577	76744
10	Net area sown	81659	2048109
11	Area sown more than once	18060	543625
12	Total cropped area	99719	2591734

Table: 1.5

ANIMAL HUSBANDRY

Sl. No.	Livestock Population	Pathanamthitta	Kerala
1	Cattle	98325	1740117
2	Buffaloes	856	58145
3	Goats	88054	1729127
4	Pigs	908	59017
5	Sheep	0	965
6	Ducks	46824	865331
7	Fowls	631414	11820376

Table: 1.6

FISHERIES

Sl. No.	Particulars	Pathanamthitta	Kerala
1	Length of coastal line	0	590
2	No. of fishing villages		
a)	Marine	0	222
b)	Inland	3	113
3	Fisher folk population		
a)	Marine	0	771249
b)	Inland	2073	230376

Table: 1.7

INDUSTRIES

Sl. No.	Industrial Units	Pathanamthitta	Kerala
1	Number of SSI units registered	8857	219444
2	Number of Women SSI units registered	3439	55416
3	Number of Industrial Co-operative Societies registered	0	9

Table: 1.8

COMMUNICATION

Sl. No.	Communication Divisions	Pathanamthitta	Kerala
1	Total Number of Post Offices	472	5064
a)	Number of Head Office	5	51
b)	Number of Sub Office	141	1455
c)	Number of ED Branch Office	326	3558
2	Total Number of Telephone Exchanges	84	1266

Table: 1.9

HEALTH

Sl. No.	Institutions	Pathanamthitta	Kerala
1	General Hospital	2	16
2	Women & Children Hospital	0	8
3	District Hospital	1	15
4	Taluk Hospital	4	77
5	Primary Health Centre	38	682
6	Leprosy Control Unit/Hospitals	0	3
7	TB Centre/Clinic	1	17
8	Mental Health Centre	0	3
9	Number of Govt. Allopathic Hospitals	64	1281
10	Number of Govt. Homoeopathic Hospitals	1	32

Table: 1.10

EDUCATION

Sl. No.	Institutions	Pathanamthitta	Kerala
1	Government Lower Primary Schools	167	2607
2	Government Upper Primary Schools	43	924
3	Government High Schools	50	1089
4	Government Higher Secondary Schools	26	769
5	Government Vocational Higher Secondary Schools	10	261
6	Teachers Training Institute	13	222
7	Kendriya Vidyalaya	1	27
8	Jawahar Navodaya Vidyalaya	1	14
9	CBSE School	38	797
10	ICSE School	13	108
11	Government Engineering Colleges	0	9
12	Government Medical Colleges	0	5
13	Government Polytechnic Colleges	2	49

Table: 1.11

DRINKING WATER FACILITIES

Sl. No.	Water Supply Connections	Pathanamthitta	Kerala
1	Number of Public Canals	1460	85825
2	Number of Public Wells	0	603
3	Number of Public Tanks	1	1777
4	Number of Tube Wells	6	19716
5	Number of Ground water Dug Wells	7513	162826

Table: 1.12

POWER

Sl.No.	Particulars	Kerala
1	No. of Pump sets Energised	524568
2	No. of Streetlight Energised	1202988
3	No. of Transformers	58104

Table: 1.13

WATER RESOURCES

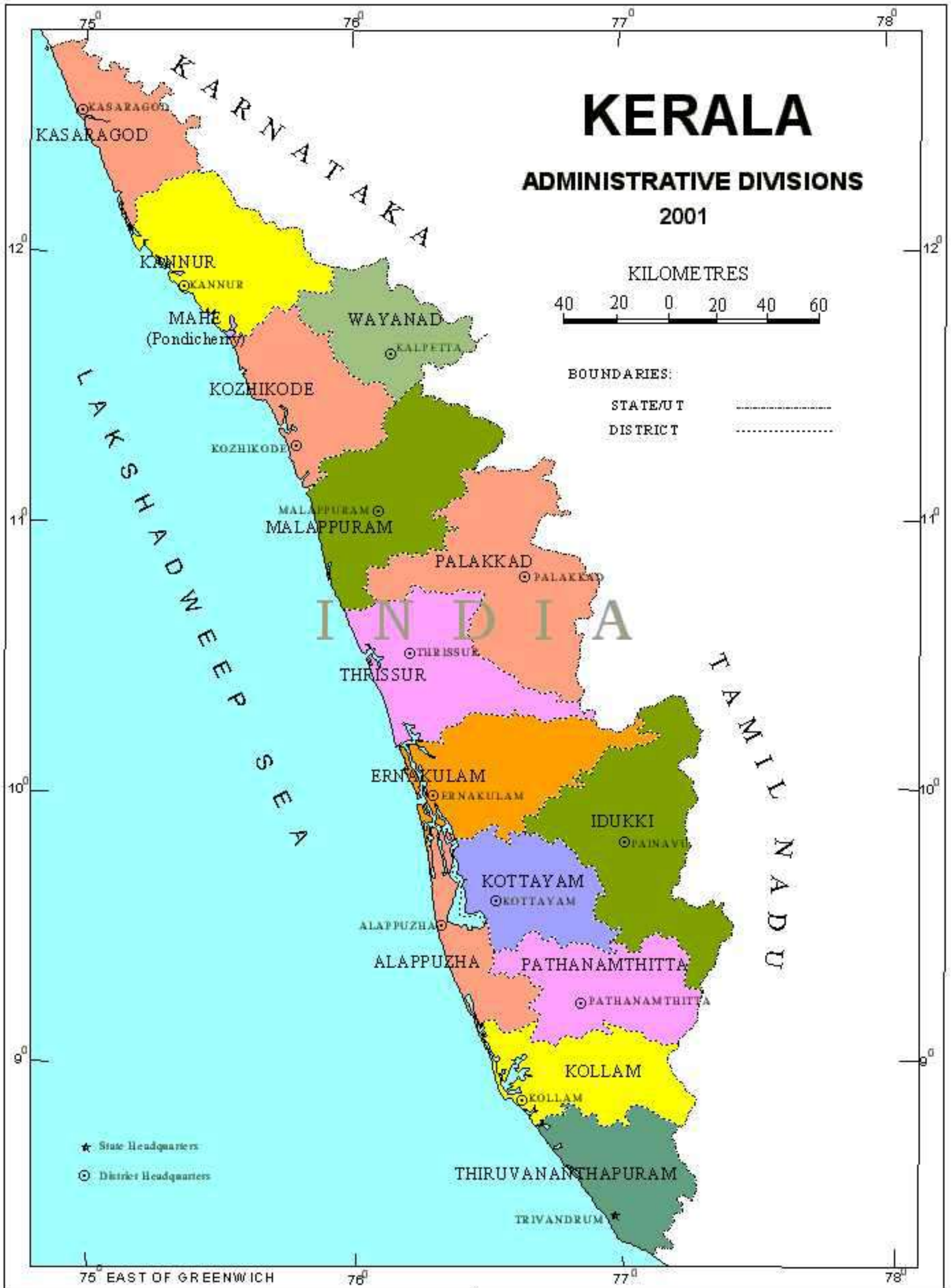
Rivers	Achenkovil
	Manimala
	Pamba

Table: 1.14

MAJOR TOURIST SPOTS

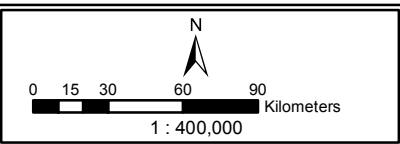
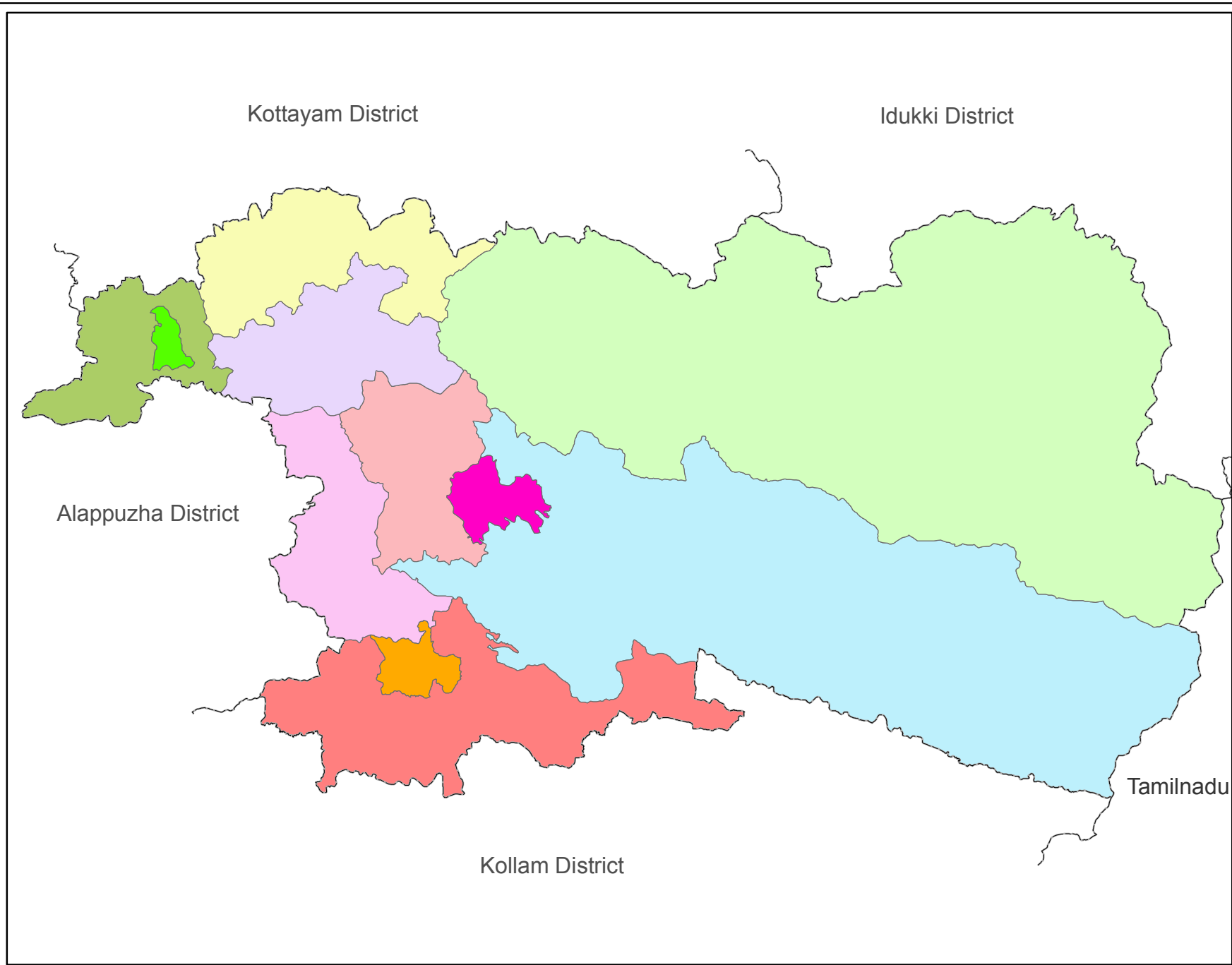
Sl.No.	Tourist Centre	Focus
1	Gavi	Eco tourism
2	Perunthenaruvi	Water falls
3	Konni	Forest reserve
4	Aranmula	Water spot

Source: Various



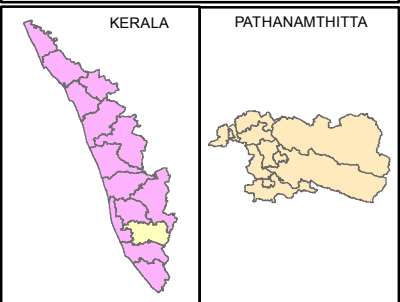
Based upon Survey of India map with the permission of the Surveyor General of India. The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.

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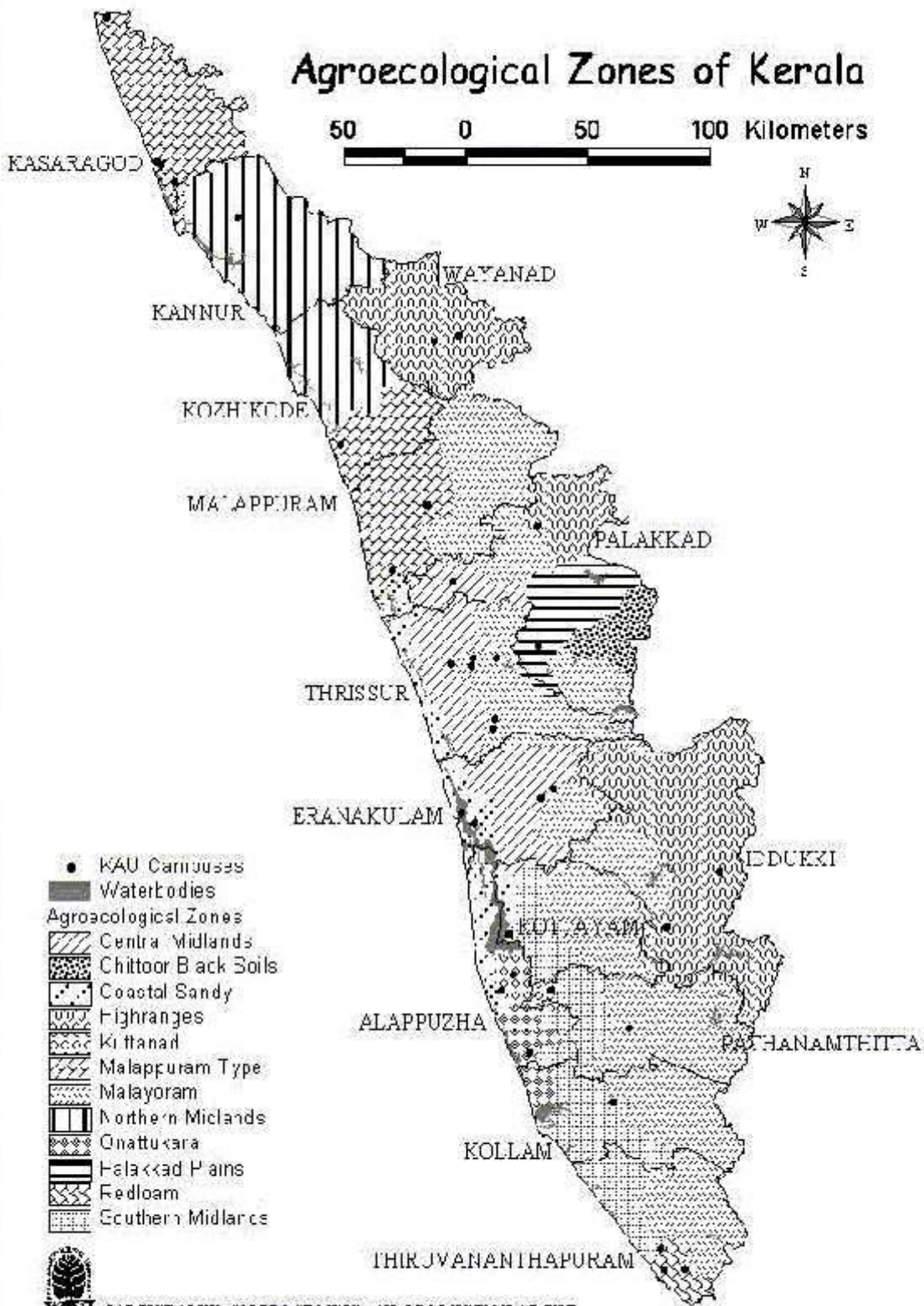
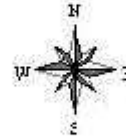
**ADMINISTRATIVE MAP
PATHANAMTHITTA DISTRICT**

- Legend**
- Adoor Municipality
 - Pathanamthitta Municipality
 - Thiruvalla Municipality
 - Elanthoor Block
 - Koipram Block
 - Konni Block
 - Mallappally Block
 - Pandalam Block
 - Parakkode Block
 - Pulikeezhu Block
 - Ranni Block



Agroecological Zones of Kerala

50 0 50 100 Kilometers



- KAU Campuses
- Waterbodies
- Agroecological Zones
- ▨ Central Midlands
- ▩ Chittoor Back Soils
- ▧ Coastal Sandy
- ▦ Highranges
- ▤ Kuttanad
- ▣ Malappuram Type
- ▢ Malayoram
- Northern Midlands
- Onattukara
- ▧ Palakkad Plains
- ▦ Redloam
- ▤ Southern Midlands

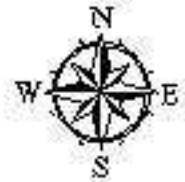


CARTOGRAPHY, GIS PROCESSING AND PRODUCTION AT THE
CENTRE FOR LAND RESOURCES RESEARCH AND MANAGEMENT, SAU P.U., TRISSUR-680 036

Assembly Constituencies

State : kerala

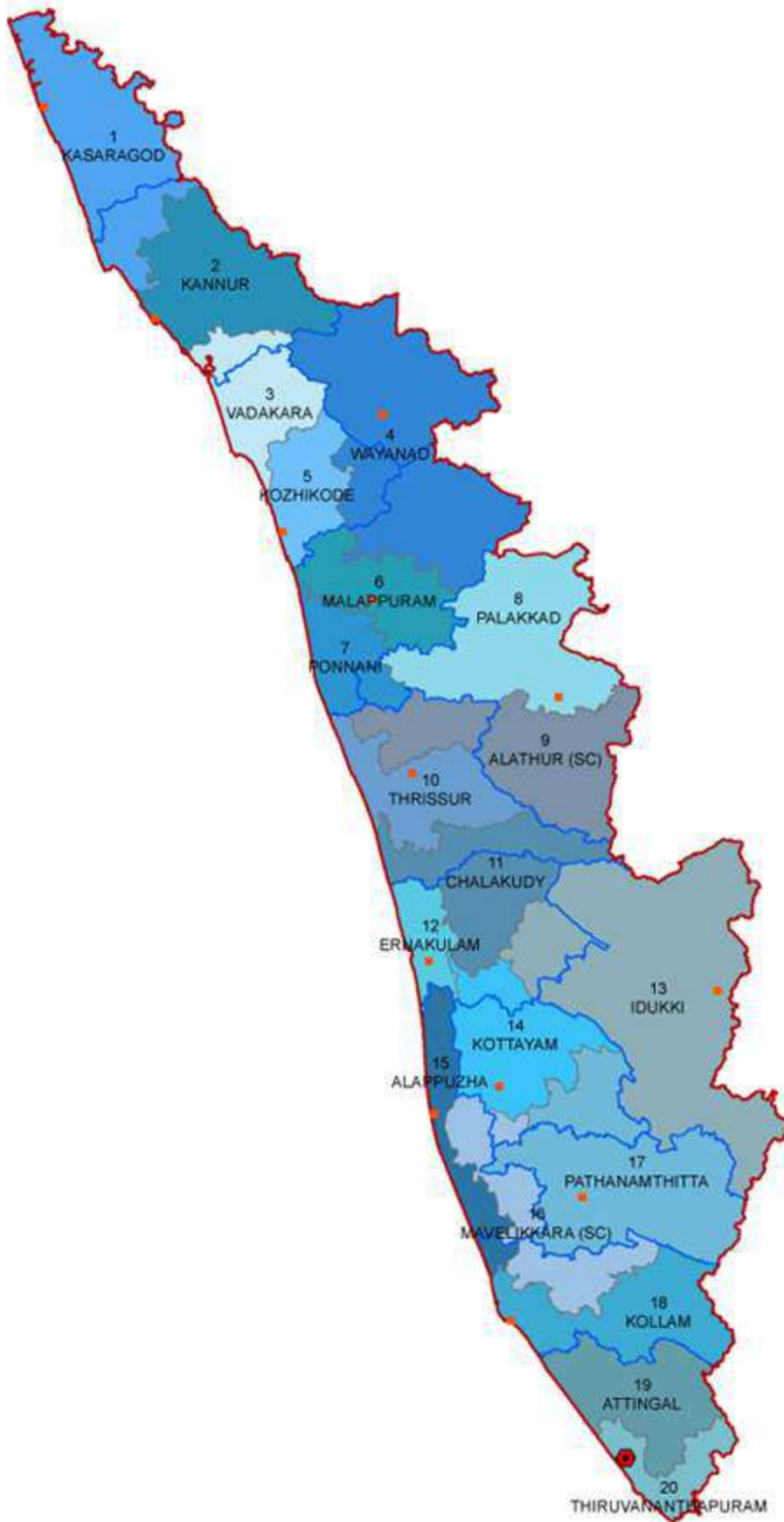
District : Pathanamthitta



Legend

- District Head Office
- ★ Sub-district Hqs
- Major Towns
- Railways
- National Highways
- Other Roads
- District Boundary
- Assembly Constituencies

Parliamentary Constituencies Kerala



Legend

- State Head Quarter
- District Head Quarters
- State Boundary
- District Boundary

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

Table: 4.2

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	71	74
Infant Mortality (per 1000)	22	16	12
Birth Rate (per 1000)	19.8	18.3	14.7

Source: Census Report 2011

Table:- 4.3

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
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

Table:- 4.3 continued.....

India/State/ District	Literacy rate (in Percentage)			Percentage decadal growth rate of population	Sex Ratio (Number of Females per 1000 Males)	Sex Ratio 0-6 population
	Persons	Males	Females	2001-11	2011	2011
1	12	13	14	15	16	17
INDIA	74.04	82.14	65.46	17.64	940	914
KERALA	93.91	96.02	91.98	4.86	1084	959
Kasaragod	89.95	93.93	86.13	8.18	1079	960
Kannur	95.41	97.54	93.57	4.84	1133	962
Wayanad	89.32	92.84	85.94	4.6	1035	960
Kozhikode	95.24	97.57	93.16	7.31	1097	963
Malappuram	93.55	95.78	91.55	13.39	1096	960
Palakkad	88.49	92.27	84.99	7.39	1067	962
Thrissur	95.32	96.98	93.85	4.58	1109	948
Ernakulam	95.68	97.14	94.27	5.6	1028	954
Idukki	92.2	94.84	89.59	1.93	1006	958
Kottayam	96.4	97.14	95.67	1.32	1040	957
Alappuzha	96.26	97.9	94.8	0.61	1100	947
Pathanam thitta	96.93	97.7	96.26	3.12	1129	964
Kollam	93.77	95.83	91.95	1.72	1113	960
Thiruvanan thapuram	92.66	94.6	90.89	2.25	1088	967

Source : Census Report 2011

Table: 4.4

Population - 2011 Census

Sl. No.	Category		Pathanamthitta			Kerala		
			Total	Male	Female	Total	Male	Female
1	Total Population	Total	1197412	561716	635696	33406061	16027412	17378649
		Rural	1065799	499820	565979	17471135	8408054	9063081
		Urban	131613	61896	69717	15934926	7619358	8315568
2	Population in the age group 0-6 Years	Total	96837	49002	47835	3472955	1768244	1704711
		Rural	86181	43601	42580	1823664	927888	895776
		Urban	10656	5401	5255	1649291	840356	808935
3	Scheduled Caste Population	Total	164465	78942	85523	3039573	1477808	1561765
		Rural	151844	72784	79060	1818281	883819	934462
		Urban	12621	6158	6463	1221292	593989	627303
4	Scheduled Tribe Population	Total	8108	3947	4161	484839	238203	246636
		Rural	7663	3732	3931	433092	213208	219884
		Urban	445	215	230	51747	24995	26752
5	Literates	Total	1062553	499181	563372	28135824	13704903	14430921
		Rural	945351	444022	501329	14549320	7132430	7416890
		Urban	117202	55159	62043	13586504	6572473	7014031
6	Illiterates	Total	134859	62535	72324	5270237	2322509	2947728
		Rural	120448	55798	64650	2921815	1275624	1646191
		Urban	14411	6737	7674	2348422	1046885	1301537

Table: 4.4 Continued.....

7	Total Workers	Total	392794	281854	110940	11619063	8451569	3167494
		Rural	351835	252352	99483	6341957	4507501	1834456
		Urban	40959	29502	11457	5277106	3944068	1333038
Main Workers								
8	Workers	Total	293257	223642	69615	9329747	7179828	2149919
		Rural	259956	198953	61003	4930191	3743078	1187113
		Urban	33301	24689	8612	4399556	3436750	962806
9	Cultivators	Total	31590	28683	2907	544932	465546	79386
		Rural	30630	27771	2859	481651	410532	71119
		Urban	960	912	48	63281	55014	8267
10	Agricultural Labourers	Total	35216	29909	5307	919136	629092	290044
		Rural	33523	28410	5113	760632	510300	250332
		Urban	1693	1499	194	158504	118792	39712
11	House hold Industry Workers	Total	7589	5802	1787	198281	132111	66170
		Rural	6873	5262	1611	104642	68889	35753
		Urban	716	540	176	93639	63222	30417
12	Other Workers	Total	218862	159248	59614	7667398	5953079	1714319
		Rural	188930	137510	51420	3583266	2753357	829909
		Urban	29932	21738	8194	4084132	3199722	884410

Table: 4.4 Continued.....

		Marginal Workers						
13	Workers	Total	99537	58212	41325	2289316	1271741	1017575
		Rural	91879	53399	38480	1411766	764423	647343
		Urban	7658	4813	2845	877550	507318	370232
14	Cultivators	Total	9824	7814	459	125321	81360	43961
		Rural	9481	7521	445	105378	68349	37029
		Urban	343	293	14	19943	13011	6932
15	Agricultural Labourers	Total	4120	2581	1539	403714	228903	174811
		Rural	3957	2463	1494	322371	179994	142377
		Urban	163	118	45	81343	48909	32434
16	Household Industry Workers	Total	724	346	378	74741	32504	42237
		Rural	705	340	365	46285	20508	25777
		Urban	19	6	13	28456	11996	16460
17	Other Workers	Total	12415	5085	7330	1685540	928974	756566
		Rural	11471	4596	6875	937732	495572	442160
		Urban	944	489	455	747808	433402	314406
18	Non Workers	Total	804618	279862	524756	21786998	7575843	14211155
		Rural	713964	247468	466496	11129178	3900553	7228625
		Urban	90654	32394	58260	10657820	3675290	6982530

Source: Panchayat Statistics, 2011

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

INDIA/ STATE/ DISTRICT	Total / Rural/ Urban	Population			Percentage of decadal growth 2001- 2011	Percentage of child population in the age-group 0-6			Literacy Rate			Sex ratio of total populat ion	Sex ratio of child populat ion in the age- group 0-6	Percent age share of urban populat ion
		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	12.93	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	58.75	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	1,74,55,506	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	12.15	10.82	89.85	93.93	86.13	1079	960	38.78
	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	88.49	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	-26.20	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	4.60	10.99	11.41	10.58	89.32	92.84	85.94	1035	960	3.87
	R	7,84,981	3,85,922	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	6.64	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	16,62,258	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	9.35	8.65	96.32	97.70	94.98	1030	954	
Idukki District	T	11,07,453	5,51,944	5,55,509	-1.93	9.04	9.26	8.82	92.20	94.84	89.59	1006	958	4.70
	R	10,55,428	5,26,420	5,29,008	-1.51	9.02	9.24	8.80	92.03	94.73	89.34	1005	957	
	U	52,025	25,524	26,501	-9.67	9.49	9.83	9.16	95.74	97.10	94.45	1038	968	
Kottayam District	T	19,79,384	9,70,140	10,09,244	1.32	8.52	8.88	8.17	96.40	97.17	95.67	1040	957	28.58
	R	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	
	U	5,65,611	2,75,832	2,89,779	88.66	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	0.61	8.77	9.46	8.14	96.26	97.90	94.80	1100	947	54.06
	R	9,74,916	4,62,571	5,12,345	-34.47	9.08	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	10,64,076	4,99,745	5,64,331	-4.16	7.65	8.29	7.08	96.87	97.64	96.19	1129	964	
	U	1,31,461	61,875	69,586	6.19	7.70	8.32	7.15	97.42	98.15	96.79	1125	967	
Kollam District	T	26,29,703	12,44,815	13,84,888	1.72	9.05	9.76	8.42	93.77	95.83	91.95	1113	960	45.11
	R	14,43,363	6,78,969	7,64,394	-31.89	9.02	9.78	8.35	94.10	96.15	92.30	1126	961	
	U	11,86,340	5,65,846	6,20,494	154.59	9.09	9.73	8.50	93.38	95.46	91.52	1097	958	
Thiruvananthapuram District	T	33,07,284	15,84,200	17,23,084	2.25	8.79	9.33	8.29	92.66	94.60	90.89	1088	967	53.80
	R	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	
	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

ADMINISTRATIVE UNITS-KERALA			
	2001	2011	
No. of Districts	14	14	Percentage of urban population
No. of Sub-Districts (Talucs)	63	63	
No. of Towns	159	520	2001
			2011
No. of Villages	1,364	1,018	25.96
			47.72

NUMBER OF TOWNS AND URBAN POPULATION IN KERALA		
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

GROWTH IN NO. OF TOWNS (KERALA)			
Towns	2001	2011	% Growth (Rounded to next digit)
STs	60	59	-2%
CTs	99	461	366%
Total	159	520	227 %

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 *

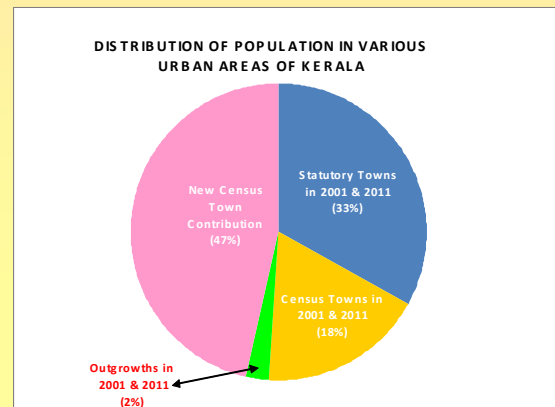
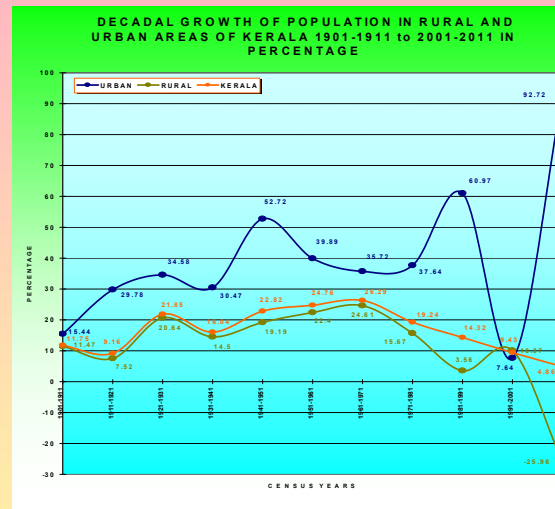
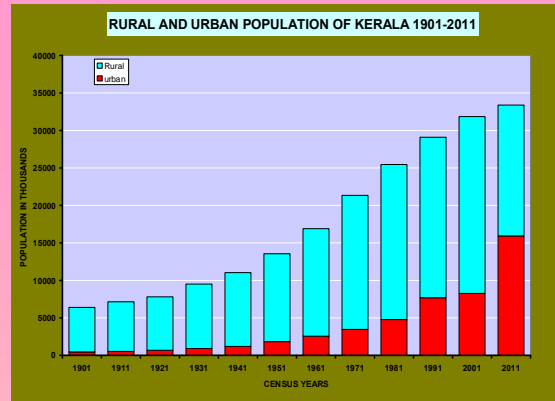
Urban Agglomeration (UA): It is a continuous urban spread constituting a town and its adjoining urban outgrowths (OGs) or two or more physically contiguous towns together and any adjoining urban out-growths of such towns.

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

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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 climate condition is divided into four seasons viz; Winter, Summer, South-West monsoon and North-East monsoon.

Pathanamthitta district experiences South-West monsoon from June to September, North-East monsoon during October and November, hot season from March to May and cold season from December to February. Temperature decreases by the end of May and district gets benefit of rainfall during South-West and North-East monsoon seasons. Eastern part of the district receives maximum rainfall in comparison with western part area. The area around Konni receives the highest rainfall and area around Adoor receives the lowest. Humidity is higher during the monsoon period that is from June to September. The maximum temperature ranges from 28.5⁰C to 32.7⁰C whereas the minimum temperature from 25.5⁰C to 22.6⁰C.

Table: 5.1

**ACTUAL RAINFALL, NORMAL RAINFALL AND PERCENTAGE OF DEPARTURE
FOR THE YEAR 2013**

Pre-Monsoon Rainfall (March to May)			
District/State	Actual Rainfall (mm)	Normal Rainfall (mm)	Percentage departure
Pathanamthitta	293.0	553.3	-47
Kerala	218.9	379.7	-42

South West Monsoon Rainfall (June to September)			
District/State	Actual Rainfall (mm)	Normal Rainfall (mm)	Percentage departure
Pathanamthitta	1928.4	1715.0	12
Kerala	2570.3	2039.6	26

North East Monsoon Rainfall (October to till 18th December 2013)			
District/State	Actual Rainfall (mm)	Normal Rainfall (mm)	Percentage departure
Pathanamthitta	592.5	612.7	-3
Kerala	430.7	473	-9

Source: Economic Review 2013

Table: 5.2

RAINFALL DISTRIBUTION OF DISTRICT FOR THE YEAR 2012-13

(Rainfall in mm)

2012						
District/State	JUL	AUG	SEP	OCT	NOV	DEC
Pathanamthitta	270.6	451.6	138.4	158.9	120.1	26.0
Kerala (Average)	362.5	504.1	239.9	188.1	114.4	9.7

2013						
District/State	JAN	FEB	MAR	APR	MAY	JUN
Pathanamthitta	9.0	24.4	92	47.0	154.0	728.7
Kerala (Average)	3.7	39.1	50	50.2	118.6	1041.1

2012-13			
District/State	ACTUAL	NORMAL	DEPARTURE (%)
Pathanamthitta	2220.7	2956.7	-24.9
Kerala (Average)	2706.4	2936.7	-7.84

Source: Agricultural Statistics, DES

GEOLOGY & GEOMORPHOLOGY

Pathanamthitta district is a hilly terrain with a narrow linear belt of midland towards west. It is bounded on the south by Kollam district, north by Kottayam and Idukki districts, east by Tamil Nadu and west by Alappuzha district. Its area is 2,650 sq.km.

GEOLOGY

Geologically, the district forms part of the Precambrian metamorphic shield comprising (1) Charnockite group, Khondalite group and Migmatite complex of Archaean age, (2) Acid intrusive of Proterozoic age and (3) rocks of Cenozoic age (basic intrusive, Neogene and Quaternary).

Charnockite group is the dominant formation of the area within which occur concordant, linear and lensoidal bodies of calc granulite and quartzite of Khondalite group. The charnockite group comprises charnockite (hypersthene granite), Pyroxene-granulite and cordierite gneiss. Charnockite is the dominant rock and its variants are charnockite gneiss, massive charnockite and hypersthene-diopside gneiss. The rock is generally dark grey and crudely foliated. Cordierite gneiss occurs as impersistent bands within charnockite, while pyroxene granulite is seen as restites, mostly in the west. At places, charnockite is migmatized resulting in the formation of biotite gneiss and garnet-biotite gneiss (Migmatite complex). These rocks are predominant towards south. The area witnessed a period of igneous activity during the Proterozoic as evidenced from the granite and syenogranite (acid intrusive) bodies. Pegmatite and quartz veins traverse the older rocks parallel to the regional foliation. Basic igneous activity, probably of Late Mesozoic age, is evidenced from the dolerite and gabbro dykes cutting across the older rocks. These dykes have a general NW-SE trend. Warkalli sediment of Neogene age is exposed near Thiruvalla. Along the western margin the basement and sedimentary rocks have been lateritised. The

quaternary sediment mostly of fluvial origin, are the flood plain deposits and they valley fills.

GEOMORPHOLOGY

Broadly the district can be divided into three physiographic zones viz., the coastal plain in the northwest, the midland region and the high hills to the east. The coastal plain is characterized by fluvial landforms, which extend further west to Alappuzha district. The midland region has elevations ranging from 30 to 300m. It is characterized by undulating topography with numerous small ridges, spurs and laterite interfluves, with moderate to gentle slope, intervened by narrow valleys. The hilly region to the east is relatively wide and occupies a major part of the district. The hills that are either structural or denudational in origin are very steep with narrow summits. Some of the peaks in the east are more than 1500m high and form part of the Western ghats.

Source: GSI, Kerala

GEOLOGY DETAILS

Table: 6.1

ELANTHOOR BLOCK

(Area in Ha)

Sl. No.	Category	Chenneerkkara	Cherukol	Elanthur	Kozhancherry	Mallappuzhasseri	Naranganam	Omallur
1	Acidic Rocks							
2	Alkaline Rocks				15.77	106.23		
3	Basic Rocks		107.93					
4	Charnockite Group of Rocks	273.79	1207.04	1172.00	750.78	285.88	1599.20	594.36
5	Khondalite Group of Rocks	18.15	143.16				66.18	
6	Laterite	42.26						152.44
7	Migmatite Complex	1557.79		298.36	19.98	668.85	91.16	90.11
8	Sand and Silt	0.02	58.86	52.07	212.43	83.48	171.49	603.54
9	Sandstone and Clay with Lignite Interc		29.96				39.12	
10	Tank/WB/River							
	Panchayat Total	1892.01	1546.95	1522.43	998.96	1144.44	1967.15	1440.45
	Block Total	10512.39						

Table: 6.2

KONNI BLOCK

(Area in Ha)

Sl. No.	Category	Aruvappulam	Konni	Malayalappuzha	Mylappra	Pramadam	Thannithodu	Vallikkodu
1	Acidic Rocks	182.28				114.08		
2	Alkaline Rocks							
3	Basic Rocks		29.83	309.18	90.60		31.91	
4	Charnockite Group of Rocks	41377.29	2818.60	2463.06	809.24	4868.68	15736.44	382.89
5	Khondalite Group of Rocks			339.63	172.2		316.40	74.83
6	Laterite					73.44		597.6
7	Migmatite Complex	3318.97				1554.36		58.90
8	Sand and Silt		154.62			1366.24		680.81
9	Sandstone and Clay with Lignite Interc							
10	Tank/WB/River							
	Panchayat Total	44878.54	2998.95	2841.87	1072.04	7876.52	16351.75	1715.20

Table: 6.3

RANNI BLOCK**(Area in Ha)**

Sl. No.	Category	Chittar	Naranamoozhi	Ranni	Ranni-Angadi	Ranni - Pazhavangadi	Ranni-Perunadu	Seethathodu	Vadasseri kvara	Vechuchira
1	Acidic Rocks	48.87	16.69				238.15			
2	Alkaline Rocks									
3	Basic Rocks	335.06	24.26	44.91	134.55	271.99	167.77	91.26	271.92	301.72
4	Charnockite Group of Rocks	14015.47	1493.68	1284.34	1925.02	2324.72	3887.89	66075.39	3782.79	4380.82
5	Khondalite Group of Rocks	458.8	59.03	69.19	58.41	67.83	470.61	98.46	112.81	393.92
6	Laterite									
7	Migmatite Complex									
8	Sand and Silt									
9	Sandstone and Clay with Lignite Interc									
10	Tank/WB/River							2229.28		
	Panchayat Total	14858.2	1593.66	1398.44	2117.98	2664.54	4764.42	68494.39	4167.52	5076.46
	Block Total	105135.61								

Table: 6.4

MALLAPALLI BLOCK**(Area in Ha)**

Sl. No.	Category	Anikkadu	Kalluppara	Kaviyur	Kottanadu	Kottangal	Kunnan thanam	Mallappalli
1	Acidic Rocks							
2	Alkaline Rocks							
3	Basic Rocks	17.33	18.08		76.51	91.49	5.47	16.23
4	Charnockite Group of Rocks	1859.12	1674.41	1522.84	2165.84	2238.23	1208.70	1931.97
5	Khondalite Group of Rocks	57.12			24.81	29.32		94.35
6	Laterite		2.1	50.57			323.13	
7	Migmatite Complex							
8	Sand and Silt							
9	Sandstone and Clay with Lignite Interc							
10	Tank/WB/River							
	Panchayat Total	1933.57	1694.59	1573.41	2267.16	2359.04	1537.30	2042.55

Table: 6.5

PARAKKOD BLOCK**(Area in Ha)**

Sl. No.	Category	Enadimangalam	Erath	Ezhamkulam	Kadambanadu	Kalanjoor	Kodumon	Pallickal
1	Acidic Rocks					38.71		
2	Alkaline Rocks							
3	Basic Rocks					34.63		
4	Charnockite Group of Rocks	71.79	12.32	52.26		2298.08		
5	Khondalite Group of Rocks							
6	Laterite	53.86		204.53		53.48	449.21	
7	Migmatite Complex	2696.20	2224.05	2266.88	4124.61	2187.93	404.61	2389.83
8	Sand and Silt	334.51	6.35	358.13	49.18		677.46	
9	Sandstone and Clay with Lignite Interc				21.53			31.33
10	Tank/WB/River							
	Panchayat Total	3156.36	2242.72	2881.80	4195.32	4612.83	1531.28	2421.16
	Block Total	21041.47						

Table: 6.6

KOIPRAM BLOCK**(Area in Ha)**

Sl. No.	Category	Ayiroor	Ezhumattoor	Eraviperoor	Koipram	Puramattom	Thottappuzhasseri
1	Acidic Rocks			45.92			
2	Alkaline Rocks			310.41	526.46		279.28
3	Basic Rocks	178.86	28.60				3.69
4	Charnockite Group of Rocks	2171.45	2030.19	1130.35	1438.28	1210.81	1276.86
5	Khondalite Group of Rocks	207.20	73.55				
6	Laterite			752.35	353.22	65.23	
7	Migmatite Complex						35.25
8	Sand and Silt						7.74
9	Sandstone and Clay with Lignite Interc						
10	Tank/WB/River						

Table: 6.7

PANDALAM BLOCK**(Area in Ha)**

Sl. No.	Category	Aranmula	Kulanada	Mezhuveli	Pandalam	Pandalam Thekkekara	Thumbamon
1	Acidic Rocks						
2	Alkaline Rocks	8.77					
3	Basic Rocks						
4	Charnockite Group of Rocks	1966.97	747.84	46.31	24.62	93.42	179.65
5	Khondalite Group of Rocks			52.10		173.42	
6	Laterite					194.95	
7	Migmatite Complex	511.85	1060.94	1597.03	1295.68	1622.86	897.73
8	Sand and Silt		85.86		216.81	455.64	305.46
9	Sandstone and Clay with Lignite Interc						
10	Tank/WB/River						
	Panchayat Total	2487.59	1894.64	1695.44	1537.11	2540.29	1382.84
	Block Total	11537.91					

Table: 6.8

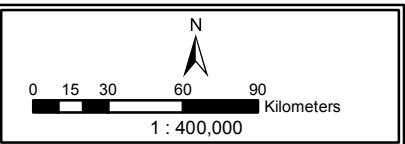
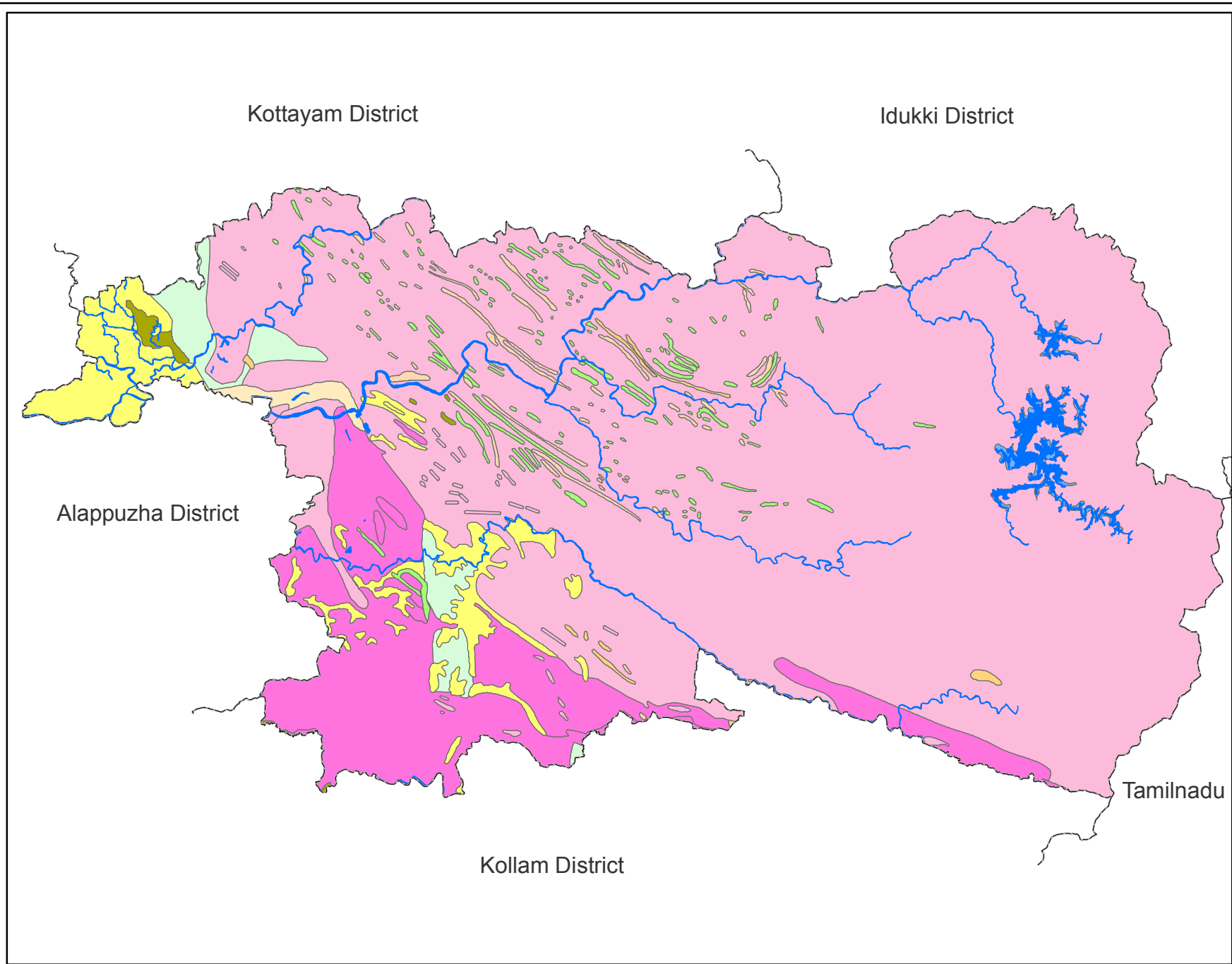
PULIKKEEZHU BLOCK**(Area in Ha)**

Sl. No.	Category	Kadapra	Kuttoor	Nedumbram	Niranam	Peringara
1	Acidic Rocks					
2	Alkaline Rocks		18.95			
3	Basic Rocks					
4	Charnockite Group of Rocks		193.10			
5	Khondalite Group of Rocks					
6	Laterite		264.62			1379.21
7	Migmatite Complex					
8	Sand and Silt	1730.50	381.82	930.55	1072.90	1994.51
9	Sandstone and Clay with Lignite Interc					342.35
10	Tank/WB/River					
	Panchayat Total	1730.50	858.40	930.55	1072.90	3716.07

Table: 6.9

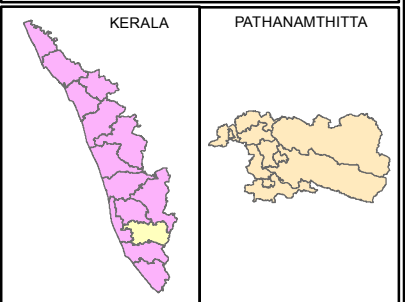
MUNICIPALITY**(Area in Ha)**

Sl. No.	Category	Adoor Municipality	Pathanamthitta Municipality	Thiruvalla Municipality
1	Acidic Rocks			
2	Alkaline Rocks			
3	Basic Rocks		1.64	
4	Charnockite Group of Rocks		2554.28	
5	Khondalite Group of Rocks		10.92	
6	Laterite	302.41		133.92
7	Migmatite Complex	1650.53		
8	Sand and Silt	222.80	166.36	471.76
9	Sandstone and Clay with Lignite Interc			260.01
10	Tank/WB/River			
	Municipality Total	2175.74	2733.20	865.69



GEOLOGY
PATHANAMTHITTA DISTRICT

- Legend**
- Acidic rocks
 - Alkaline Rocks
 - Basic Rocks
 - Charnockite group of rocks
 - Khondalite Group of rocks
 - Laterite
 - Migmatite Complex
 - Sand and Silt
 - Sandstone and clay with lignite interc
 - Tank/WB/River



GEOMORPHOLOGY DETAILS

Table: 6.10

ELANTHOOR BLOCK

(Area in Ha)

Sl. No.	Category	Chenneerkkara	Cherukol	Elanthur	Kozhancherry	Mallappuzhasseri	Naranganam	Omallur
1	Alluvial Plain							
2	Channel Bar (Flood Plain)		5.71		2.93	0.90		
3	Coastal Plain							
4	Denudational Hills							
5	Denudational Structural Hills							
6	Linear Ridge (Lower Plateau)	47.25		28.31			18.87	7.10
7	Lower Plateau (Lateritic)- Dissected	1498.65	1255.13	1187.08	772.52	811.68	1587.91	1146.27
8	Mud Flat (Coastal Plain)							
9	Piedmont Zone							
10	Point Bar (Flood Plain)		13.41		34.50	11.41		
11	Residual Hill		4.77	17.18			84.72	
12	Residual Mount	43.92	30.88	64.77	14.48	12.49	139.01	61.50
13	Residual Mount (Pediment)							
14	Rock Exposure					1.62		
15	Valley							
16	Valley Fill	273.78	179.14	225.09	129.50	282.91	136.63	208.24
17	Waterbody	28.42	57.91		45.04	23.43		17.32
	Panchayat Total	1892.02	1546.95	1522.43	998.97	1144.44	1967.14	1440.43
	Block Total	10512.38						

Table: 6.11

KOIPRAM BLOCK**(Area in Ha)**

Sl. No.	Category	Ayiroor	Ezhumattoor	Eraviperoor	Koipram	Puramattom	Thottappuzhasseri
1	Alluvial Plain						
2	Channel Bar (Flood Plain)	4.77					
3	Coastal Plain						
4	Denudational Hills						
5	Denudational Structural Hills						
6	Linear Ridge (Lower Plateau)	91.50					
7	Lower Plateau (Lateritic)- Dissected	2053.38	1826.79	1757.80	1885.85	1037.25	1253.96
8	Mud Flat (Coastal Plain)						
9	Piedmont Zone						
10	Point Bar(Flood Plain)	9.17		13.75		6.16	0.27
11	Residual Hill	6.22	76.73				94.42
12	Residual Mount	126.72	59.35	11.21	13.88	17.40	45.30
13	Residual Mount (Pediment)						
14	Rock Exposure			2.99			
15	Valley						
16	Valley Fill	228.25	169.48	404.80	403.55	184.66	208.19
17	Waterbody	37.50		48.40	14.68	30.57	0.69
	Panchayat Total	2557.51	2132.35	2238.95	2317.96	1276.04	1602.83
	Block Total	12125.64					

Table: 6.12

KONNI BLOCK**(Area in Ha)**

Sl. No.	Category	Aruvappulam	Konni	Malayalappuzha	Mylappra	Pramadam	Thannithodu	Vallikkodu
1	Alluvial Plain							
2	Channel Bar (Flood Plain)	1.16						
3	Coastal Plain							
4	Denudational Hills	118.40						
5	Denudational Structural Hills	41469.26	665.64	1097.98			14501.19	
6	Linear Ridge (Lower Plateau)	61.42	54.04	1.12	7.87	397.07	23.43	
7	Lower Plateau (Lateritic)- Dissected	1687.45	1506.89	1211.83	922.92	6083.16	436.82	1381.76
8	Mud Flat (Coastal Plain)							
9	Piedmont Zone	704.04	298.55	566.84		1.34	642.48	
10	Point Bar (Flood Plain)	2.52	18.66			1.13	9.09	
11	Residual Hill	112.29		118.57	10.75	294.07		
12	Residual Mount	145.83	51.09	32.39	86.57	138.86		
13	Residual Mount (Pediment)		27.87	20.69				
14	Rock Exposure	1.19					1.54	
15	Valley	143.52					229.87	
16	Valley Fill	194.22	341.15	20.96	43.93	1023.83	101.62	369.73
17	Waterbody	237.22	39.15	41.48		37.34	138.72	43.55
	Panchayat Total	44878.52	3003.04	3111.86	1072.04	7976.80	16084.76	1795.04
	Block Total	77922.06						

Table: 6.13

MALLAPALLI BLOCK**(Area in Ha)**

Sl. No.	Category	Anikkadu	Kalluppara	Kaviyur	Kottanadu	Kottangal	Kunnanathanam	Mallappalli
1	Alluvial Plain							
2	Channel Bar (Flood Plain)							
3	Coastal Plain							
4	Denudational Hills							
5	Denudational Structural Hills							
6	Linear Ridge (Lower Plateau)					27.99		
7	Lower Plateau (Lateritic)- Dissected	1685.39	1439.47	1196.65	2000.50	1850.13	1244.96	1699.76
8	Mud Flat (Coastal Plain)							
9	Piedmont Zone							
10	Point Bar(Flood Plain)	6.23	3.27	0.95		18.76		11.97
11	Residual Hill				122.20	182.69		
12	Residual Mount	40.51			76.21	72.12	11.25	11.52
13	Residual Mount (Pediment)							
14	Rock Exposure							
15	Valley							
16	Valley Fill	193.59	222.98	370.04	68.24	182.98	281.09	273.46
17	Waterbody	7.84	28.88	5.76		24.35		45.84
	Panchayat Total	1933.56	1694.6	1573.40	2267.15	2359.02	1537.30	2042.55
	Block Total	13407.58						

Table: 6.14

PANDALAM BLOCK**(Area in Ha)**

Sl. No.	Category	Aranmula	Kulanada	Mezhuveli	Pandalam	Pandalam Thekkekara	Thumbamon
1	Alluvial Plain						
2	Channel Bar (Flood Plain)						
3	Coastal Plain						
4	Denudational Hills						
5	Denudational Structural Hills						
6	Linear Ridge (Lower Plateau)		0.03	56.25			
7	Lower Plateau (Lateritic)- Dissected	1647.18	1557.45	1325.17	1092.04	2171.29	1059.04
8	Mud Flat (Coastal Plain)						
9	Piedmont Zone						
10	Point Bar(Flood Plain)	57.28					
11	Residual Hill						
12	Residual Mount	115.62	84.21	64.98		16.71	31.68
13	Residual Mount (Pediment)						
14	Rock Exposure						
15	Valley		36.13				
16	Valley Fill	613.44	165.25	238.93	439.89	351.77	288.29
17	Waterbody	54.07	51.58	10.12	5.18	0.57	3.84
	Panchayat Total	2487.59	1894.65	1695.45	1537.11	2540.34	1382.85
	Block Total	11537.99					

Table: 6.15

PARAKKOD BLOCK**(Area in Ha)**

Sl. No.	Category	Enadimangalam	Erath	Ezhamkulam	Kadambanadu	Kalanjoor	Kodumon	Pallickal
1	Alluvial Plain							
2	Channel Bar (Flood Plain)							
3	Coastal Plain							
4	Denudational Hills					1246.22		
5	Denudational Structural Hills					584.93		
6	Linear Ridge (Lower Plateau)	109.07		10.10				
7	Lower Plateau (Lateritic)- Dissected	2650.98	2028.95	2459.64	3623.93	1213.77	1157.95	1898.31
8	Mud Flat (Coastal Plain)							
9	Piedmont Zone					822.71		
10	Point Bar(Flood Plain)			3.14	5.25			
11	Residual Hill	29.46				118.28		
12	Residual Mount	52.51	40.28	58.62	103.80	41.47	19.34	25.54
13	Residual Mount (Pediment)							
14	Rock Exposure							
15	Valley			8.17		132.82		
16	Valley Fill	314.33	173.49	332.30	441.15	452.62	353.98	497.31
17	Waterbody			9.84	21.19			
	Panchayat Total	3156.35	2242.72	2881.81	4195.32	4612.82	1531.27	2421.16
	Block Total	21041.45						

Table: 6.16

PULIKEEZHU BLOCK**(Area in Ha)**

Sl. No.	Category	Kadapra	Kuttoor	Nedumbram	Niranam	Peringara
1	Alluvial Plain	348.35	238.51	186.81	502.57	2246.79
2	Channel Bar (Flood Plain)					
3	Coastal Plain	1194.49	0.07	583.09	551.58	31.95
4	Denudational Hills					
5	Denudational Structural Hills					
6	Linear Ridge (Lower Plateau)					
7	Lower Plateau (Lateritic)- Dissected		436.65			1061.09
8	Mud Flat (Coastal Plain)		5.67	110.24		
9	Piedmont Zone					
10	Point Bar(Flood Plain)		7.06			3.14
11	Residual Hill					
12	Residual Mount					
13	Residual Mount (Pediment)					
14	Rock Exposure					
15	Valley					
16	Valley Fill		125.75			259.85
17	Waterbody	187.65	44.79	50.41	18.76	113.25
	Panchayat Total	1730.49	858.5	930.55	1072.91	3716.07
	Block Total	8308.52				

Table: 6.17

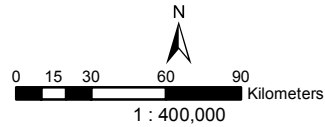
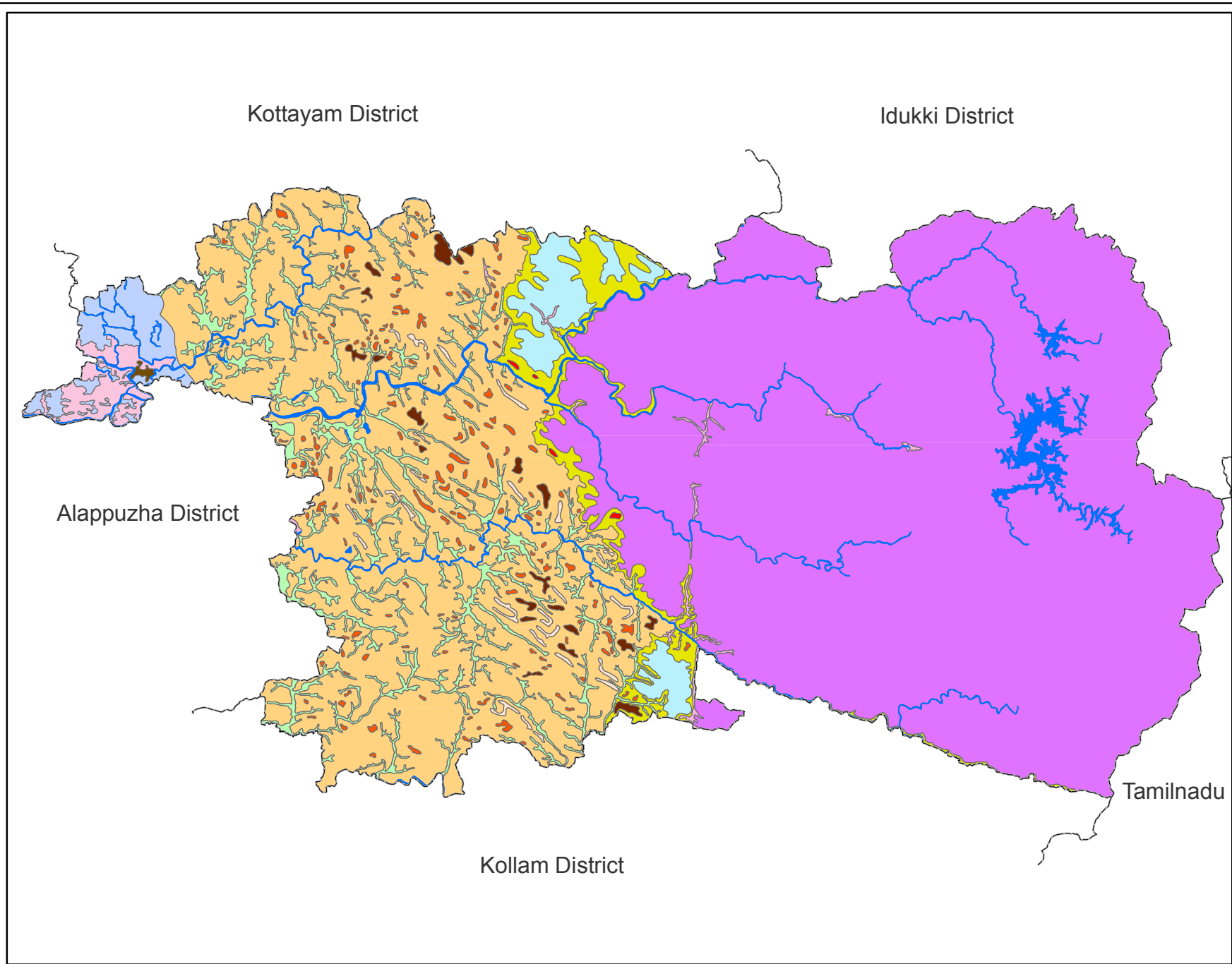
RANNI BLOCK**(Area in Ha)**

Sl. No.	Category	Chittar	Naranamoozhi	Ranni	Ranni-Angadi	Ranni - Pazhavangadi	Ranni-Perunadu	Seethathodu	Vadasseri kvara	Vechuchira
1	Alluvial Plain									
2	Channel Bar (Flood Plain)							0.39		
3	Coastal Plain									
4	Denudational Hills		700.47			970.44	0.70		171.73	2188.52
5	Denudational Structural Hills	14568.42	501.36				4164.52	65991.16	2248.90	0.88
6	Linear Ridge (Lower Plateau)			72.58	31.09					
7	Lower Plateau (Lateritic)- Dissected			1188.06	1749.61	828.95			640.34	626.31
8	Mud Flat (Coastal Plain)									
9	Piedmont Zone		260.64			591.48	484.05	64.36	887.26	2156.32
10	Point Bar(Flood Plain)			0.31		2.07			2.73	
11	Residual Hill									
12	Residual Mount			41.33	53.36	68.94			9.61	41.24
13	Residual Mount (Pediment)								32.93	
14	Rock Exposure									
15	Valley	105.70	55.03		40.74	24.37		114.77	23.74	
16	Valley Fill			60.09	232.49	162.15			48.13	
17	Waterbody	184.07	76.16	36.07	10.69	16.15	115.15	2323.71	102.13	63.18
	Panchayat Total	14858.19	1593.66	1398.44	2117.98	2664.55	4764.42	68494.39	4167.5	5076.45
	Block Total	105135.58								

Table: 6.18

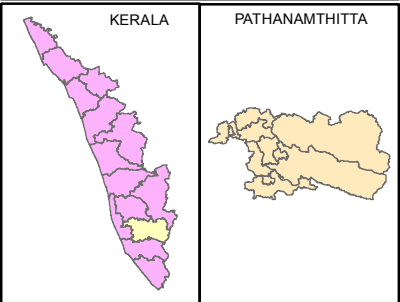
MUNICIPALITY**(Area in Ha)**

Sl. No.	Category	Adoor Municipality	Pathanamthitta Municipality	Thiruvalla Municipality
1	Alluvial Plain			473.22
2	Channel Bar (Flood Plain)			
3	Coastal Plain			91.45
4	Denudational Hills			
5	Denudational Structural Hills			
6	Linear Ridge (Lower Plateau)		35.10	
7	Lower Plateau (Lateritic)- Dissected	1869.84	2087.91	262.48
8	Mud Flat (Coastal Plain)			0.24
9	Piedmont Zone			
10	Point Bar(Flood Plain)			2.42
11	Residual Hill		20.51	
12	Residual Mount	8.51	155.98	
13	Residual Mount (Pediment)			
14	Rock Exposure			
15	Valley			
16	Valley Fill	297.39	405.49	4.18
17	Waterbody		28.21	31.69
	Municipality Total	2175.74	2733.2	865.68



**GEOMORPHOLOGY
PATHANAMTHITTA DISTRICT**

- Legend**
- Residual Mount(Pediment)
 - Alluvial Plain
 - Channel bar(Flood Plain)
 - Coastal Plain
 - Denudational Hills
 - Denudational Structural Hills
 - Linear ridge(Lower Plateau)
 - Lower Plateau (Lateritic) - Dissected
 - Mud flat(Coastal Plain)
 - Piedmont Zone
 - Point bar(Flood Plain)
 - Residual Hill
 - Residual Mount
 - Rock Exposure
 - Valley
 - Valley Fill



PHYSIOGRAPHY

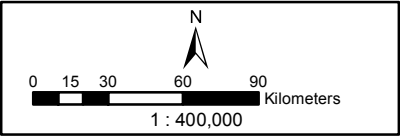
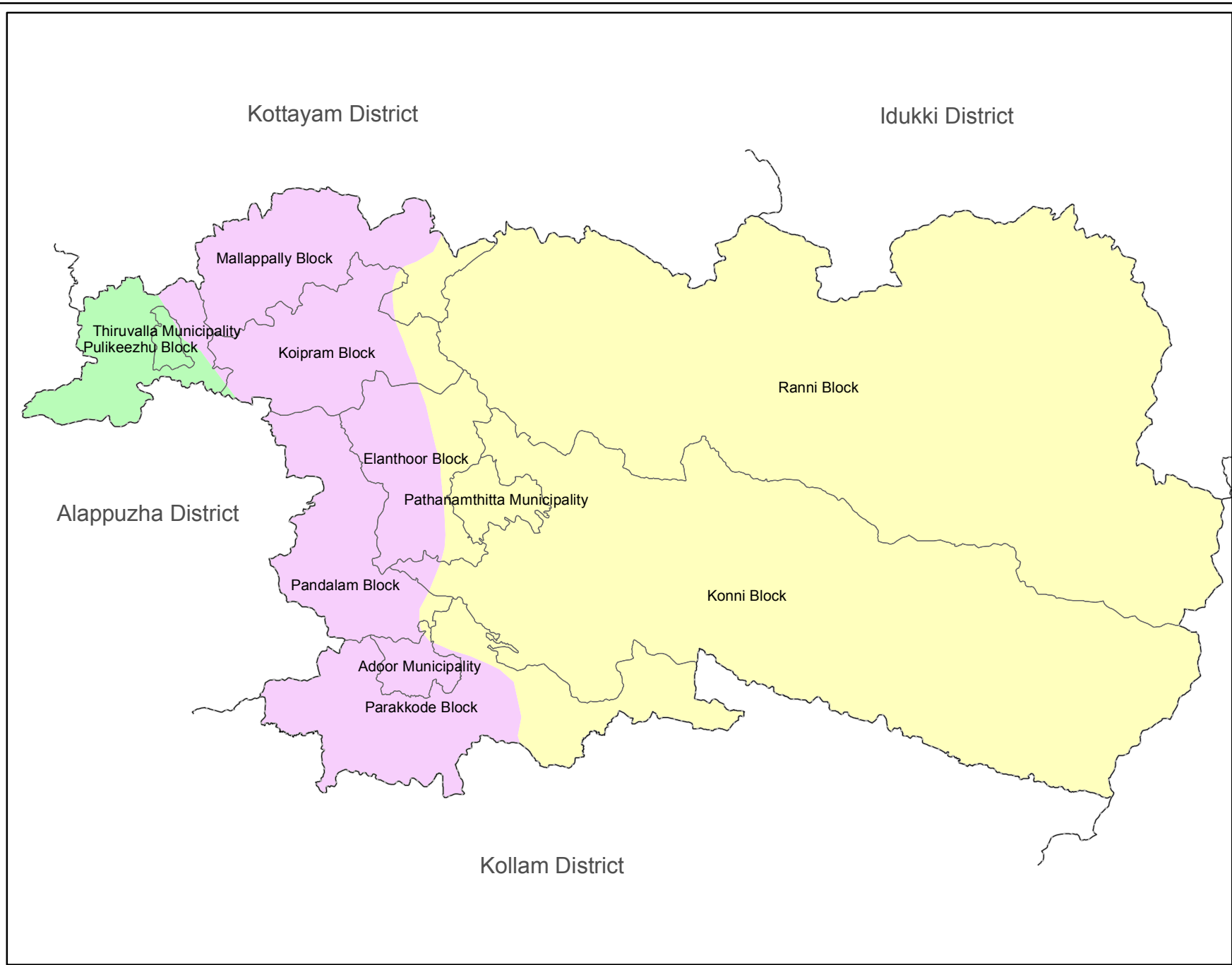
Based on physiographic nature, Kerala is divided into three regions namely **highland, midland** and **lowland**. Pathanamthitta district falls under five sub micro regions viz. i) Chengannur rolling plain ii) Kuttanad low lying plain iii) Kottarakkara undulating upland iv) Pamba kakki forest hills v) Adoor rolling plain. Chengannur rolling plain region falls in the western portions of the district, comprising of parts of Thiruvalla, Mavelikkara and Chengannur taluks. This region is also a plain region having the average height between 80 m and 90 m. Maximum height of this region (157m) falls in its east Thottappuzhassery village of Thiruvalla taluk and this region slopes gently towards the west. Kuttanad low lying plain is bounded by Kumarakam low lying plain in the north, Chengannur rolling plain in the east and Alappuzha coast in the south-west. This region comprises of the whole of Kuttanad taluk and parts of Ambalappuzha, Chengannur, Mavelikkara and Thiruvalla taluk. This region is largely influenced by kayals. Kottarakkara undulating upland falls in a narrow stretch from north to south over the southern part of this district. It makes its boundaries with Meenachil-Kanjirappalli upland in the north, Pamba kakki forested hills in the east, Attingal-Neyyattinkara undulating upland in the south and Adoor rolling plain in the west. Maximum height is at Konnithazham village of Pathanamthitta district. This region has a number of isolated hills, separated from the mountain chain. Pamba kakki forested hills regions falls in the northern and eastern portion of the district, is bounded by Thekkadi forested hills and Ranni forested hills in the north, Tamilnadu in the east, Kulathupuzha forested hills in the south and Kottarakkara undulating upland in the west. The maximum height (1554 m) is at the eastern sector and minimum height (119 m) is in the central part of the reserve forest. The western part, there are a number of rubber estates. Adoor rolling plain region is bounded by Chengannur rolling plain in the north, Kottarakkara undulating upland in the east and the south and coast in the west. This region has gentle slope towards the west.

Table: 7.1

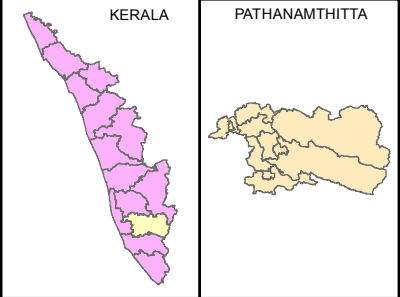
**NATURAL REGIONS OF PATHANAMTHITTA - DETAILS OF TALUKS/VILLAGES
AND WITH AREA BY REGIONS**

(Area in ha)				
Sl.No.	Taluks/Villages	Low land	Mid land	High land
Thiruvalla Taluk				
1	Peringara	1249	-	-
2	Nedumbram	849	-	-
3	Kadapra	1690	-	-
4	Kizhakkumbhagam	1101	-	-
5	Thiruvalla (M)	-	1447	-
6	Kaviyur	-	3024	-
7	Thottappuzhasseri	-	1446	-
8	Koipram	-	2226	-
9	Eraviperoor	-	2813	-
10	Thiruvalla (P)	-	1613	-
11	Kavumbhagam (P)	-	761	-
	Total	4889	13330	-
Mallappalli Taluk				
1	Kalluppara	-	1686	-
2	Mallappalli	-	2001	-
3	Anikkadu	-	1904	-
4	Kottangal	-	2308	-
5	Ezhumattoor	-	2789	-
6	Perumpetti	-	1701	-
7	Puramattom	-	1466	-
	Total	-	13855	-
Ranni Taluk				
1	Ranni	-	2144	-
2	Cherukol	-	1561	-
3	Ranni-Pazhavangadi	-	-	2646
4	Chathakkal	-	-	5430
5	Ranni-Perunadu	-	-	6190
6	Vadasserikkara	-	-	5490
7	Ranni-Angadi	-	-	2072
8	Ayiroor	-	2576	-
	Total		6281	21828

Sl.No.	Taluks/Villages	Low land	Mid land	High land
Kozhancherry Taluk				
1	Mallappuzhasseri	-	2106	-
2	Naranganam	-	2042	-
3	Elanthur	-	1509	-
4	Pathanamthitta (M)	-	2350	-
5	Pathanamthitta (P)	-	506	-
6	Omallur	-	1454	-
7	Chenneerkkara	-	1950	-
8	Vallikkodu	-	1866	-
9	Malayalapuzha	-	-	2748
10	Konnithazham	-	-	1798
11	Eravam	-	-	1085
12	Thannithodu	-	-	1771
13	Konni	-	-	3804
14	Pramadam	-	-	3710
15	Aranmula	-	2404	-
16	Mezhuveli	-	1714	-
17	Kulanada	-	1880	-
	Total	-	19781	14916
Adoor Taluk				
1	Angadikkal	-	-	2096
2	Koodal	-	-	6601
3	Pallickal	-	2236	-
4	Peringanadu	-	2307	-
5	Adoor	-	1671	-
6	Kodumon	-	1540	-
7	Enadimangalam	-	3077	-
8	Ezhamkulam	-	3055	-
9	Erath	-	2174	-
10	Kadambanadu	-	2395	-
	Total	-	18455	8697



**PHYSIOGRAPHY
 PATHANAMTHITTA DISTRICT**



SOIL

Soil is an important natural resource, through which we get 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 the 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 of 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 is endowed with wide range of soil types.

Pathanamthitta district has very fertile soil and rich in all plant nutrients. District covers kari, alluvial, laterite and sandy soil. Kari soils can be found in Chengannur rolling plain. In north-eastern portions of this region shallow black, brown and alluvial soils are found. Kuttanad low lying plain has recent formation of soil of acidic saline. These include the Kari soil (black soil with organic content developed in low lying water logged area), kayal soil (soil in reclaimed areas with high clay content) and kadappuram soil (soil along river courses with silt content). Kottarakkara upland region covers sandy alluvial and laterite soil. The soil in the Pamba-Kakki forested hills are forest loam, laterite and shallow black, brown and alluvial soils. In Adoor rolling plain there is recent formation of sandy soil and alluvial soil.

Table: 8.1

SOILS IN PATHANAMTHITTA DISTRICT (COMPREHENSIVE LEGEND)

Soil Mapping Unit	Description Major Soil	Classification	
		Major Soils	Inclusions
K04	Very deep, very poorly drained, clayey soils with shallow water table on level submerged lands, swamps and marshes;	Fine, Mixed Typic tropaquepts	Fine-loamy, Mixed, Typic Sulfaquents
	Associated with very deep, very poorly drained sulphide-rich, saline, clayey soils with very shallow water table.	Fine, Mixed Typic Sulfaquents	Mixed Aquic Ustipsamments
K05	Very deep, imperfectly drained, clayey soils with shallow water table on level lands with valleys, with slight erosion.	Fine, Mixed Typic Dystropepts	Fine, Mixed Typic Tropaquepts
		Fine, Mixed Aeric Tropaquepts	Fine-loamy, Mixed Ustic Kanhaplohumults
K06	Very deep, moderately well drained, loamy soils with moderately deep water table on very gently sloping reclaimed lands, with slight erosion:	Fine-loamy over sandy, mixed fluventic Dystropepts	Fine-loamy, mixed Typic Dystropepts
	Associated with very deep, poorly drained, loamy soils with moderately shallow water table.	Fine-loamy mixed Typic Tropaquepts	Clayey over sandy, mixed, fluventic Dystropepts
K07	Very deep, well drained, gravelly clay soils on gently sloping coastal laterites, with moderate erosion:	Clayey-skeletal, Kaolinitic, Typic Kandiustults	Loamy- skeletal, Mixed Ustoxic Dystropepts
	Associated with very deep, well drained, gravelly clay soils with moderate surface gravelliness.	Clayey-skeletal, Kaolinitic, Typic Kanhaplustults	Clayey, Kaolinitic, Typic Kandiustults

K08	Very deep, moderately well drained, clayey soils with moderately shallow water table in nearly level narrow valleys, with slight erosion:	Fine Mixed Typic Dystropepts	Clayey, Kaolinitic, Typic Kanhaplustults
	Associated with very deep, imperfectly drained clayey soils with moderately shallow water table on nearly level land.	Fine Mixed Typic Tropaquepts	Fine Mixed Typic Ustropepts
K09	Very deep, well drained, gravelly clay soils with moderate surface gravelliness on moderately steeply sloping laterite mounds, with moderate erosion:	Clayey-skeletal, Kaolinitic, Oxic Humitropepts	Clay-skeletal, Kaolinitic, Ustic-Kandihumults
	Associated with deep, well drained, gravelly clay soils on gently slopes.	Clay-skeletal, Kaolinitic, Ustic-Haplohumults	Fine-loamy, Mixed Typic Kandihumults
K11	Very deep, well drained, gravelly clay soils on gently sloping midland laterites with valleys of central Kerala, with moderate erosion:	Clayey, Kaolinitic, Ustic Kandihumults	Fine Mixed Typic Dystropepts
	Associated with deep, well drained, clayey soils with coherent material at 100 to 150 cm on gentle slopes.	Clayey, Kaolinitic, Typic Kanhaplustults	Clayey-skeletal, Kaolinitic, Oxic Humitropepts
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:	Clay-skeletal, Kaolinitic, Ustic-Kanhaplohumults	Fine-loamy, Mixed Aquic Ustifluvents
	Associated with very deep, well drained, clayey soils.	Clayey, Kaolinitic, Typic Kandiusults	Clay-skeletal, Kaolinitic, Typic Kanhaplustults

K31	<p>Very deep, well drained, gravelly loam soils on steeply sloping medium hills with thick vegetation, with moderate erosion:</p> <p>Associated with very deep, well drained, clayey soils on moderate slopes.</p>	<p>Fine-loamy, Mixed, Ustic Humitropepts</p> <p>Clayey, Mixed Ustic Palehumults</p>	<p>Rock land</p> <p>Clayey, Mixed Ustic Haplohumults</p>
K32	<p>Deep, well drained loamy soils on gently sloping low hills with isolated hillocks, with moderate erosion:</p> <p>Associated with deep, well drained, loamy soils with coherent material at 100 to 150 cm. on moderate slopes, severely eroded.</p>	<p>Fine-loamy, Mixed, Ustic Humitropepts</p> <p>Fine-loamy, Mixed Ustic-Haplohumults</p>	<p>Fine Mixed Ustic Humitropepts</p> <p>Clayey-skeletal, Mixed Ustic Humitropepts</p>
K33	<p>Deep well drained, gravelly clay soils on moderately sloping medium hills with thin vegetation, with severe erosion:</p> <p>Associated with rock outcrops</p>	<p>Fine, Kaolinitic, Oxic Humitropepts</p> <p>Rock land</p>	<p>Fine-loamy Mixed, Ustic Palehumults</p>
K35	<p>Deep, well drained gravelly clay soils with coherent material at 100 to 150 cm. on moderately sloping isolated hillocks, with severe erosion:</p> <p>Associated with moderately shallow, well drained, gravelly loam soils with coherent material at 50 to 75 cm. on very gently slopes, moderately eroded.</p>	<p>Clayey-skeletal, Kaolinitic Oxic Humitropepts</p> <p>Fine-loamy Mixed Oxic Humitropepts</p>	<p>Clayey-skeletal, Mixed Ustic Humitropepts</p> <p>Clayey, Mixed Ustic Haplohumults</p>

K36	<p>Very deep, well drained, clayey soils on moderately steeply sloping high hills with thick vegetation, with moderate erosion:</p> <p>Associated with deep, well drained, gravelly loam soils on gently slopes.</p>	<p>Clayey, Mixed, Ustic Haplohumults</p> <p>Fine-loamy, Mixed Oxic Humitropepts</p>	<p>Fine, Mixed, Ustic Humitropepts</p> <p>Rock land</p>
K37	<p>Very deep, well drained, clayey soils on moderately sloping foot hills with moderate erosion:</p> <p>Associated with very deep, well drained, gravelly clay soils on gentle slopes.</p>	<p>Clayey, Mixed, Ustic Palehumults</p> <p>Clayey, Mixed Ustic Haplohumults</p>	
K38	<p>Very deep, well drained, clayey soils on moderately steeply sloping high hills with thin vegetation, with moderate erosion:</p> <p>Associated with rock outcrops.</p>	<p>Clayey, Mixed, Ustic Palehumults</p> <p>Rock land</p>	<p>Fine, Mixed, Ustic Humitropepts</p> <p>Fine-loamy, Mixed Ustic Humitropepts</p>

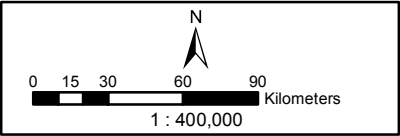
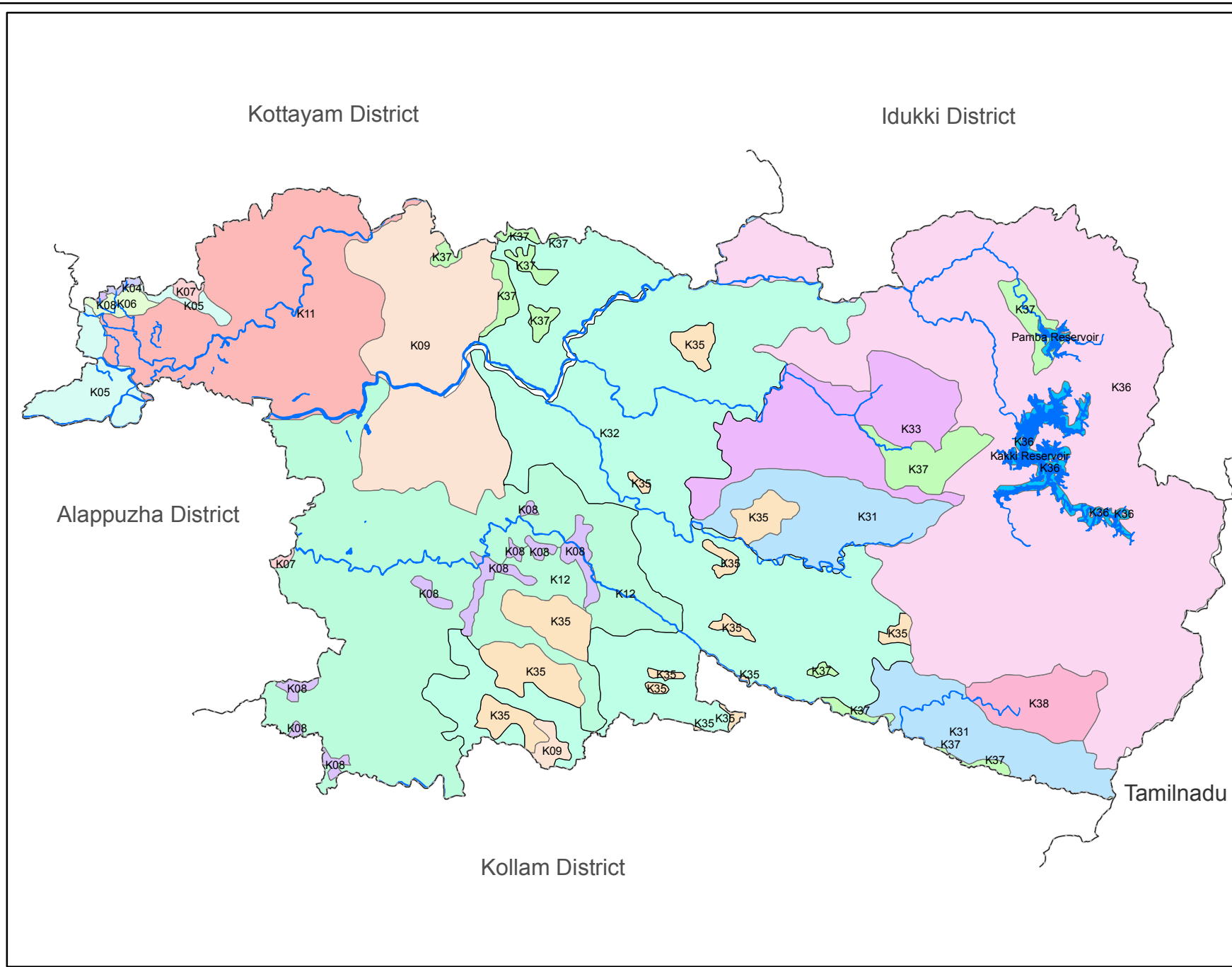
- Soils of the Lowland - K04, K05, K06, K07,
- Soils of the Midland - K08, K09, K11, K12
- Soils of the South Sahyadri - K31, K32, K33, K37, K38
- Soils of the Nilgris - K35, K36

Table: 8.2

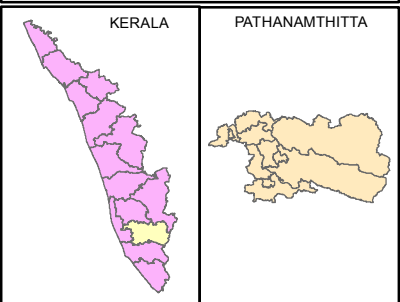
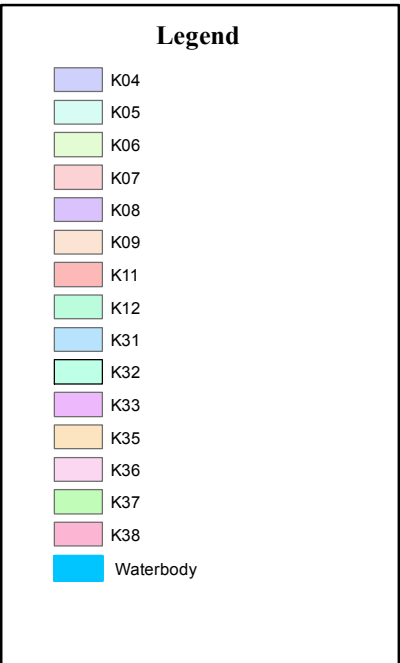
LEGEND FOR THE SOIL MAP OF PATHANAMTHITTA DISTRICT

Sl.No.	Map Symbol	Depth	Texture	Slope	Drainage
1	K04	vd	c	vg	vp
2	K05	vd	c	vg	i
3	K06	vd	l	vg	mw
4	K07	vd	gc	g	w
5	K08	vd	c	vg	mw
6	K09	vd	gc	ms	w
7	K11	vd	gc	g	w
8	K12	vd	gc	g	w
9	K31	vd	gl	s	w
10	K32	d	l	g	w
11	K33	d	gc	m	w
12	K35	d	gc	m	w
13	K36	vd	c	ms	w
14	K37	vd	c	ms	w
15	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	gc	gravelly clay
2	c	clay
3	l	loam
4	gl	gravelly loam
Drainage		
1	mw	moderately well drained
2	w	well
3	i	imperfectly



**SOIL
PATHANAMTHITTA DISTRICT**



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.

Table: 9.1

Live storage position in the Irrigation Reservoirs

(Million cubic meter)

Sl. No.	Item	2011	2012	2013
1	Storage at the beginning of the Monsoon	525	404	281
2	Storage at the end of the Monsoon	1274	744	1290
3	Increase due to Monsoon	749	340	1009
Live storage position (Average for 10 years)				
i	Storage at the beginning of the Monsoon	431	431	395
ii	Storage at the end of the Monsoon	1133	1117	1186
iii	Increase due to Monsoon	702	686	791

RIVERS

There are 41 west flowing rivers 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 the Achankovil, Manimala and Pamba.

Achankovil River

Several small streams originating from the Pasukidamettu, Ramakkalteri and Rishimala join together to form the Achankovil river. The total drainage area of the river is covering portions of the Kunnathur, Mavelikkara, Chengannur, Karthikappally, Karunagappally and Pathanamthitta taluks. The important towns in the basin are Pandalam, Mavelikkara and Harippad.

Manimala River

Rising at an altitude above mean sea level in Tatamala, the river flows through the estate lands fed by several rivulets enroute. From Manimala, it continues in a winding course and finally joins the Pamba River at Neeruttupuram. The river passes through the villages of Peruvanthanam, Mundakayam, Erumeli, Manimala, Kallupara, Kaviyur and Thiruvalla town.

Pamba River

This is the third longest river in Kerala and has the fourth largest catchment area. The entire catchment lies within Kerala. It originates in the hill ranges of Pathanamthitta district and the adjoining primed plateau and is the confluence of Pambayar, Aruthaiyar, Kakkadayar, Kakkiyar and Kallar. It descends from Sabarimala. It flows mainly through various parts of Ranni taluk and enters Alappuzha district after joining with the Manimala and the Achankovil Rivers and empties itself into the Vembanad Lake.

Table: 9.2

BASIC RIVER STATISTICS

Sl. No.	Name of the River	Main Tributaries	Irrigation Projects	Hydro Electric Projects
1	Achankovil	Kallar	Nil	Nil
2	Pamba	Kakkiyar, Kallar Arudai, Pamba	Pamba	Sabarigiri
3	Manimala	Kokayar Elakkal thodu	Nil	Nil

Source: - ER, CGWD, PWD.

RIVERS OF KERALA

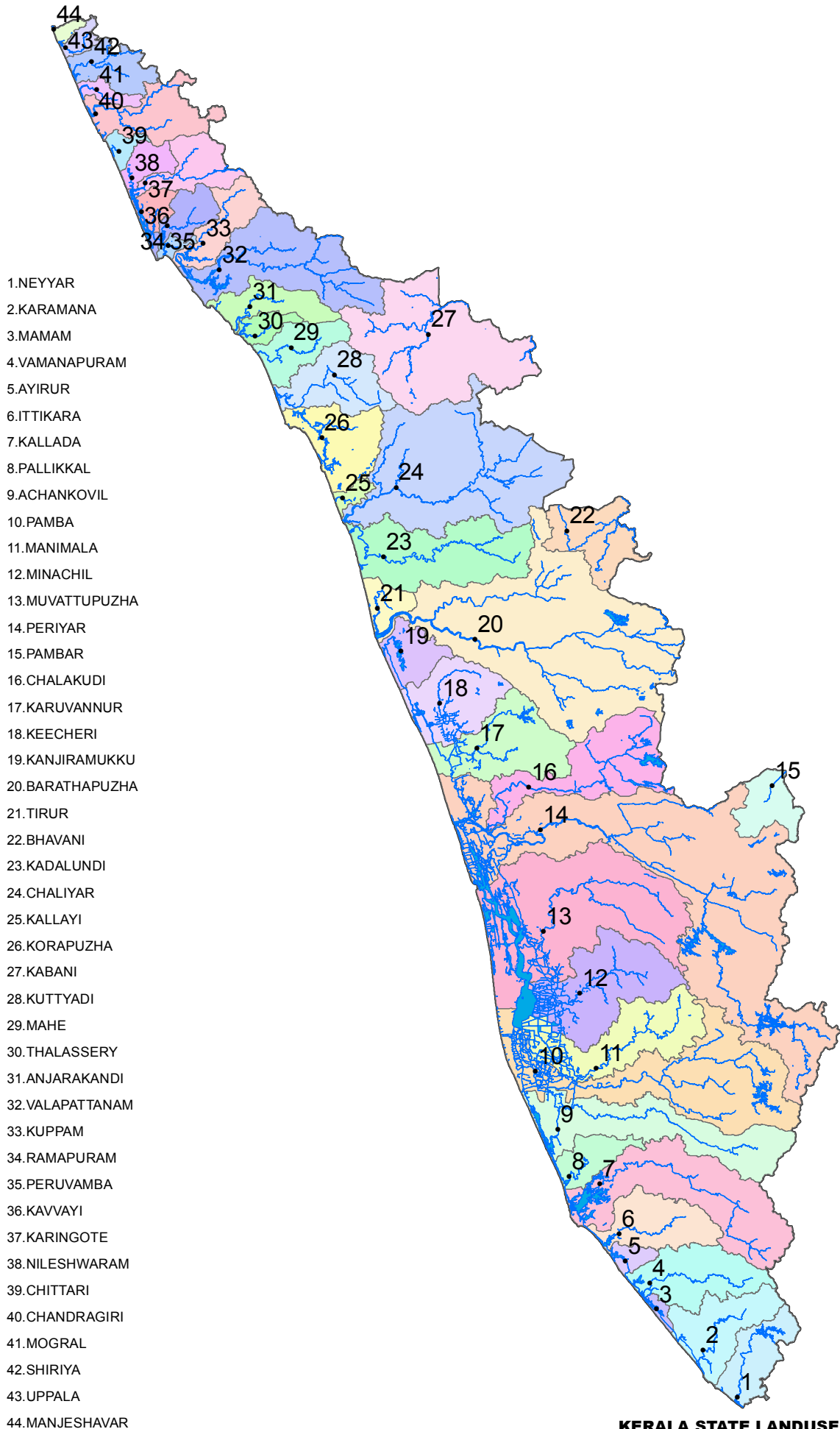


Table: 9.3

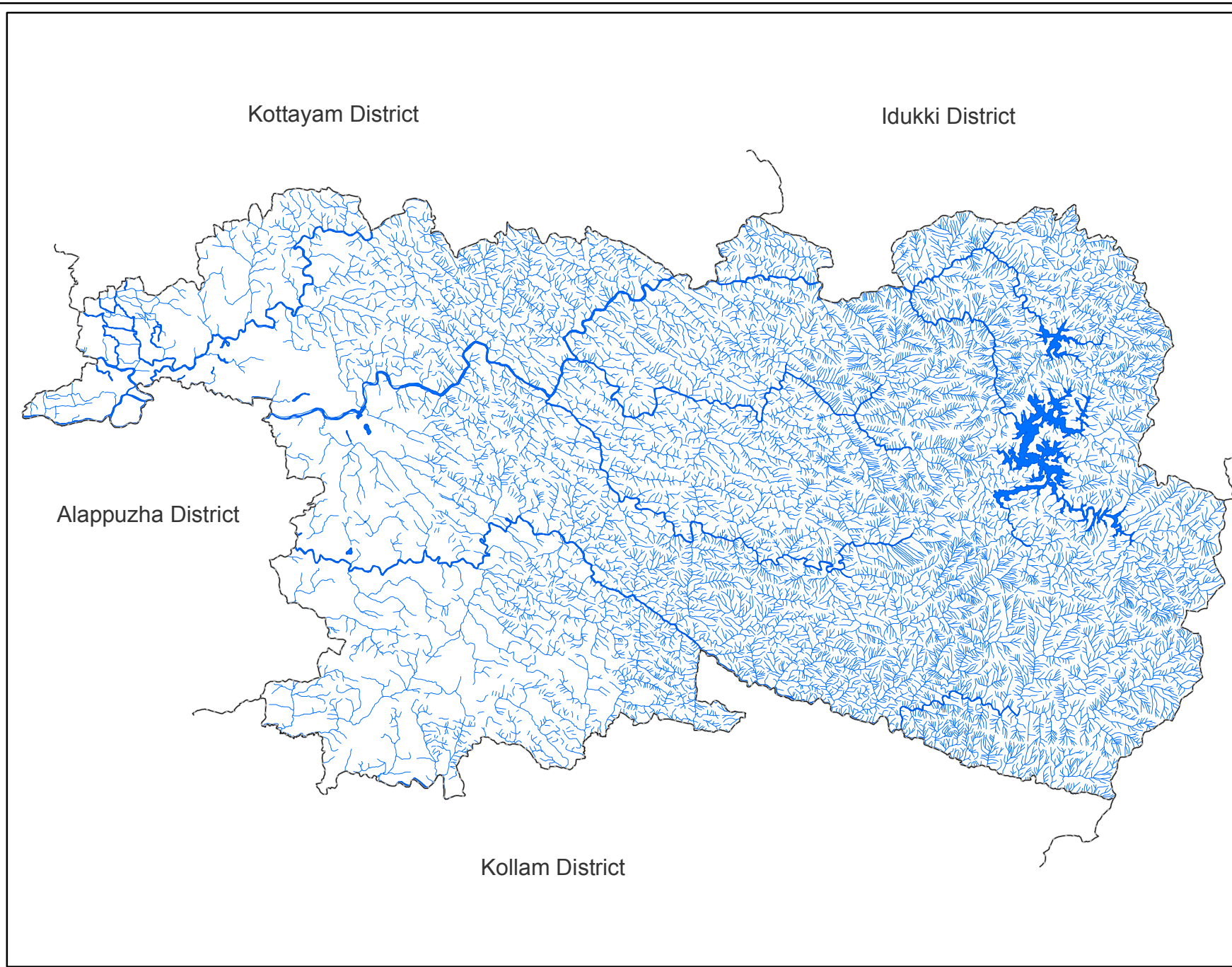
GROUND WATER STATISTICS - PATHANAMTHITTA (2008-09)

Sl. No.	Assessment Unit	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	Elanthoor	Non-Command	1441.87	15.11	501.15	583.00	2541.13	254.11
2	Koipram	Non-Command	1678.75	15.69	583.48	92.47	2370.38	237.04
3	Konni	Non-Command	3778.09	12.04	1313.14	400.00	5503.27	550.33
4	Kulanada	Non-Command	815.14	17.24	283.32	350.00	1465.70	146.57
5	Mallappalli	Non-Command	1713.63	11.84	595.60	160.00	2481.07	248.11
6	Pandalam	Non-Command	755.42	15.49	262.56	470.00	1503.46	150.35
7	Parakkod	Non-Command	4251.68	42.61	1068.25	1240.00	6602.54	330.13
8	Pulikeezhu	Non-Command	1857.40	11.69	556.72	94.74	2520.56	126.03
9	Ranni	Non-Command	4445.10	11.97	1544.97	71.07	6073.11	607.31
Total (Ha.m)		Non-Command	20737.08	153.68	6709.19	3461.28	31061.22	2649.98
Total (MCM)		Non-Command	207.37	1.54	67.09	34.61	310.61	26.50

Table: 9.3 Continued.....

Sl. No.	Assessment Unit	Net Annual Ground Water Availability (8-9)	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 in 2025	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	Elanthoor	2287.02	343.48	488.19	831.67	516.26	1427.28	36.36
2	Koipram	2133.34	361.21	636.08	997.29	672.65	1099.48	46.75
3	Konni	4952.94	301.83	834.04	1135.87	882.00	3769.11	22.93
4	Kulanada	1319.13	376.22	353.66	729.88	374.00	568.91	55.33
5	Mallappalli	2232.96	282.47	609.82	892.29	644.89	1305.6	39.96
6	Pandalam	1353.11	328.93	340.27	669.20	359.84	664.34	49.46
7	Parakkod	6272.41	912.60	1069.60	1982.20	1131.10	4228.71	31.60
8	Pulikeezhu	2394.53	266.14	753.82	1019.96	797.17	1331.22	42.60
9	Ranni	5465.80	289.86	876.12	1165.98	926.50	4249.44	21.33
Total (Ha.m)		28411.26	3462.73	5961.60	9424.33	6304.41	18644.12	33.17
Total (MCM)		284.11	34.63	59.62	94.24	63.04	186.44	33.17

Source: Central Ground Water Board

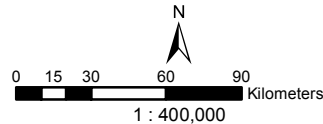


Kottayam District

Idukki District

Alappuzha District

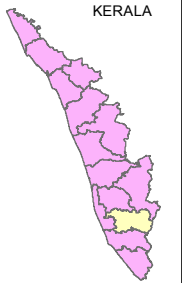
Kollam District



**WATER RESOURCES
PATHANAMTHITTA DISTRICT**

Legend

- Drains
- Waterbody



KERALA



PATHANAMTHITTA



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 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, Magnesite 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. Pathanamthitta district is not rich in mineral wealth.

Table: 10.1

INVENTORY OF THE MINERAL RESOURCES OF KERALA

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>Earipuram</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 strengthen 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.
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	Magnesite	Palakkad (Attapadi)	0.03	Refractory bricks for furnaces

Table: 10.2

NUMBER OF MINERAL QUARRIES (PERMITS ISSUED) DURING 2009-10

Sl. No.	Districts	Name of Mineral						Total
		Granite building stone	Laterite	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

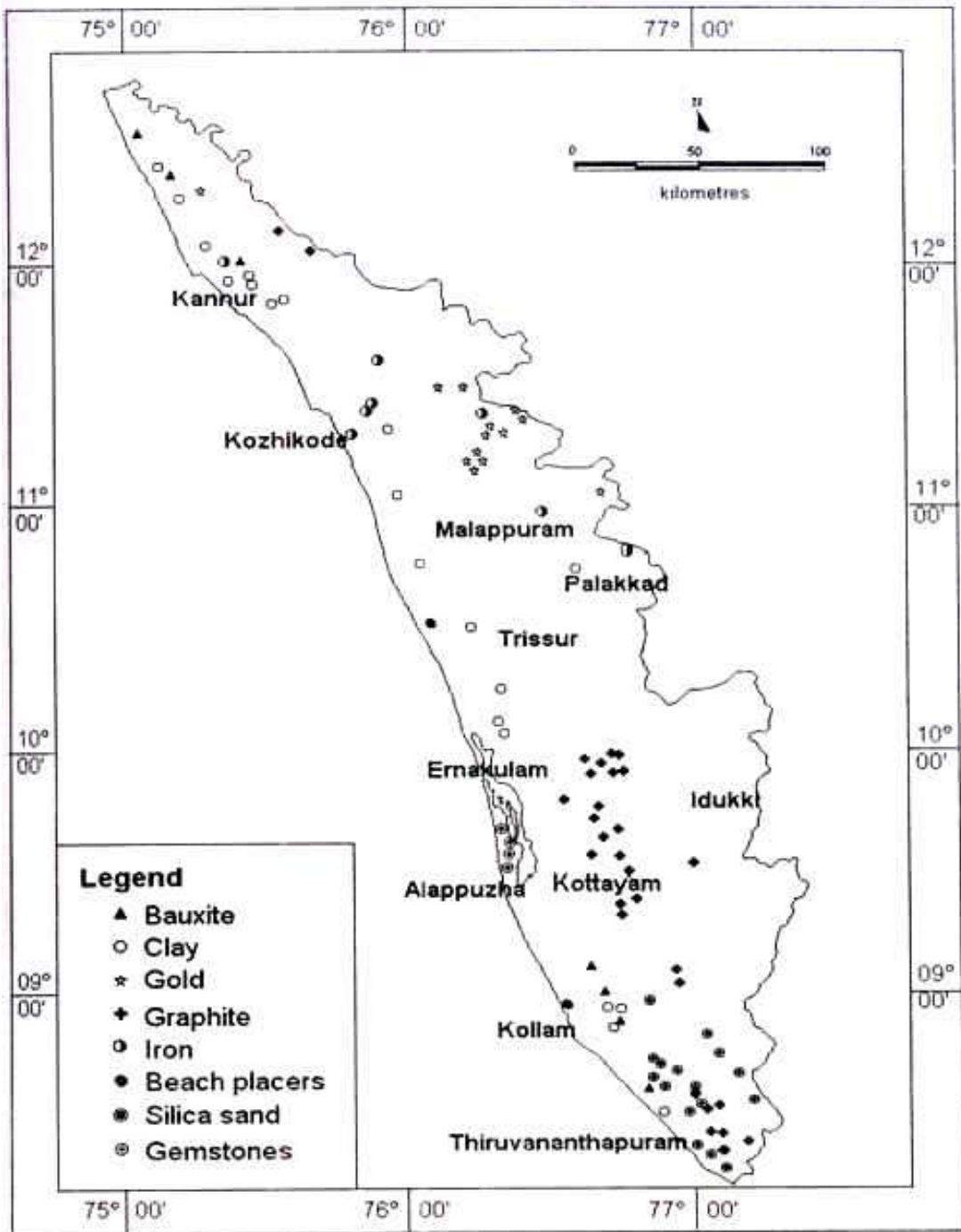
Table: 10.3

**NUMBER OF MINERAL WISE MINING LEASES IN KERALA AS ON
31-03-2010**

Sl. No.	Districts	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					1					
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

Source: Infrastructure Statistics of Kerala 2011, DES

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.

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

Pathanamthitta

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 Pathanamthitta district and their spatial distribution is given below:

i) 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 category is occupying an area of 121916.27 ha accounting for 45.87% of the total geographical area.

ii) 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. This category accounts for 131885.54 ha, which is 50% of the total geographical area.

iii) 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 3979.15 ha accounting for 1.50% of the total geographical area.

iv) 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 4613.47 ha accounting for 1.74% of the total geographical 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 - PATHANAMTHITTA

Sl. No.	Category	Area in ha.
1	Agriculture plantation (Rubber)	86269.89
2	Agriculture plantation (Areca nut)	56.56
3	Agriculture plantation (Banana)	22.39
4	Agriculture plantation (Cardamom)	8.67
5	Agriculture plantation (Coconut)	98.73
6	Agriculture plantation (Mixed)	24558.27
7	Agriculture plantation (Pepper)	10.36
8	Barren rocky/stony waste/sheet rock	1814.63
9	Built up (Cities/Town/Villages)	590.07
10	Cropland (Kharif)	6.49
11	Cropland (Rabi)	1.13
12	Double crop (Kharif+Rabi)	10883.78

13	Fallow land	198.42
14	Forest Deciduous (Dense)	14391.01
15	Forest Deciduous (Forest Blanks)	12.38
16	Forest Deciduous (Open)	49.56
17	Forest Evergreen (Dense)	94477.77
18	Forest Evergreen (Open)	676.38
19	Forest Plantations	22240.70
20	Forest Deciduous (Scrub/Degrade)	37.74
21	Grass land	2582.90
22	Land with scrub	1396.68
23	Land without scrub	5.15
24	Mining/Industrial Waste	14.14
25	River/Waterbodies	4613.47
26	Sandy Area	132.14
27	Wetlands (Waterlogged)	616.41
	Total	265765.83

Table: 11.2

ELANTHOOR BLOCK**(Area in Ha)**

Sl.No.	Land Use	Chenneerkkara	Cherukol	Elanthur	Kozhancherry	Mallappuzhasseri	Naranganam	Omaller
1	Agriculture plantation (Areca nut)							
2	Agriculture plantation (Banana)				22.39			
3	Agriculture plantation (Cardamom)							
4	Agriculture plantation (Coconut)					2.21		
5	Agriculture plantation (Mixed)	361.54	251.14	230.72	193.37	416.19	260.26	228.95
6	Agriculture plantation (Pepper)							
7	Agriculture plantation (Rubber)	1278.36	1195.83	1182.82	611.83	548.00	1603.61	941.00
8	Barren rocky/Stony waste/Sheetrock							12.42
9	Built-up (Cities/Town/Villages)		4.29		4.07		25.08	
10	Cropland (Kharif)							
11	Cropland (Rabi)							
12	Doublecrop (Kharif+Rabi)	210.08	18.66	105.60	74.49	126.96	64.26	237.30
13	Fallow land							
14	Forest deciduous (Forest blanks)							
15	Forest deciduous (Dense)							
16	Forest deciduous (Open)							
17	Forest deciduous (Scrub/degrade)							
18	Forest evergreen (Dense)							
19	Forest evergreen (Open)							
20	Forest plantations							
21	Grass land		19.06		37.43	13.93		
22	Land with scrub	5.07		3.29			13.94	3.45
23	Land without scrub							
24	Mining/Industrial waste							
25	River/Waterbodies	28.42	57.96		45.04	29.31		17.32
26	Sandy area							
27	Wetlands (Waterlogged)	8.54			10.34	7.84		
	Panchayat Total	1892.01	1546.94	1522.43	998.96	1144.44	1967.15	1440.44
	Block Total	10512.37						

Table: 11.3

KOIPRAM BLOCK**(Area in Ha)**

Sl. No.	Land Use	Ayiroor	Ezhumattoor	Eraviperoor	Koipram	Puramattom	Thottappuzhasseri
1	Agriculture plantation (Arecanut)						
2	Agriculture plantation (Banana)						
3	Agriculture plantation (Cardamom)						
4	Agriculture plantation (Coconut)						
5	Agriculture plantation (Mixed)	109.24	67.78	1261.27	620.72	216.56	158.71
6	Agriculture plantation (Pepper)						
7	Agriculture plantation (Rubber)	2330.32	2056.22	543.91	1438.90	1006.70	1314.80
8	Barrenrocky/Stonywaste/Sheetrock		7.34		9.91	7.17	8.43
9	Built-up (Cities/Town/Villages)			11.16			3.42
10	Cropland (Kharif)						
11	Cropland (Rabi)						
12	Doublecrop (Kharif+Rabi)	66.51	1.02	319.32	215.29	8.88	102.65
13	Fallow land						
14	Forest deciduous (Forest blanks)						
15	Forest deciduous (Dense)						
16	Forest deciduous (Open)						
17	Forest deciduous (Scrub/degrade)						
18	Forest evergreen (Dense)						
19	Forest evergreen (Open)						
20	Forest plantations						
21	Grass land	12.21		7.84			
22	Land with scrub			3.85			
23	Land without scrub						
24	Mining/Industrial waste						2.07
25	River/Waterbodies	37.53		59.61	2.47	30.57	
26	Sandy area	1.71		8.90		6.16	
27	Wetlands (Waterlogged)			23.08	30.67		12.74
	Panchayat Total	2557.52	2132.36	2238.94	2317.96	1276.04	1602.82
	Block Total			12125.64			

Table: 11.4

KONNI BLOCK**(Area in Ha)**

Sl. No.	Land Use	Aruvappulam	Konni	Malayalappuzha	Mylappra	Pramadam	Thannithodu	Vallikkodu
1	Agriculture plantation (Arecanut)							
2	Agriculture plantation (Banana)							
3	Agriculture plantation (Cardamom)							
4	Agriculture plantation (Coconut)					2.08	23.72	
5	Agriculture plantation (Mixed)	368.84	632.69	225.65	161.89	1539.06	446.75	324.61
6	Agriculture plantation (Pepper)							
7	Agriculture plantation (Rubber)	2131.84	1749.97	2575.01	893.58	5609.51	2618.04	995.99
8	Barrenrocky/Stonywaste/Sheetrock	582.02	28.30	10.83		57.96	268.96	3.37
9	Built-up (Cities/Town/Villages)		5.47		4.98	12.82		
10	Cropland (Kharif)							
11	Cropland (Rabi)							
12	Doublecrop (Kharif+Rabi)	68.63	108.93	17.22	10.31	685.11	13.15	394.55
13	Fallow land				1.28			
14	Forest deciduous (Forest blanks)							
15	Forest deciduous (Dense)	1148.19		229.22			3526.29	
16	Forest deciduous (Open)						18.57	
17	Forest deciduous (Scrub/degrade)							
18	Forest evergreen (Dense)	23744.10	21.03				5745.41	
19	Forest evergreen (Open)							
20	Forest plantations	16575.62	364.62	3.38		22.35	3208.51	3.40
21	Grass land		6.04	2.30			26.71	
22	Land with scrub	17.21	28.19	6.79		9.45	39.28	29.57
23	Land without scrub							
24	Mining/Industrial waste							
25	River/Waterbodies	237.20	39.15	41.48		37.29	138.71	43.55
26	Sandy area	4.89	18.66			1.19	10.64	
27	Wetlands (Waterlogged)							
	Panchayat Total	44878.54	3003.05	3111.88	1072.04	7976.82	16084.74	1795.04
	Block Total				77922.11			

Table: 11.5

MALLAPPALLI BLOCK**(Area in Ha)**

Sl.No.	Land Use	Anikkadu	Kalluppara	Kaviyur	Kottanadu	Kottangal	Kunnanthanam	Mallappalli
1	Agriculture plantation (Arecanut)							
2	Agriculture plantation (Banana)							
3	Agriculture plantation (Cardamom)							
4	Agriculture plantation (Coconut)							
5	Agriculture plantation (Mixed)	142.65	166.3	282.05	109.72	109.46	188.28	190.86
6	Agriculture plantation (Pepper)							
7	Agriculture plantation (Rubber)	1767.49	1423.08	1000.76	1631.88	2131.08	1275.82	1724.79
8	Barrenrocky/Stonywaste/Sheetrock				9.44	24.26		
9	Built-up (Cities/Town/Villages)			3.30	4.39			7.64
10	Cropland (Kharif)							
11	Cropland (Rabi)							
12	Doublecrop (Kharif+Rabi)		64.47	227.23	24.91	33.27	58.98	32.25
13	Fallow land							
14	Forest deciduous (Forest blanks)							12.38
15	Forest deciduous (Dense)				486.81	12.70		
16	Forest deciduous (Open)							
17	Forest deciduous (Scrub/degrade)							
18	Forest evergreen (Dense)							
19	Forest evergreen (Open)							
20	Forest plantations							
21	Grass land							
22	Land with scrub	9.37					11.38	
23	Land without scrub					5.15		
24	Mining/Industrial waste							
25	River/Waterbodies	7.84	28.88	5.76		24.35		45.84
26	Sandy area	6.23	3.27			18.76		11.97
27	Wetlands (Waterlogged)		8.60	54.3			2.84	16.82
	Panchayat Total	1933.58	1694.60	1573.40	2267.15	2359.03	1537.3	2042.55
	Block Total				13407.61			

Table: 11.6

PANDALAM BLOCK**(Area in Ha)**

Sl. No.	Land Use	Aranmula	Kulanada	Mezhuveli	Pandalam	Pandalam Thekkekara	Thumbamon
1	Agriculture plantation (Areca nut)						
2	Agriculture plantation (Banana)						
3	Agriculture plantation (Cardamom)						
4	Agriculture plantation (Coconut)		49.37		19.47		
5	Agriculture plantation (Mixed)	808.13	953.49	532.32	649.67	405.15	553.56
6	Agriculture plantation (Pepper)						
7	Agriculture plantation (Rubber)	1331.14	760.40	1143.36	162.29	1432.12	564.95
8	Barrenrocky/Stonywaste/Sheetrock						
9	Built-up (Cities/Town/Villages)		11.10		37.45		13.07
10	Cropland (Kharif)						
11	Cropland (Rabi)						
12	Doublecrop (Kharif+Rabi)	215.46	40.22	5.5	460.59	654.61	218.97
13	Fallow land					5.15	
14	Forest deciduous (Forest blanks)						
15	Forest deciduous (Dense)						
16	Forest deciduous (Open)						
17	Forest deciduous (Scrub/degrade)						
18	Forest evergreen (Dense)						
19	Forest evergreen (Open)						
20	Forest plantations						
21	Grass land	27.07					3.67
22	Land with scrub					25.77	24.79
23	Land without scrub						
24	Mining/Industrial waste						
25	River/Waterbodies	54.07	47.13	10.12	3.54		3.84
26	Sandy area	17.43				12.62	
27	Wetlands (Waterlogged)	34.3	32.92	4.14	204.11	4.92	
	Panchayat Total	2487.60	1894.63	1695.44	1537.12	2540.34	1382.85
	Block Total			11537.98			

Table: 11.7

PARAKKOD BLOCK**(Area in Ha)**

Sl. No.	Land Use	Enadi mangalam	Erath	Ezhamkulam	Kadambanadu	Kalanjoor	Kodumon	Pallickal
1	Agriculture plantation (Arecanut)							
2	Agriculture plantation (Banana)							
3	Agriculture plantation (Cardamom)			4.40				
4	Agriculture plantation (Coconut)							
5	Agriculture plantation (Mixed)	574.13	587.04	726.92	974.22	206.26	266.28	666.35
6	Agriculture plantation (Pepper)							
7	Agriculture plantation (Rubber)	2272.84	1123.37	1719.68	2140.19	2409.30	758.14	1326.01
8	Barrenrocky/Stonywaste/Sheetrock					163.95		
9	Built-up (Cities/Town/Villages)	4.04		16.16	39.81	16.41		
10	Cropland (Kharif)							
11	Cropland (Rabi)							
12	Doublecrop (Kharif+Rabi)	275.50	530.14	401.67	1003.19	81.16	497.88	407.46
13	Fallow land							5.84
14	Forest deciduous (Forest blanks)							
15	Forest deciduous (Dense)							
16	Forest deciduous (Open)					30.99		
17	Forest deciduous (Scrub/degrade)					13.80		
18	Forest evergreen (Dense)					22.87		2.18
19	Forest evergreen (Open)							
20	Forest plantations					1650.90		
21	Grass land							
22	Land with scrub	29.84	2.17		11.47	17.19	5.77	13.32
23	Land without scrub							
24	Mining/Industrial waste							
25	River/Waterbodies			9.84	21.18			
26	Sandy area			3.14	5.25			
27	Wetlands (Waterlogged)						3.19	
	Panchayat Total	3156.35	2242.72	2881.81	4195.31	4612.83	1531.26	2421.18
	Block Total				21041.44			

Table: 11.8

PULIKEEZHU BLOCK**(Area in Ha)**

Sl. No.	Land Use	Kadapra	Kuttoor	Nedumbram	Niranam	Peringara
1	Agriculture plantation (Arecanut)					
2	Agriculture plantation (Banana)					
3	Agriculture plantation (Cardamom)					3.50
4	Agriculture plantation (Coconut)				1.32	
5	Agriculture plantation (Mixed)	962.45	471.55	146.74	454.09	1567.18
6	Agriculture plantation (Pepper)					
7	Agriculture plantation (Rubber)	158.89	150.20	280.17		352.58
8	Barrenrocky/Stonywaste/Sheetrock					
9	Built-up (Cities/Town/Villages)	19.55				30.70
10	Cropland (Kharif)					
11	Cropland (Rabi)		1.13			
12	Doublecrop (Kharif+Rabi)	205.16	172.20	156.87	299.08	1313.67
13	Fallow land					
14	Forest deciduous (Forest blanks)					
15	Forest deciduous (Dense)					
16	Forest deciduous (Open)					
17	Forest deciduous (Scrub/degrade)					
18	Forest evergreen (Dense)					
19	Forest evergreen (Open)					
20	Forest plantations					
21	Grass land		7.06			3.14
22	Land with scrub	93.35		296.36	298.60	283.40
23	Land without scrub					
24	Mining/Industrial waste					
25	River/Waterbodies	205.02	40.26	50.41	19.8	113.2
26	Sandy area					
27	Wetlands (Waterlogged)	86.06	16.09			48.70
	Panchayat Total	1730.48	858.49	930.55	1072.89	3716.07
	Block Total			8308.48		

Table: 11.9

RANNI BLOCK**(Area in Ha)**

Sl. No.	Land Use	Chittar	Narana moozhi	Ranni	Ranni-Angadi	Ranni - Pazhavangadi	Ranni-Perunadu	Seethathodu	Vadasseri kvara	Vechuchira
1	Agriculture plantation (Arecanut)							56.56		
2	Agriculture plantation (Banana)									
3	Agriculture plantation (Cardamom)									
4	Agriculture plantation (Coconut)									
5	Agriculture plantation (Mixed)	741.38	121.24	185.86	242.56	167.37	20.33	40.07	298.02	148.17
6	Agriculture plantation (Pepper)						10.26			
7	Agriculture plantation (Rubber)	3161.96	1077.40	1123.80	1628.71	1676.16	3860.75	1873.01	2519.91	4777.05
8	Barrenrocky/Stonywaste/Sheetrock	44.31	4.31	23.75	5.50	31.45	39.06	439.08	18.82	2.42
9	Built-up (Cities/Town/Villages)			3.59	6.45	21.27	1.21	68.19	9.89	
10	Cropland (Kharif)								2.52	
11	Cropland (Rabi)									
12	Doublecrop (Kharif+Rabi)			19.37	33.63	23.20		8.04	4.6	
13	Fallow land									
14	Forest deciduous (Forest blanks)									
15	Forest deciduous (Dense)	3116.15	127.85		189.42	715.70	111.40	3481.22	1208.91	37.00
16	Forest deciduous (Open)									
17	Forest deciduous (Scrub/degrade)							23.94		
18	Forest evergreen (Dense)	7610.33	186.68			11.17	606.25	56527.06		1.34
19	Forest evergreen (Open)							676.38		
20	Forest plantations							411.92		
21	Grass land					2.09		2408.86	2.76	
22	Land with scrub			5.70				56.20		47.29
23	Land without scrub									
24	Mining/Industrial waste							12.07		
25	River/Waterbodies	184.06	76.16	36.38	10.69	16.12	115.25	2411.80	102.09	63.18
26	Sandy area									
27	Wetlands (Waterlogged)				1.04					
	Panchayat Total	14858.19	1593.64	1398.45	2118.00	2664.53	4764.51	68494.40	4167.52	5076.45
	Block Total					105135.69				

Table: 11.10

MUNICIPALITY**(Area in Ha)**

Sl. No.	Land Use	Adoor Municipality	Pathanamthitta Municipality	Thiruvalla Municipality
1	Agriculture plantation (Arecanut)			
2	Agriculture plantation (Banana)			
3	Agriculture plantation (Cardamom)			
4	Agriculture plantation (Coconut)			
5	Agriculture plantation (Mixed)	528.16	804.78	490.04
6	Agriculture plantation (Pepper)			
7	Agriculture plantation (Rubber)	1210.30	1591.85	106.60
8	Barrenrocky/Stonywaste/Sheetrock		11.6	
9	Built-up (Cities/Town/Villages)	65.02	58.86	80.60
10	Cropland (Kharif)		3.97	
11	Cropland (Rabi)			
12	Doublecrop (Kharif+Rabi)	364.66	51.63	149.28
13	Fallow land	7.60	178.55	
14	Forest deciduous (Forest blanks)			
15	Forest deciduous (Dense)			
16	Forest deciduous (Open)			
17	Forest deciduous (Scrub/degrade)			
18	Forest evergreen (Dense)			
19	Forest evergreen (Open)			
20	Forest plantations			
21	Grass land			2.42
22	Land with scrub		3.76	
23	Land without scrub			
24	Mining/Industrial waste			
25	River/Waterbodies		28.21	31.69
26	Sandy area			
27	Wetlands (Waterlogged)			4.95
	Municipality Total	2175.74	2733.21	865.58

Koipram Block

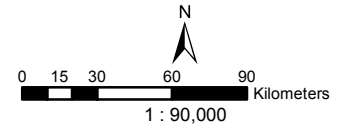
Ranni Block

Konni Block

Pandalam Block

Pathanamthitta Municipality

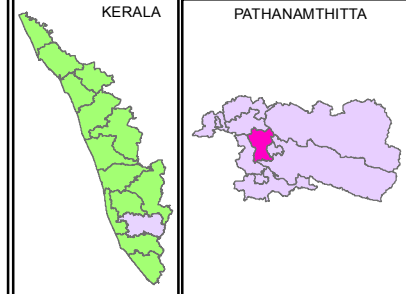
Konni Block

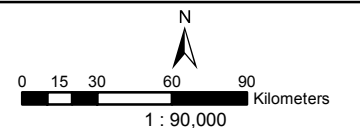
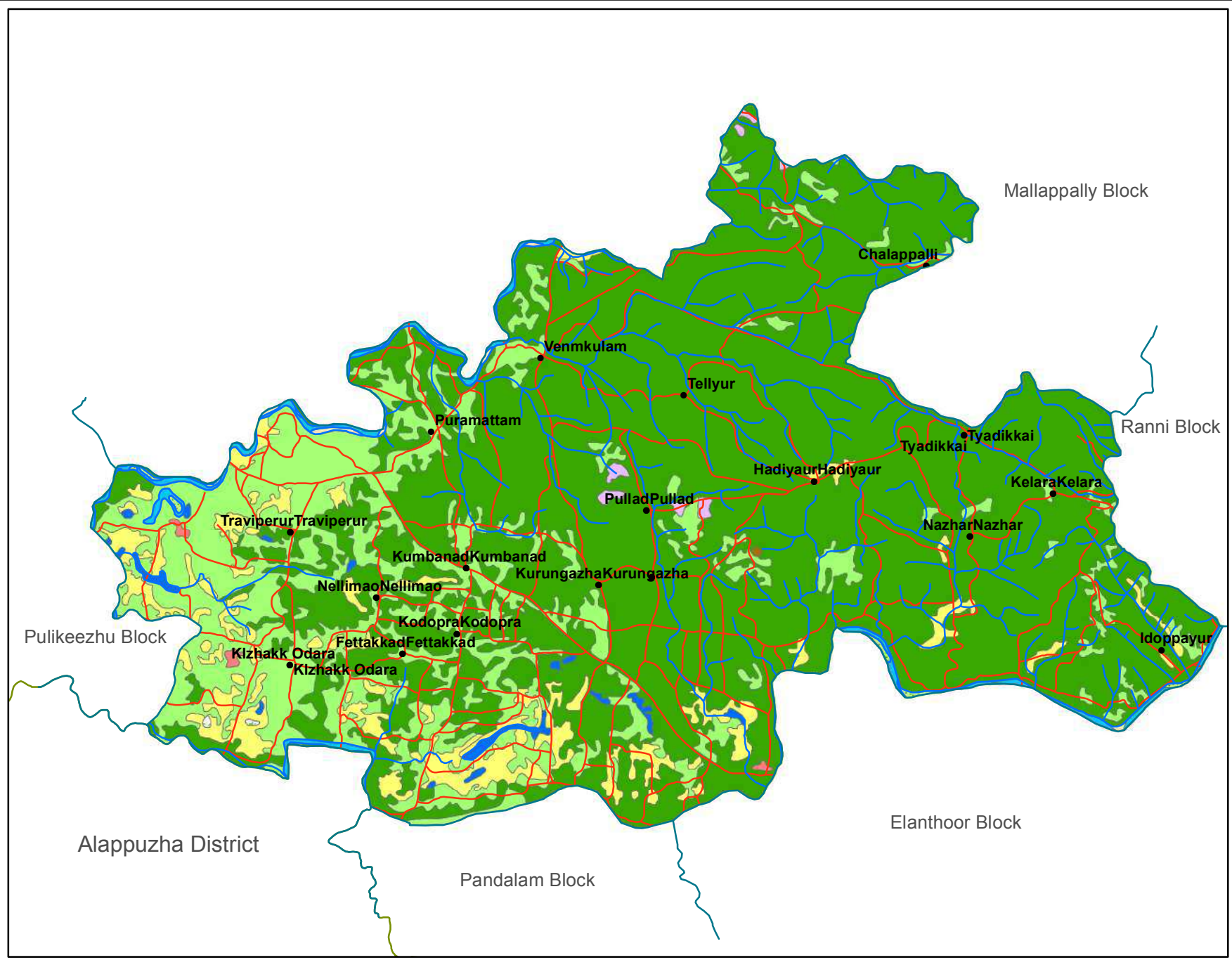


LANDUSE
ELANTHOOR BLOCK
PATHANAMTHITTA DISTRICT

Legend

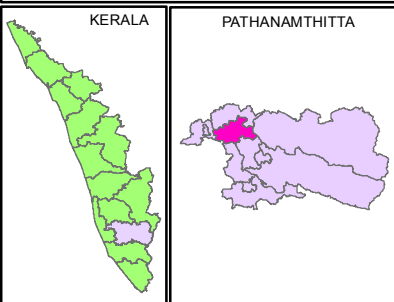
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- Roads
- Drains
- Built-up land(Cities/Town/Villages)
- Double crop(Kharif+Rabi)
- Agriculture Plantation(Banana)
- Agriculture Plantation(Coconut)
- Agriculture Plantation(Mixed)
- Agriculture Plantation(Rubber)
- Grass land
- Land with scrub
- Barren rocky/stony waste/sheet rock
- Wetlands (Waterlogged)
- River/Waterbodies

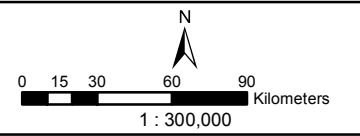
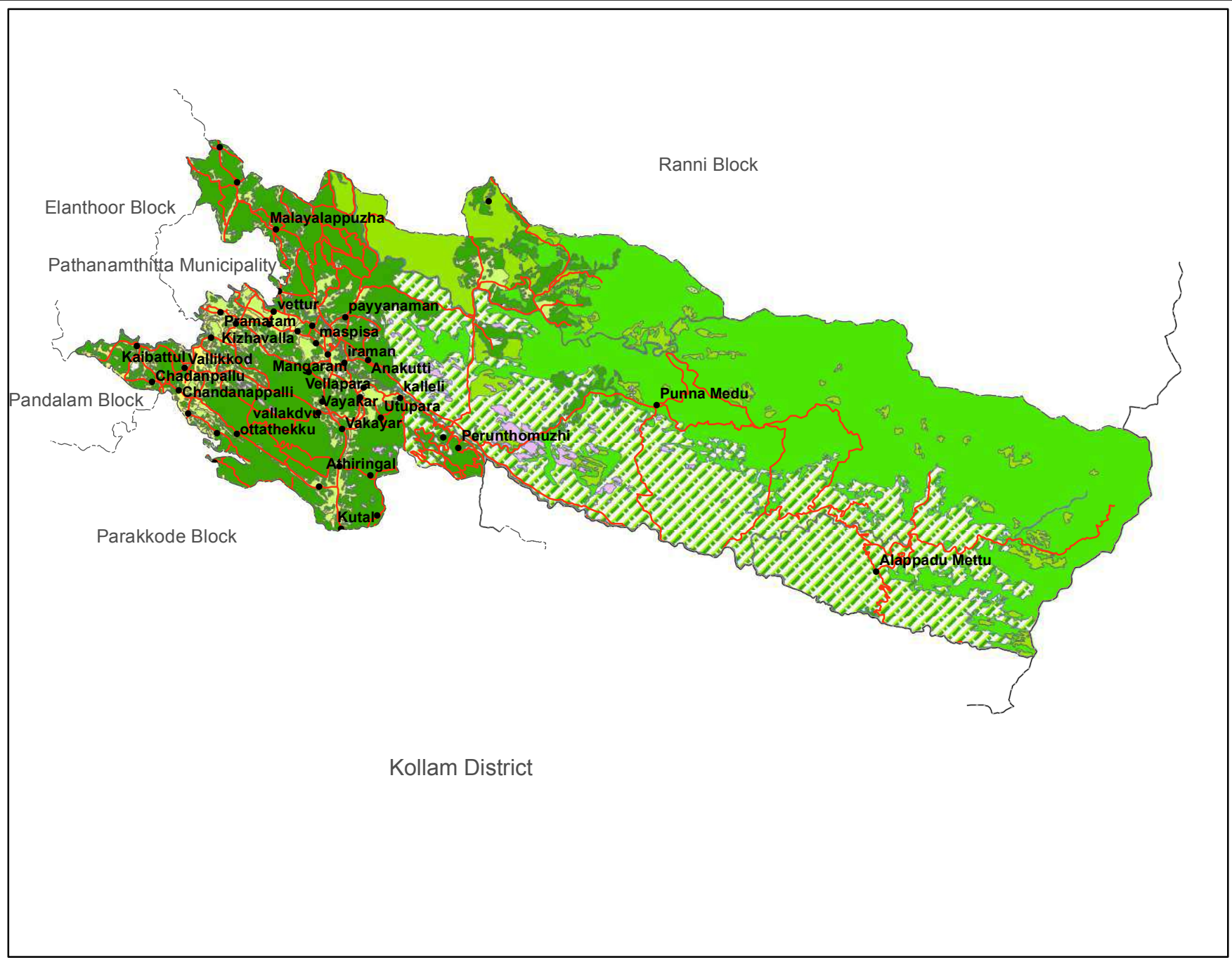




**LANDUSE
KOIPRAM BLOCK
PATHANAMTHITTA DISTRICT**

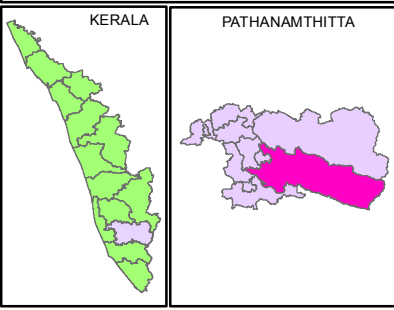
- Legend**
- Place Names
 - Roads
 - Drains
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 - Double crop(Kharif+Rabi)
 - Agriculture plantation(Mixed)
 - Agriculture plantation(Rubber)
 - Grass land
 - Land with scrub
 - Mining/industrial waste
 - Sandy Area
 - Barren rocky/stony waste/sheet rock
 - Wetlands (Waterlogged)
 - River/Waterbodies

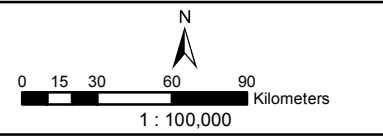
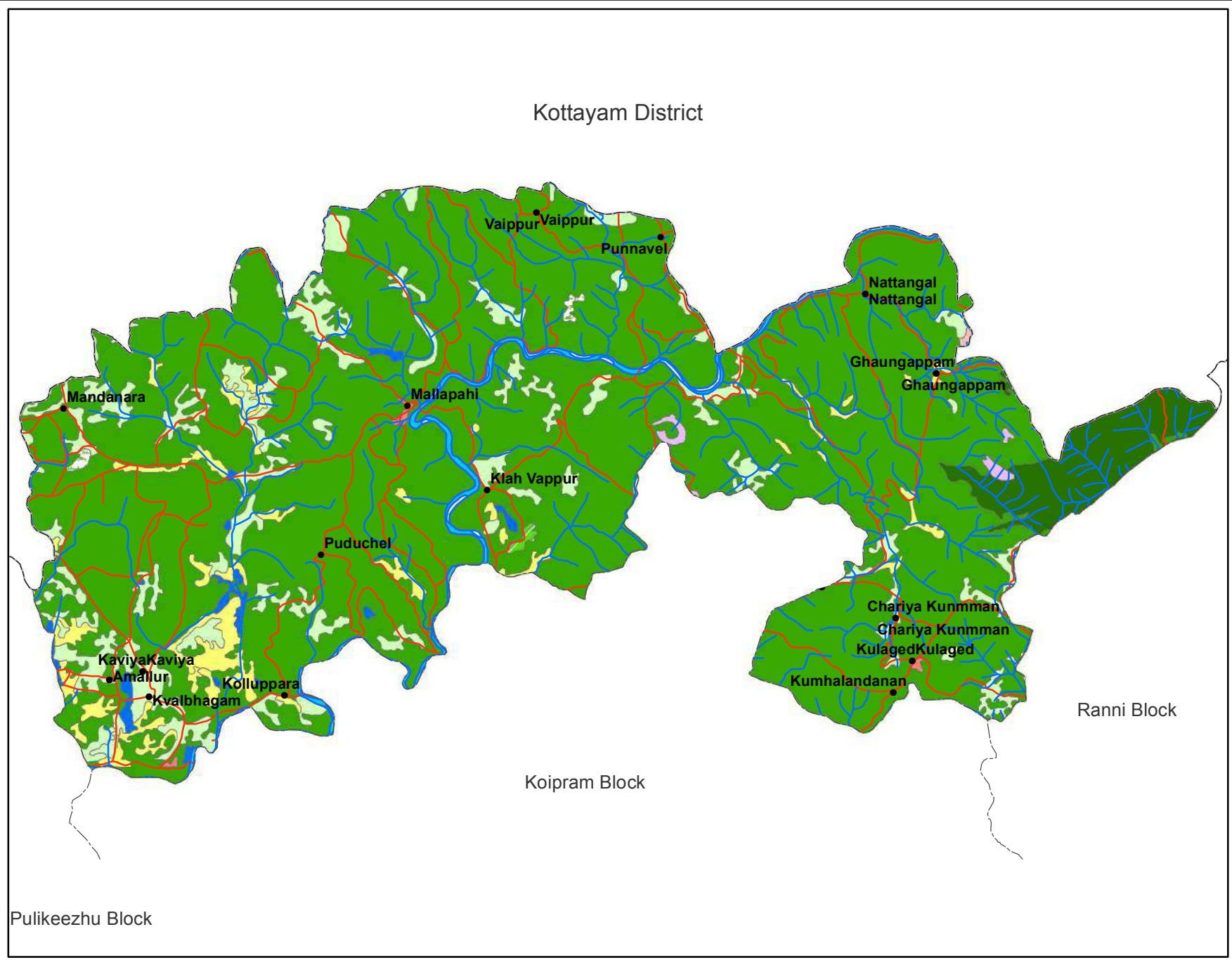




**LANDUSE
KONNI BLOCK
PATHANAMTHITTA DISTRICT**

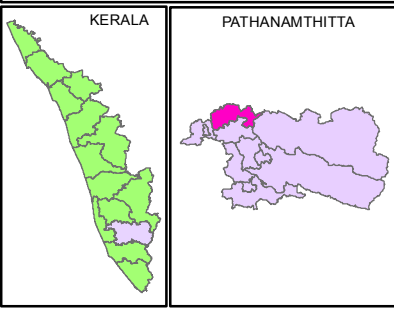
- Legend**
- Place Names
 - Roads
 - Drains
 - Agriculture plantation(Rubber)
 - Built-up(Cities/Town/Villages)
 - Double crop(Kharif+Rabi)
 - Agriculture plantation(Coconut)
 - Agriculture plantation(Mixed)
 - Fallow Land
 - Forest Deciduous(Dense)
 - Forest Deciduous(Open)
 - Forest Evergreen(Dense)
 - Forest plantations
 - Grass land
 - Land with scrub
 - Barren rocky/stony waste/sheet rock
 - Sandy Area
 - River/Waterbodies

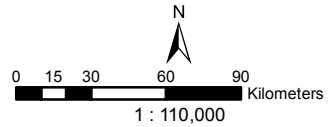
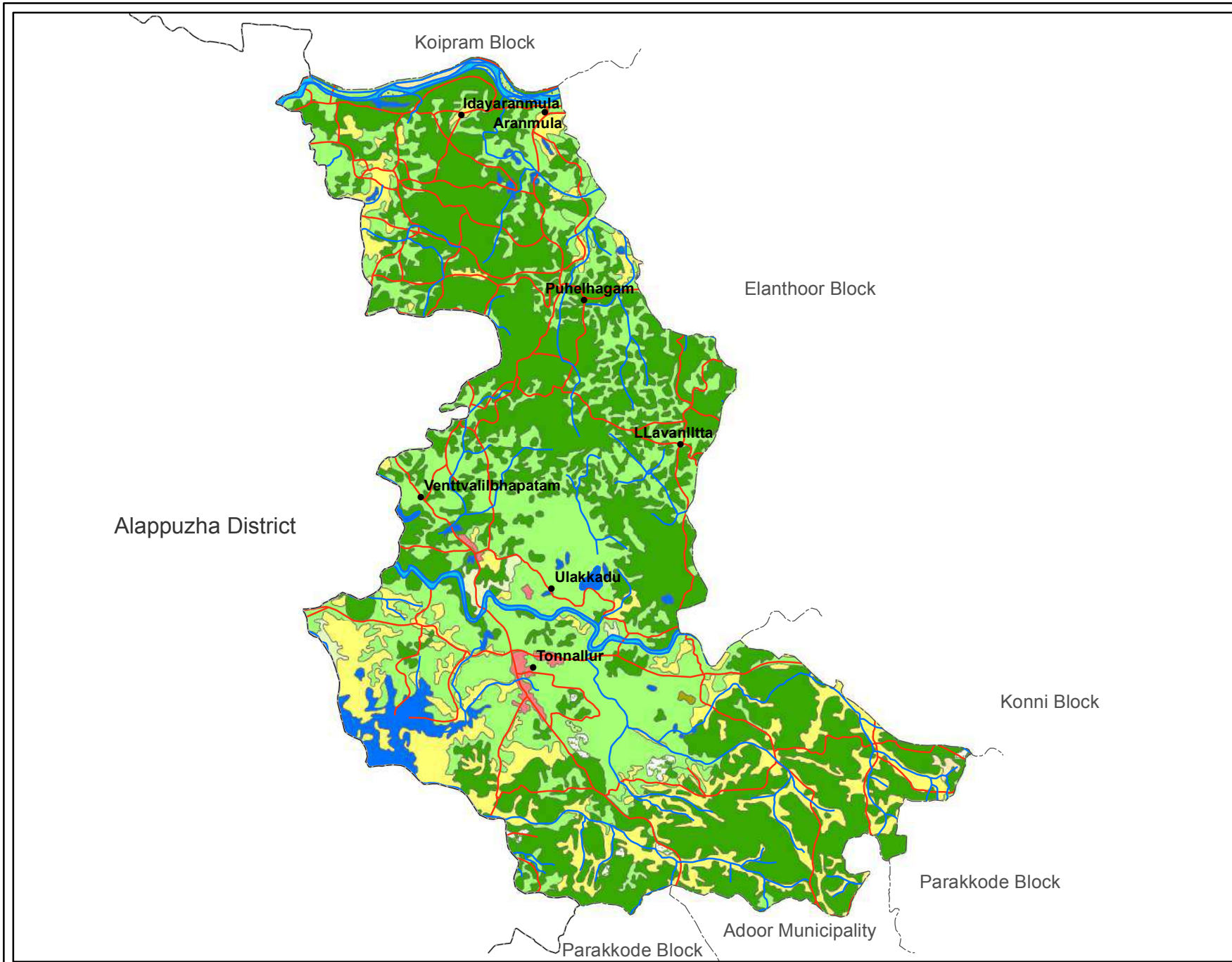




**LANDUSE
MALLAPPALLI BLOCK
PATHANAMTHITTA DISTRICT**

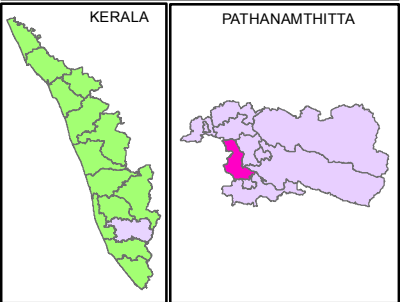
- Legend**
- Place Names
 - Roads
 - Drains
 - Built-up land (Cities/Town/Villages)
 - Double crop(Kharif+Rabi)
 - Agriculture plantation(Mixed)
 - Agriculture plantaion(Rubber)
 - Forest Deciduous(Dense)
 - Forest Deciduous(ForestBlanks)
 - Grass land
 - Land with scrub
 - land without scrub
 - Barren rocky/stony waste/sheet rock
 - Sandy Area
 - Wetlands (Waterlogged)
 - River/Waterbodies

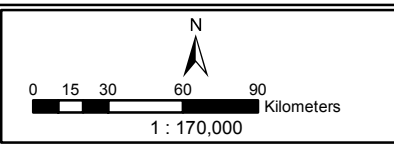
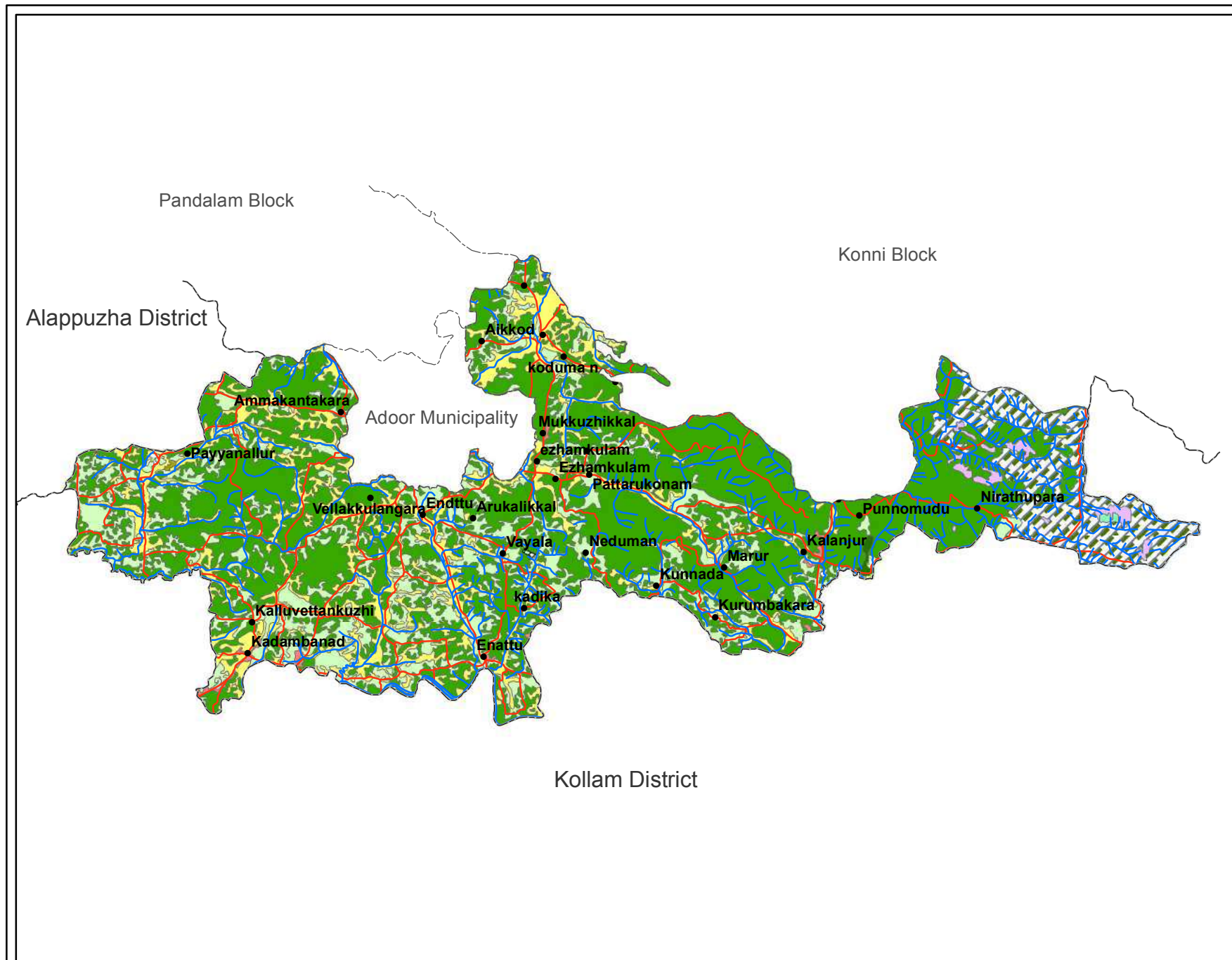




**LANDUSE
PANDALAM BLOCK
PATHANAMTHITTA DISTRICT**

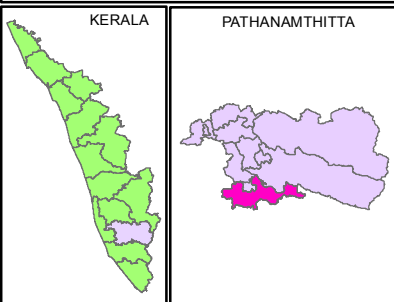
- Legend**
- Place Names
 - Drains
 - Roads
 - Built-up land(Cities/Town/Villages)
 - Double crop(Kharif+Rabi)
 - Agriculture plantation(Coconut)
 - Agriculture plantation(Mixed)
 - Agriculture plantation(Rubber)
 - Fallow Land
 - Grass land
 - Land with scrub
 - Sandy Area
 - Wetlands (Waterlogged)
 - River/Waterbodies

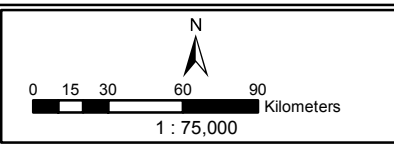
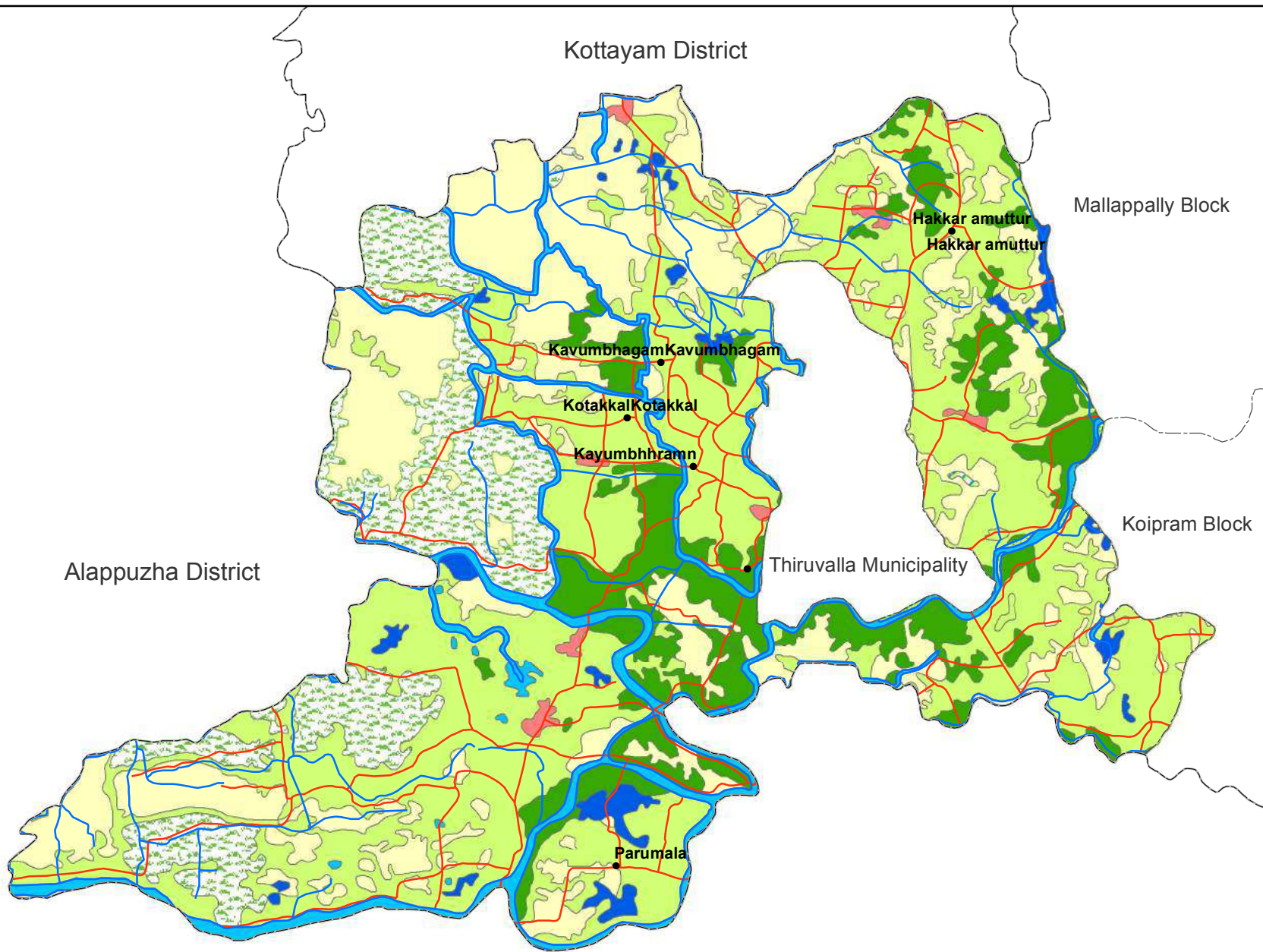




**LANDUSE
PARAKKOD BLOCK
PATHANAMTHITTA DISTRICT**

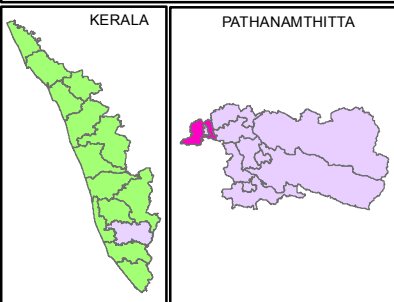
- Legend**
- Place Names
 - Drains
 - Roads
 - Built-up land (Cities/Town/Villages)
 - Double crop(Kharif+Rabi)
 - Agriculture plantation(Mixed)
 - Agriculture plantation(Rubber)
 - Agriculture plantation(Cardmom)
 - Fallow Land
 - Forest Deciduous(Open)
 - Forest Evergreen(Dense)
 - Forest plantations
 - ForestDeciduous(Scrub/Degrade)
 - Land with scrub
 - Sandy Area
 - Barren rocky/stony waste/sheet rock
 - Wetlands (Waterlogged)
 - River/Waterbodies





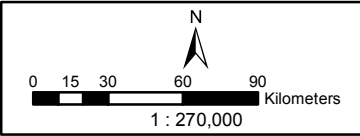
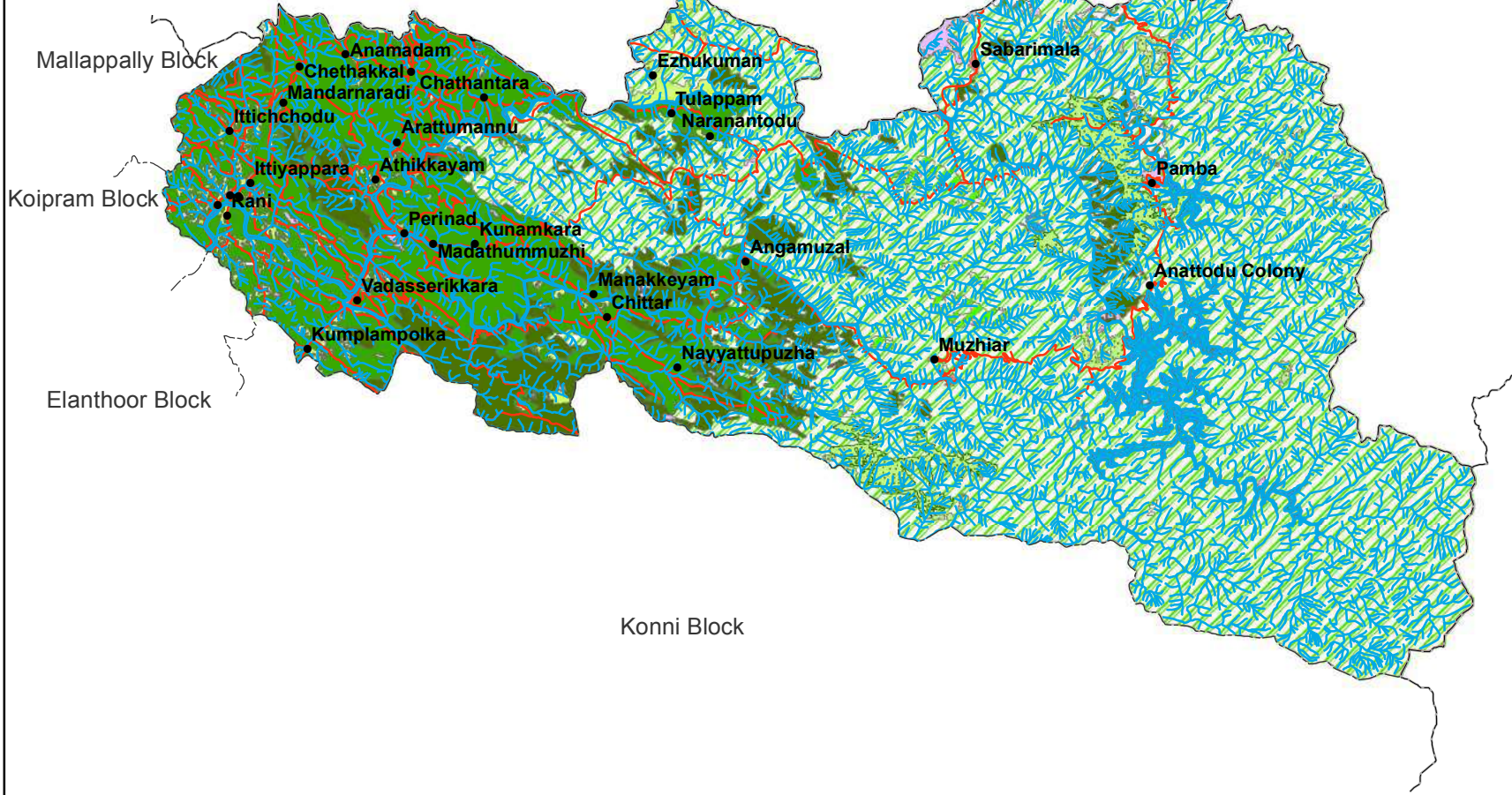
**LANDUSE
PULIKEEZHU BLOCK
PATHANAMTHITTA DISTRICT**

- Legend**
- Place Names
 - Roads
 - Drains
 - Built-up (Cities/Town/Villages)
 - Cropland(Rabi)
 - Double crop(Kharif+Rabi)
 - Agriculture plantation(Coconut)
 - Agriculture plantation(Mixed)
 - Agriculture plantation(Rubber)
 - Agriculture plantation(Cardamom)
 - Grass land
 - Land with scrub
 - Wetlands (Waterlogged)
 - River/Waterbodies



Kottayam District

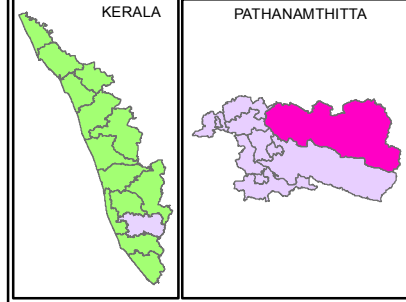
Idukki District



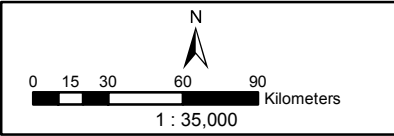
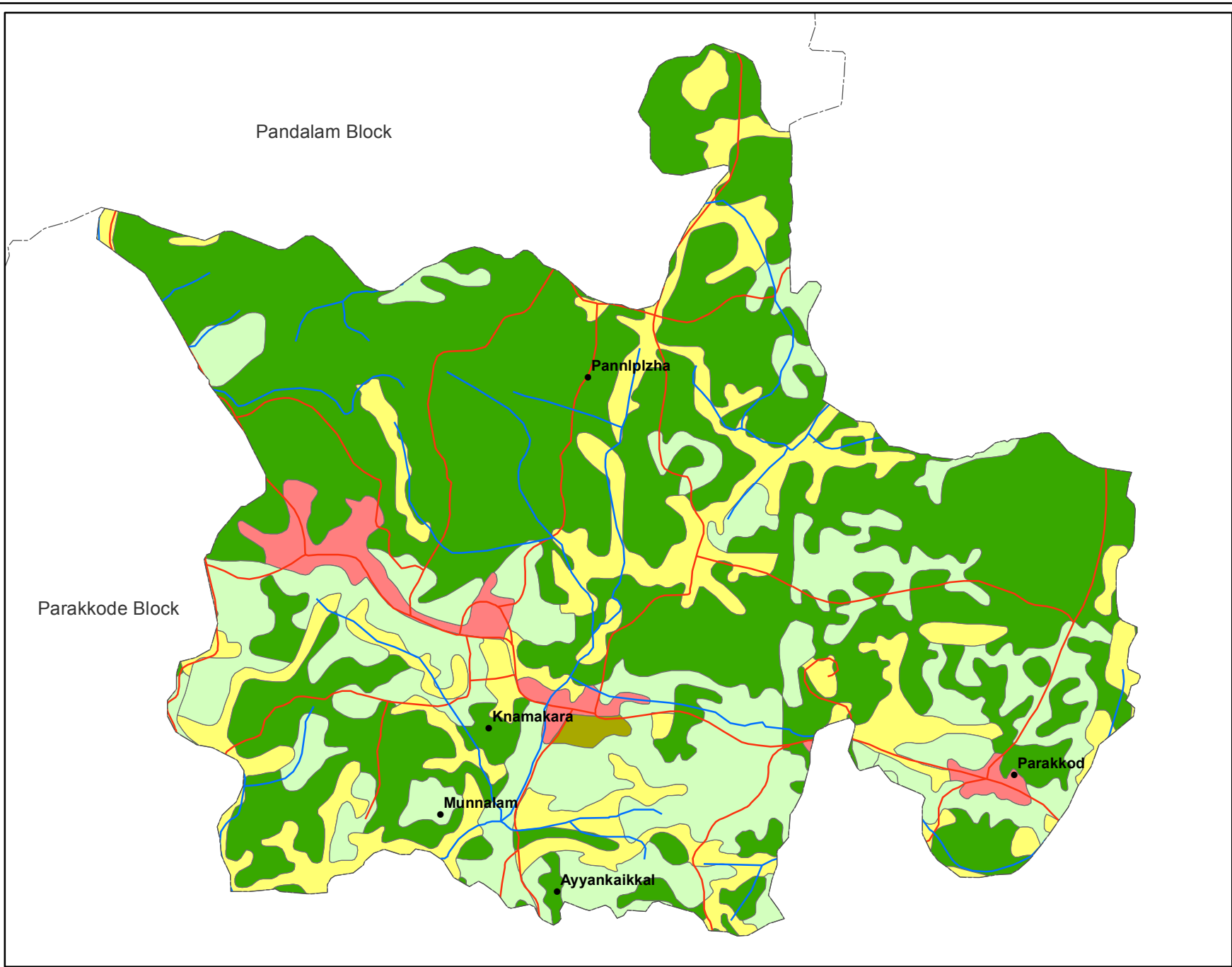
**LANDUSE
RANNI BLOCK
PATHANAMTHITTA DISTRICT**

Legend

- Roads
- Drains
- Built-up land (Cities/Town/Villages)
- Crop land(Kharif)
- Double crop(Kharif+Rabi)
- Agriculture Plantation(Arcanut)
- Agriculture plantation(Mixed)
- Agriculture plantation(Pepper)
- Agriculture plantation(Rubber)
- Forest Deciduous(Dense)
- Forest Evergreen(Dense)
- Forest Evergreen(Open)
- Forest plantations
- Forest Deciduous(Scrub/Degrade)
- Grass land
- Land with scrub
- Mining/industrial waste
- Barren rocky/stony waste/sheet rock
- Sandy Area
- Wetlands (Waterlogged)
- River/Waterbodies

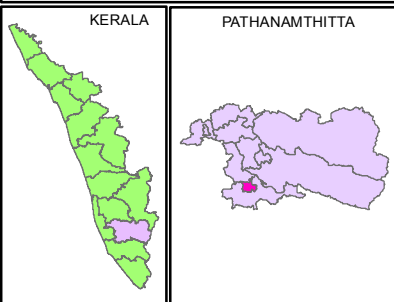


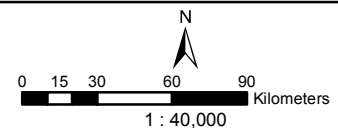
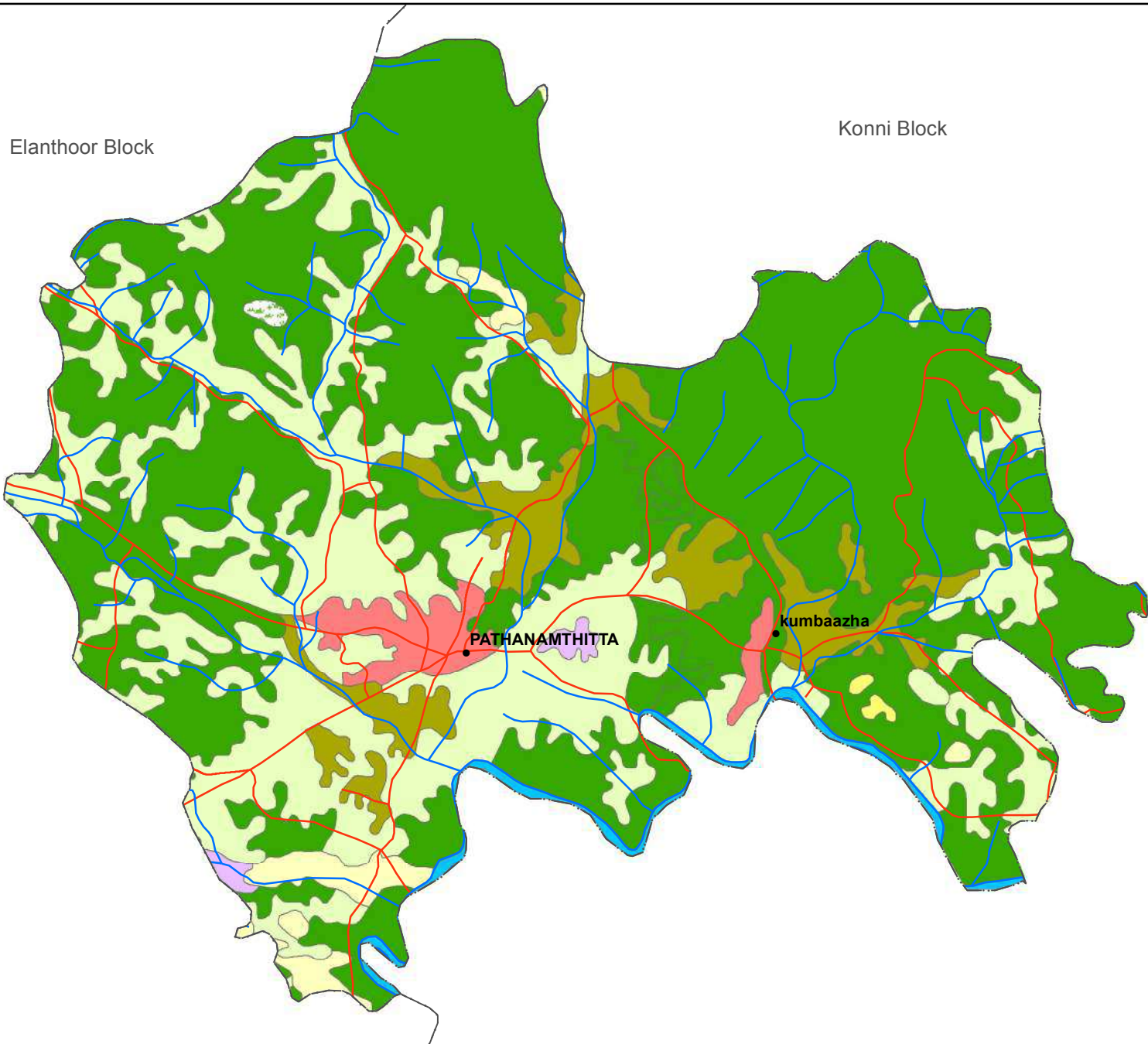
TAMILNADU



**LANDUSE
ADOOR MUNICIPALITY
PATHANAMTHITTA DISTRICT**

- Legend**
- Place Names
 - Roads
 - Drains
 - Built-up(Cities/Town/Villages)
 - Double crop(Kharif+Rabi)
 - Agriculture plantation(Rubber)
 - Agriculture plantation(Mixed)
 - Fallow Land

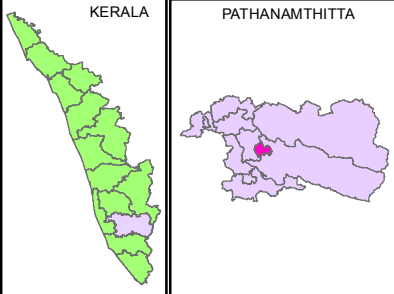




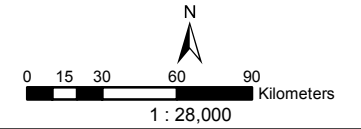
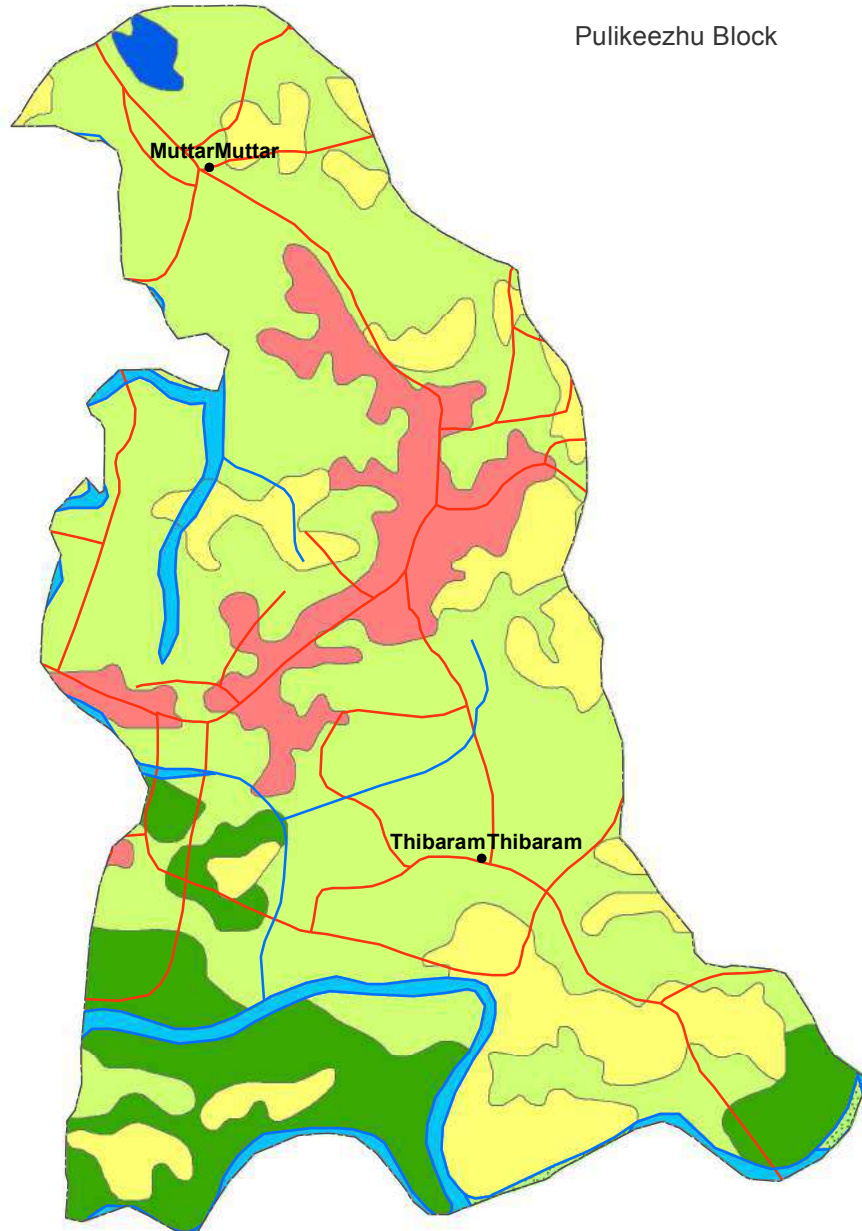
LANDUSE
PATHANAMTHITTA MUNICIPALITY
PATHANAMTHITTA DISTRICT

Legend

- Place Names
- Roads
- Drains
- Built-up land (Cities/Town/Villages)
- Crop land(Kharif)
- Double crop(Kharif+Rabi)
- Agriculture plantation(Mixed)
- Agriculture plantation(Rubber)
- Fallow Land
- Land with scrub
- Barren rocky/stony waste/sheet rock
- River/Waterbodies



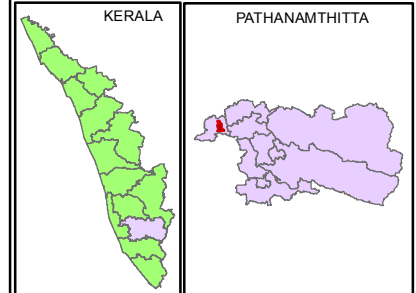
Pulikeezhu Block



LANDUSE
THIRUVALLA MUNICIPALITY
PATHANAMTHITTA DISTRICT

Legend

- Place Names
- Roads
- Drains
- Built-up land(Cities/Town/Villages)
- Double crop(Kharif+Rabi)
- Agriculture plantation(Mixed)
- Agriculture plantation(Rubber)
- Grass land
- Wetlands (Waterlogged)
- River/Waterbodies



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 which are certainly superior natural pesticides than their chemical equivalents. 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.

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 BLOCKS, GRAMA PANCHAYATS OF
PATHANAMTHITTA DISTRICT**

Block	Panchayat
Elanthoor	Chenneerkkara
	Elanthur
	Kozhancherry
	Mallappuzhassery
	Naranganam
	Omallur & Cherukol
Kulanada	Aranmula
	Kulanada
	Mezhuveli
Ranni	Chittar
	Naranamoozhi
	Ranni
	Ranni-Angadi
	Ranni-Pazhavangadi
	Ranni-Perunadu
	Seethathodu
	Vadasserikkara
	Vechuchira
Konni	Aruvappulam
	Konni
	Malayalapuzha
	Mylappra
	Pramadam
	Thannithodu
	Vallikkodu
Pandalam	Pandalam
	Pandalam – Thekkekara
	Thumbamon
Parakkod	Enadimangalam
	Erath
	Ezhamkulam
	Kadambanadu
	Kalanjoor
	Kodumon
	Pallickal (Pta)

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). 11309.47 Sq.km of forest cover includes reserve forest (9176.30 Sq.km), proposed reserve (295.37 sq.km), vested forest (1837.79 sq.km). Tropical climate favours forests with rich biodiversity and endemism. Pathanamthitta is one of the wide ranges of forest area district in Kerala State covers 1533.79 sq.km. accounts more than 50% of total geographical area. Forest in the district can be broadly classified as evergreen, semi evergreen and moist deciduous. This is mainly located in Mallappally, Ranni, Kozhenchery and Adoor taluks. Timber is the most important forest product in the district.

Table: 13.1

CLASSIFICATION OF FOREST TYPES AS ON 31-03-2012

Sl. No.	Type	Area (km ²)	Percentage 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	1525.52	13.49
6	Grass Lands	501.08	4.43
7	Others	1011.65	8.95
	Total	11309.47	100.00

Table: 13.2

**CLASSIFICATION OF FOREST AREA ACCORDING TO UTILIZATION AS ON
31-03-2012**

Sl. No.	Mode of Utilisation	Area (km ²)	Percentage of total
1	Dense Forests/Degraded Forest	8952.17	79.16
2	Plantation	1525.52	13.49
3	Area under lease	421.27	3.72
4	Forest land diverted under FCA	410.49	3.63
	Total	11309.47	100.00

Table: 13.3

**DISTRICT WISE FOREST AREA (APPROX) BY LEGAL STATUS AS ON
31-03-2012**

District	Division	Reserve Forest/Proposed Reserve	Vested Forest + EFL	(Km ²)
				Total
Pathanamthitta	Konni	253.27		253.27
	Ranni	1057.49	1.56	1059.06
	Achankovil	221.45		221.45
	Total	1532.21	1.56	1533.78

Table: 13.4

DISTRICT WISE FOREST AREA AS ON 31-03-2012

Sl.No.	District	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	Kasaragode	119.84
	Total	11309.41

Table: 13.5

DISTRIBUTION OF FOREST AREA ACCORDING TO LEGAL STATUS(Km²)

Reserve Forest	Proposed Reserve	Vested Forest + EFL	Total
9176.30	295.37	1837.79	11309.47
81.14%	2.61	16.25%	100%

Source: Forest Statistics, Forest Department

KERALA - FOREST COVER



NOT TO SCALE

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.

Pathanamthitta district has a unique position in Agricultural sector. Of the total geographical area of 265277 ha, total cropped area covers 99719 ha. Area under paddy cultivation was 14234 ha during 1990-91 period and now it had declined to 2280 ha in 2012-13. Rubber is the dominant crop among plantation crops and district stands 3rd position in this cultivation. 50540 ha of land were under rubber cultivation and a production of 79425 tonnes during the year 2012-13. Tapioca is another major food crop next to paddy and covers an area of 5420 ha. This cultivation is mainly concentrated in Parakode, Pandalam and Ranni blocks. Coconut also enjoys an important position in the agricultural area of the district and stands 2nd position among cultivation. During 2000-2001 period coconut cultivation was 126 million numbers and now it had declined to 110.04 million numbers. Parakode, Mallappalli and Koipram cover the maximum area under coconut cultivation. Banana and other plantains are cultivated in different parts of the district. Perennial crops are also cultivating in this district.

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
2012-13	265277	155214	16126	180	0
2011-12	265277	155214	16484	165	0
2010-11	265277	155214	16361	220	0

Year	Land under misc. tree crops	Cultivable waste	Fallow other than current fallow	Current fallow	Marshy land
1	7	8	9	10	11
2012-13	125	1784	2631	4577	0
2011-12	126	2323	2595	4314	0
2010-11	102	1538	2876	4219	0

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
2012-13	2698	165	118	81659	18060	99719
2011-12	2698	165	122	81071	21314	102385
2010-11	2698	165	112	81772	21669	103441

Table: 14.2

BLOCK WISE AREA OF CROPS 2012-13**(Area in Ha)**

Sl. No.	Name of Block	Paddy			Tapioca			Drum stick	Amaranthus	Brinjal	Ladies finger	Bitter gourd
		Autumn	Winter	Summer	Autumn	Winter	Summer					
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Pulikeezhu		41.84	1541.85	8.67	53.09	57.21	33.85	5.04	2.58	1.69	4.61
2	Koipram	10.11	45.20	99.08	41.15	153.71	115.65	54.25	8.9	8.43	5.76	8.64
3	Parakkod	14.77	171.73		312.90	878.34	1043.17	56.58	13.78	18.38	11.18	19.39
4	Pandalam	8.53	27.93	94.74	179.14	302.05	472.94	48.96	8.66	7.78	1.76	9.53
5	Elanthoor	0.09	26.86		54.95	109.40	153.70	49.16	5.2	4.94	3.71	8.05
6	Konni	0.06	70.26		70.86	136.16	260.30	30.95	7.61	4.62	3.46	6.74
7	Ranni				66.79	201.87	297.20	82.92	11.53	10.21	8.96	11.25
8	Mallappalli		14.69	41.42	56.62	100.11	207.69	43.27	8.61	8.01	6.75	7.06
	Blocks Total	33.56	398.51	1777.09	791.08	1834.73	2607.86	399.94	69.33	64.95	43.27	75.27
	Municipalities		0.55	70.00	20.45	67.76	98.47	41.18	3.24	2.36	2.17	2.78
	District Total	33.56	399.06	1847.09	811.53	1902.49	2706.33	441.12	72.57	67.31	45.44	78.05

Table: 14.2 Continued.....

(Area in Ha)

Sl. No.	Name of Block	Snake gourd	Little gourd (Koval)	Ash gourd (Kumbalam)	Payar (Achinga)	Pumpkin (Mathan)	Cucumber (Vellari)	Bottle gourd	Green chilli	Cabbage	Tomato	Cauli flower
1	2	14	15	16	17	18	19	20	21	22	23	24
1	Pulikeezhu	4.27	6.99	0.74	8.15	0.93	1.13		0.28		0.03	
2	Koipram	4.82	9.21	3.79	14.3	4.4	5.82		4.74		0.03	
3	Parakkod	17.01	17.44	4.42	57.54	5.11	4.87	0.01	8.58		0.03	
4	Pandalam	16.26	8.68	3.44	36.4	3.32	3.69		2.94			0.02
5	Elanthoor	6.19	7.99	2.83	15.73	3.39	2.67		3.17	0.65		
6	Konni	5.55	6.79	2.95	12.34	3.19	3.06		3.23			
7	Ranni	6.59	13.67	13.11	18.73	9.38	3.53		5.56			
8	Mallappalli	14.11	9.62	5.76	21.02	4.96	6.62		7.7		0.01	
	Blocks Total	74.8	80.39	37.04	184.21	34.68	31.39	0.01	36.2	0.65	0.10	0.02
	Municipalities	3.20	3.5	0.82	6.92	1	0.58		0.64			
	District Total	78.00	83.89	37.86	191.13	35.68	31.97	0.01	36.84	0.65	0.10	0.02

Table: 14.2 Continued.....

(Area in Ha)

Sl. No.	Name of Block	Other Vegetables	Elephant foot yam	Colocasia	Yam	Koorka	Sweet potato	Nana kizhangu	Other tubers	Ginger	Turmeric	Coconut
1	2	25	26	27	28	29	30	31	32	33	34	35
1	Pulikeezhu	9.63	38.67	51.59	8.02		0.02	1.82		6.2	1.62	1924.56
2	Koipram	10.09	97.02	92.14	31.93		0.01	2.64		10.81	5.62	1982.53
3	Parakkod	22.89	406.61	327.73	101.51	1.6	0.12	14.46	3.08	93.89	19.28	1920.92
4	Pandalam	15.22	160.93	154.3	53.7	0.21		13.06		55.18	9.53	1485.3
5	Elanthoor	6.93	73.81	111.03	33.43			5.53		24.8	4.14	1216.56
6	Konni	6	90.82	78.63	35.48	0.48		5.14		45.48	8.53	1790.76
7	Ranni	8.19	138.92	112.55	69.61		0.09	1.46		36.89	15.17	1913.97
8	Mallappalli	3.85	93.69	97.12	31.07	0.04	0.02	0.35	0.65	9.83	6.5	2044.3
	Blocks Total	82.8	1100.47	1025.09	364.75	2.33	0.26	44.46	3.73	283.08	70.39	14278.90
	Municipalities	2.73	34.53	76.84	12.29	0.22		2.21		10.7	2.71	1153.87
	District Total	84.53	1135.00	1101.93	377.04	2.55	0.26	46.67	3.73	293.78	73.10	15432.77

Table: 14.2 Continued.....

(Area in Ha)

Sl. No.	Name of Block	Arecanut	Cashew	Pepper	Jack	Mango tree	Tamarind	Clove	Nutmeg	Cocoa	Pappaya	Banana
1	2	36	37	38	39	40	41	42	43	44	45	46
1	Pulikeezhu	59.39	48.73	60.51	203.16	200.54	20.82	1.43	81.95	48.05	60.03	106.96
2	Koipram	119.85	71.31	151.14	242.01	174.35	36.82	1.38	143.87	91.6	76.84	182.69
3	Parakkod	108.58	72.43	171.59	273.65	162.84	28.54	2.54	7.55	3.28	75.17	569.64
4	Pandalam	126.57	78.88	153.83	310.01	170.56	27.18	3.57	34.29	14.01	69.12	254.09
5	Elanthoor	118.87	37.33	131.92	274.15	186.21	22.94	0.94	59.61	28.32	59.18	135.26
6	Konni	175.93	44.67	234.48	297.26	106.23	16.62	1.96	28.64	22.44	52.93	193.97
7	Ranni	235.7	102.62	425.17	468.62	229.08	27.24	1.88	67.93	116.00	118.16	385.52
8	Mallappalli	165.72	58.84	278.2	315.09	163.96	26.33	0.49	48.69	62.93	57.65	113.13
	Blocks Total	1110.61	514.81	1606.84	2383.95	1393.77	206.49	14.19	472.53	386.63	569.08	1941.26
	Municipalities	85.89	17.52	85.29	170.42	125.73	22.71	0.39	32.84	4.43	61.3	78.38
	District Total	1196.50	532.33	1692.13	2554.37	1519.50	229.20	14.58	505.37	391.06	630.38	2019.64

Table: 14.2 Continued.....

(Area in Ha)

Sl. No.	Name of Block	Betel leaves	Pine apple	Plantain	Sugar cane	Lemon grass	Fodder grass	Green Manure Plants	Teak	Medicinal Plants
1	2	47	48	49	50	51	52	53	54	55
1	Pulikeezhu		2.67	96.04	6.07		6.6	105.34	110.36	1.69
2	Koipram		12.20	169.55	3.24	0.05	33.74	144.72	249.05	3.67
3	Parakkod	12.14	42.15	252.15			18.78	64.63	129.57	3.24
4	Pandalam	11.22	15.67	174.82			16.84	48.12	158.36	2.59
5	Elanthoor	2.81	11.54	197.09			21.12	68.62	147.63	4.01
6	Konni	1.43	25.45	181.32	0.4	0.32	24.78	114.24	265.39	5.87
7	Ranni	0.73	38.52	242.57			20.45	92.19	421.35	57.83
8	Mallappalli	0.2	17.33	176.48	0.01		46.08	170.14	145.83	5.77
	Blocks Total	28.53	165.53	1490.02	9.72	0.37	188.39	808	1627.54	84.67
	Municipalities	0.73	2.9	159.39			4.97	67.8	135.97	2.87
	District Total	29.26	168.43	1649.41	9.72	0.37	193.36	875.8	1763.51	87.54

Table: 14.3

BLOCK WISE AREA OF CROPS 2011-12**(Area in Ha)**

Sl. No.	Name of Block	Paddy			Tapioca			Drum stick	Amaranthus	Brinjal	Ladies finger	Bitter gourd
		Autumn	Winter	Summer	Autumn	Winter	Summer					
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Pulikeezhu		157.79	1905.15	6.45	63.83	58.67	31.67	3.89	2.5	2.29	4.28
2	Koipram		17.90	83.18	58.43	190.71	221.92	52.51	9.63	6.57	5.43	10.12
3	Parakkod	30.28	145.05	1.61	325.65	779.75	1206	77.16	19.75	11.81	10.81	21.17
4	Pandalam	6.25	38.53	169.02	164.25	372.86	486.86	50.57	11.91	5.82	1.65	9.36
5	Elanthoor	0.12	45.95	2.06	57.51	115.01	149.25	53.33	5.71	5.27	3.79	5.73
6	Konni	8.45	57.56	1.01	72.94	151.1	253.38	29.36	10.45	3.95	3.17	7.15
7	Ranni				73.77	214.2	303.28	90.72	12.93	12.35	9.45	11.28
8	Mallappalli		11.20	44.74	80.65	106.2	243.09	52.13	8.78	8.14	6.38	6.43
	Blocks Total	45.1	473.98	2206.77	839.65	1993.66	2922.45	437.45	83.05	56.41	42.97	75.52
	Municipalities	0.32	0.84	75.48	34.47	103.63	107.33	57.19	3.49	3.32	2.32	2.97
	District Total	45.42	474.82	2282.25	874.12	2097.29	3029.78	494.64	86.54	59.73	45.29	78.49

Table: 14.3 Continued.....

(Area in Ha)

Sl. No.	Name of Block	Snake gourd	Little gourd (Koval)	Ash gourd (Kumbalam)	Payar (Achinga)	Pumpkin (Mathan)	Cucumber (Vellari)	Bottle gourd	Green chilli	Cabbage	Tomato	Other Vegetables
1	2	14	15	16	17	18	19	20	21	22	23	24
1	Pulikeezhu	3.59	5.83	0.70	8.42	0.88	1.02		0.17			8.33
2	Koipram	5.93	10.56	4.42	15.43	7.42	5.41		7.04			9.44
3	Parakkod	17.08	19.65	5.69	63.71	6.84	5.80		14.87			35.56
4	Pandalam	12.13	9.02	3.74	36.30	3.34	2.99		2.62			19.45
5	Elanthoor	5.00	6.83	2.90	13.23	3.73	2.44	0.30	3.26			8.43
6	Konni	6.68	6.33	3.05	14.45	3.27	2.21		2.76	0.09		5.71
7	Ranni	7.96	14.84	15.17	20.15	10.49	4.26		5.09			7.70
8	Mallappalli	4.67	8.86	5.91	10.94	4.96	3.93		7.28		0.01	5.16
	Blocks Total	63.04	81.92	41.58	182.63	40.93	28.06	0.30	43.09	0.09	0.01	99.78
	Municipalities	3.30	4.03	0.95	9.89	1.34	0.48		1.08			3.57
	District Total	66.34	85.95	42.53	192.52	42.27	28.54	0.30	44.17	0.09	0.01	103.35

Table: 14.3 Continued.....

(Area in Ha)

Sl. No.	Name of Block	Elephant foot yam	Colocasia	Yam	Koorka	Sweet potato	Nana kizhangu	Other tubers	Pulses	Ginger	Turmeric	Coconut
1	2	25	26	27	28	29	30	31	32	33	34	35
1	Pulikeezhu	39.03	49.22	8.94		0.05	1.28			4.12	1.72	1931.86
2	Koipram	109.00	111.30	44.11	0.08	0.20	3.89			10.06	5.37	2030.42
3	Parakkod	482.37	364.75	169.97	3.43	0.21	15.15	0.62		107.43	31.21	2439.78
4	Pandalam	148.51	146.57	61.19	0.60	0.28	18.95			63.68	13.73	1501.09
5	Elanthoor	73.52	98.56	32.30			4.90		0.90	24.50	3.77	1353.67
6	Konni	82.35	77.37	31.22	0.19	0.05	5.91		1.88	48.82	8.63	1853.89
7	Ranni	136.67	112.31	70.08			1.99			34.25	17.67	1918.17
8	Mallappalli	97.76	91.72	30.30	0.03	0.03	1.23			10.65	6.71	2058.01
	Blocks Total	1169.21	1051.80	448.11	4.33	0.82	53.3	0.62	2.78	303.51	88.81	15086.89
	Municipalities	35.83	95.75	13.8	0.14		2.41	0.16		10.26	2.35	1097.67
	District Total	1205.04	1147.55	461.91	4.47	0.82	55.71	0.78	2.78	313.77	91.16	16184.56

Table: 14.3 Continued.....

(Area in Ha)

Sl. No.	Name of Block	Areca nut	Cashew	Pepper	Jack	Mango tree	Tamarind	Clove	Nutmeg	Cocoa	Pappaya
1	2	36	37	38	39	40	41	42	43	44	45
1	Pulikeezhu	54.67	49.37	56.14	208.38	205.44	17.97	1.87	76.25	41.71	55.93
2	Koipram	124.81	76.96	162.39	227.35	159.44	35.73	1.52	141.67	96.62	68.74
3	Parakkod	117.50	111.69	194.18	330.47	197.85	39.11	2.30	11.58	3.06	95.43
4	Pandalam	109.83	92.14	141.97	299.07	178.68	36.02	4.77	38.12	14.80	72.96
5	Elanthoor	136.22	39.42	146.18	301.03	227.55	25.95	0.49	53.25	29.09	60.58
6	Konni	176.60	47.10	228.90	276.24	107.99	20.66	0.90	35.52	25.25	56.36
7	Ranni	248.47	111.89	459.36	394.85	193.30	26.37	1.91	68.67	112.46	116.12
8	Mallappalli	164.50	69.53	263.47	285.12	154.32	27.64	0.75	47.54	68.84	56.76
	Blocks Total	1132.60	598.10	1652.59	2322.51	1424.57	229.45	14.51	472.60	391.83	582.88
	Municipalities	86.51	22.81	80.62	189.61	155.28	24.20	1.11	34.16	4.07	59.11
	District Total	1219.11	620.91	1733.21	2512.12	1579.85	253.65	15.62	506.76	395.90	641.99

Table: 14.3 Continued.....

(Area in Ha)

Sl. No.	Name of Block	Banana	Pine apple	Plantain	Orange	Sugar cane	Lemon grass	Fodder grass	Green Manure Plants	Vanila	Teak	Medicinal Plants
1	2	46	47	48	49	50	51	52	53	54	55	56
1	Pulikeezhu	83.43	2.06	56.51	0.03	17.1		31.12	117.40	0.35	134.65	1.36
2	Koipram	188.83	13.26	132.52		8.18	0.12	28.82	158.39	0.67	212.31	3.18
3	Parakkod	580.33	48.15	235.01				26.73	94.87	0.86	131.14	1.38
4	Pandalam	236.59	20.91	197.27				22.55	54.39	2.76	148.81	2.36
5	Elanthoor	113.96	24.33	228.09			0.51	23.21	78.58	0.09	155.6	2.48
6	Konni	219.77	22.61	166.47			0.71	24.14	143.47	0.12	311.9	7.9
7	Ranni	361.80	35.41	230.95				23.22	82.86	1.89	387.01	117.87
8	Mallappalli	123.11	28.68	160.06				37.18	153.32	0.69	149.93	5.92
	Blocks Total	1907.82	195.41	1406.88	0.03	25.28	1.34	216.97	883.28	7.43	1631.35	142.45
	Municipalities	58.41	1.58	168.67			0.35	3.46	69.76		138.77	3.28
	District Total	1966.23	196.99	1575.55	0.03	25.28	1.69	220.43	953.04	7.43	1770.12	145.73

Table: 14.4

BLOCK WISE PRODUCTION OF CROPS 2012-13**(Production in Tonnes)**

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	Pulikeezhu		143.32	4383.23	20.02	12.18	3.02	47.90	15.43	0.79	752.06
2	Koipram	47.28	109.99	191.64	61.53	26.63	11.46	73.09	27.21	1.28	1652.42
3	Parakkod	31.84	432.80		131.95	261.29	29.49	113.90	58.30	0.81	3473.71
4	Pandalam	12.96	40.00	170.86	75.53	124.65	14.58	93.84	32.13	1.16	1869.31
5	Elanthoor	0.17	66.70		43.79	69.31	7.74	97.32	23.57	1.04	978.85
6	Konni	0.07	159.30		112.78	114.42	11.60	100.04	23.30	1.07	1919.35
7	Ranni				169.21	158.82	43.84	112.69	26.49	1.92	2890.16
8	Mallappalli		30.67	94.56	97.92	20.75	8.84	72.29	22.05	1.02	1126.73
	Blocks Total	92.32	982.78	4840.29	712.73	788.05	130.57	711.07	228.48	9.09	14662.59
	Municipalities		1.45	124.67	40.37	25.69	4.87	54.82	15.12	0.82	547.53
	District Total	92.32	984.23	4964.96	753.1	813.74	135.44	765.89	243.60	9.91	15210.12

Table: 14.4 Continued.....

(Production in Tonnes)											
Sl. No.	Name of Block	Plantain	Pineapple	Tapioca	Sugar cane	Coconut (Million No.)	Nutmeg	Cashew	Cocoa	Betel leaves	Mango
1	2	13	14	15	16	17	18	19	20	21	22
1	Pulikeezhu	851.58	15.56	3147.70	26.95	13.93	49.74	12.76	50.06		899.02
2	Koipram	1608.35	62.11	12459.71	16.84	15.86	88.76	27.02	111.48		826.41
3	Parakkod	2389.88	404.75	89485.14		17.43	3.41	25.35	6.79	298.03	784.88
4	Pandalam	1592.26	156.89	38463.84		9.32	13.16	28.71	15.41	136.21	1118.53
5	Elanthoor	3128.21	97.93	11777.71		7.33	28.37	10.45	26.73	75.73	1259.71
6	Konni	2020.81	234.25	17582.92		14.21	7.93	7.90	15.68	82.22	635.68
7	Ranni	2689.37	189.82	23978.32		11.62	35.18	25.34	92.45	23.47	967.40
8	Mallappalli	1619.12	110.44	11900.50		13.42	26.14	14.76	93.51	11.19	1545.15
	Blocks Total	15899.58	1271.75	208795.80	43.79	103.12	252.69	152.29	412.11	626.85	8036.78
	Municipalities	1531.52	22.00	6047.81		6.92	14.03	8.76	4.24	15.8	606.91
	District Total	17431.10	1293.75	214843.70	43.79	110.04	266.72	161.05	416.35	642.65	8643.69

Table: 14.5

BLOCK WISE PRODUCTION OF CROPS 2011-12**(Production in Tonnes)**

Sl. No.	Name of Block	Rice			Canegur	Black Pepper	Cured Ginger	Cured Turmeric	Arecanut	Tamarind	Jack (Million No.)
		Autumn	Winter	Summer							
1	2	3	4	5	6	7	8	9	10	11	12
1	Pulikeezhu		579.61	6608.67	71.82	26.27	8.61	3.07	54.20	22.32	0.83
2	Koipram		44.73	227.00	40.08	79.24	27.85	10.32	90.00	39.31	1.15
3	Parakkod	61.61	327.83	2.70		143.88	384.38	65.79	85.81	102.40	0.92
4	Pandalam	12.61	99.87	343.79		117.83	201.42	25.23	71.92	96.04	0.86
5	Elanthoor	0.33	138.23	5.46		60.08	71.41	6.97	89.42	101.67	0.84
6	Konni	20.72	157.69	2.63		107.35	132.10	14.17	101.20	30.13	0.98
7	Ranni					173.63	136.76	51.52	136.72	38.15	1.32
8	Mallappalli		30.16	81.89		116.98	17.49	8.61	73.21	25.26	1.21
	Blocks Total	95.27	1378.12	7272.14	111.90	825.26	980.02	185.68	702.48	455.28	8.11
	Municipalities	0.72	2.00	241.10		33.63	28.98	3.68	51.58	30.88	0.88
	District Total	95.99	1380.12	7513.24	111.90	858.89	1009.00	189.36	754.06	486.16	8.99

Table: 14.5 Continued.....

(Production in Tonnes)

Sl. No.	Name of Block	Banana	Other Plantain	Pine apple	Tapioca	Pappaya	Coconut (Million No.)	Nutmeg	Cashew	Cocoa	Betel leaves
1	2	13	14	15	16	17	18	19	20	21	22
1	Pulikeezhu	638.41	335.33	9.21	4889.39	332.44	18.61	45.36	16.73	40.91	
2	Koipram	1736.80	1038.82	68.75	18842.40	527.16	19.75	84.15	27.16	138.45	
3	Parakkod	4270.88	2910.36	450.63	93900.62	1090.38	23.51	7.89	38.53	3.71	237.49
4	Pandalam	1836.25	1778.38	183.52	38558.61	642.92	11.55	26.03	33.90	14.71	203.28
5	Elanthoor	928.02	2700.35	185.41	11161.55	396.67	9.36	16.08	8.94	20.59	201.96
6	Konni	1997.91	1626.07	214.61	17127.44	263.14	13.97	13.24	13.75	14.49	28.62
7	Ranni	2713.77	2081.78	156.12	23428.28	937.08	10.81	28.22	34.01	88.39	62.58
8	Mallappalli	1135.09	1180.28	160.75	14645.04	545.29	20.28	32.56	18.70	89.49	
	Blocks Total	15257.13	13651.37	1429.00	222553.30	4735.08	127.84	253.53	191.72	410.74	733.93
	Municipalities	374.27	1612.41	10.65	10192.47	617.39	9.17	13.36	9.83	10.65	35.8
	District Total	15631.40	15263.78	1439.65	232745.80	5352.47	137.01	266.89	201.55	421.39	769.73

Table: 14.6

PRODUCTION OF IMPORTANT CROPS**(Production in Tonnes)**

Year	Rice			Canegur	Black pepper	Green chillies	Pulses including Tur	Cured ginger	Cured turmeric	Arecanut
	Autumn	Winter	Summer							
1	2	3	4	5	6	7	8	9	10	11
2012-13	92	984	4965		753	37		816	135	766
2011-12	96	1380	7513	112	859	44	2	1009	189	754
2010-11	245	1093	5290		782	41		985	172	674

Year	Tamarind	Mango	Jack (Million Nos)	Banana	Other plantain	Pineapple	Tapioca	Sweet potato	Pappaya
1	12	13	14	15	16	17	18	19	20
2012-13	244	8644	10	15210	17431	1294	214843		6003
2011-12	486	13874	9	15631	15264	1440	232746	17	5353
2010-11	447	13005	10	16321	11565	1221	235257	17	6298

Year	Drumstick	Coconut (Million Nos.)	Nutmeg	Rubber	Cocoa	Processed cardamom	Raw cashew nuts	Betel leaves	Clove (dry)	Sugar cane (Gur)
1	21	22	23	24	25	26	27	28	29	30
2012-13	291	110	267	79425	416	24	161	643	2	44
2011-12	368	137	267	80530	421	24	202	770	2	
2010-11	389	112	188	79220	350	9	204	762	2	102

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
Coconut	Cake to seeds crushed	60 percent
	Copra to nuts	6,773 nuts gives one tonne of copra (average), presently it is 7250-7500 nuts due to mite attack
Pepper	Cake to copra	38 percent
	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
Arecanut	Husked Champan to unhusked	35 percent by weight
Supari	(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)

1.5 tonne (grade 1)
1.3 tonne (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

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. Pathanamthitta district stands 3rd position in Rubber cultivation among the districts in Kerala in the year 2012-13. The total area under rubber cultivation in this district was 50540 hectares and production 79425 tonnes in that period.

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. Kerala accounts for 6% of area under tea production. District is having no area under tea plantation.

Coffee:- Total area under coffee plantation in Kerala is recorded as 85359 hectares and production is 68175 tonnes. District is having no area under coffee plantation.

Cocoa:- Cocoa production was estimated as 13362 tonnes during 2012-13 period, all over Kerala. Total area under cocoa plantation in this district was reported as 391 hectares and a production of 416.40 tonnes in the year 2012-13.

Table: 15.1

RUBBER STATISTICS

Type- wise Production & Consumption of NR & SR	December 2013	December 2012	April to Dec 2013	April to Dec 2012	April 2012 to March 2013	(Metric Tonnes) Percentage increase (+)/ decrease (-) of (3) & (4)
	1	2	3	4	5	6
PRODUCTION						
Natural Rubber (NR)						
Ribbed Smoked Sheet (RSS)	83925	86115	465895	514230	667225	
Solid Block Rubber	10475	12340	80135	88350	122125	
Latex Concentrates (drc)	7300	8460	49280	53975	73150	
Others	6300	7085	36690	40645	51200	
Total	108000	114000	632000	697200	913700	-9.4
Synthetic Rubber (SR)						
Styrene Butadiene (SBR)	1923	1764	16401	13931	19296	
Poly Butadiene (BR)	7510	6333	59785	58378	77038	
Others	560	781	7873	9230	12358	
Total	9993	8878	84059	81539	108692	3.1
Total NR & SR	117993	122878	716059	778739	1022392	-8.0

CONSUMPTION

Natural Rubber (NR)

Ribbed Smoked Sheet (RSS)	42180	46270	422375	439125	578050	
Solid Block Rubber	31280	23210	234680	225960	292210	
Latex Concentrates (drc)	6980	6890	58235	57150	76705	
Others	1940	2050	16110	20245	25740	
Total	82380	78420	731400	742480	972705	-1.5
Out of which Auto Tyre Manufacturers	54498	49210	485659	490142	635539	-0.9

Synthetic Rubber (SR)

Styrene Butadiene (SBR)	18510	16170	169840	147140	196530	
Poly Butadiene (BR)	13810	12060	117055	110235	145695	
Others	10020	8715	74400	76560	101935	
Total	42340	36945	361295	333935	444160	8.2
Out of which Auto Tyre Manufacturers	30744	26138	259549	244228	323412	6.3
Total NR & SR	124720	115365	1092695	1076415	1416865	1.5
Out of which Auto Tyre Manufacturers	85242	75348	745208	734370	958951	1.5

(Metric Tonnes)

Production Consumption and Stock of RR	December 2013	December 2012	April to Dec 2013	April to Dec 2012	April 2012 to March 2013
	1	2	3	4	5
Reclaimed Rubber (RR)					
Production	11030	9745	92130	87470	115670
Consumption	11125	9670	91475	86870	114595
Out of which Auto Tyre Manufacturers	4453	3650	36870	35025	45879
Stock with Manufacturers (end of month/year)	7810	6680			
IMPORT/EXPORT & STOCK NR & SR					
Import (p)					
Natural Rubber	24307	18366	260133	173441	217364
Synthetic Rubber	27582	26370	280852	251967	329585
Total NR & SR	51889	44736	540985	425408	546949
Export (p)					
Natural Rubber	695	1603	5224	10782	30594

Table: 15.2

RUBBER STOCK AT THE END OF DECEMBER 2013**(Metric tonnes)**

Natural Rubber			
With Growers	98000	Ribbed smoked sheet	177110
With Dealers & Processors	90000	Solid Block Rubber	42625
With Auto Tyre Units	65725	Latex (drc)	19195
With other manufacturing units	18275	Others	33070
Total	272000	Total	272000
Synthetic Rubber			
With Producers	6975		
With Auto Tyre Units	32295	SBR	23650
With other manufacturing units	8785	Others	24405
Total	48055	Total	48055

Table: 15.3

PERFORMANCE OF NATURAL RUBBER 2012-13

Area	758,000 Hectares (3.2% Growth)
Production	913,700 Tonnes (1.1% Growth)
Consumption	972,705 Tonnes
Import	217,364 Tonnes
Export	30,594 Tonnes
Average Market Price for RSS 4 grade	Rs.176.82/kg
Stock at the end of the year	253,000 Tonnes
Number of small holdings	1.25 Million
Number of estates	537
Average yield per hectare	1,813 kg
Customs duty on natural rubber	
Solid form	20% or Rs.20/kg whichever is lower
Latex	70% or Rs.49/kg whichever is lower
Value of Natural rubber imported	Rs.3,887.9 Crore
Value of Natural rubber exported	Rs.468.5 Crore
Value of rubber products imported	Rs.6,206.3 Crore (2011-12)
Value of rubber products exported	Rs.15,532.2 Crore
Income from NR to the growers	Rs.16,150 Crore
Cess on Natural Rubber	Rs.128.28 Crore
Number of licensed dealers	9,533
Number of licensed manufacturers	4,334
Tyre and Non-tyre NR consumption ratio	65:35
NR and SR consumption ratio	69:31
Per capita consumption of elastomer	1.16kg
Tyre industry turnover	Rs.46,000 Crore
Tyre production	122.78 Million Numbers
Value of tyre exports	Rs.4,775 Crore
World production	11.327 Million Tonne (2012)
World consumption	11.005 Million Tonne (2012)
World NR & SR consumption ratio	42:58
International price of RSS 3 grade	Rs.175.76/kg

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. As per 1996 animal husbandry report district had cattle population 2.01 lakhs and a poultry population of 1.15 lakhs. Based on 2007 live stock census report cattle population was reported as 98325 and poultry population of 694432.

Table: 16.1

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
8588	25	0	268	348	2	2	0	2	25	0

Table: 16.2

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

Primary Societies	204
Regional Unions	0
Total	204
Anand Mode (APCOS)	188
Traditional	16
Total	204

Table: 16.3

**OUTBREAKS, ATTACKS, DEATHS 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
6	36	0	62997	0	0	0	869	0	0	0	230
Hemorrhagic Septicemia				Canine Distemper				Parvo Virus			
Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated
0	0	0	690	0	0	0	338	0	0	0	400
Ranikhet				Fowl Pox				Infectious Bursal Disease			
Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated	Out Break	Attack	Death	Protected/ Vaccinated
0	0	0	523600	0	0	0	0	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	26057	0	0	0	22180	6	36	0	637361

Source: Bulletin 2011, AHD.

FISHERIES

In Kerala fishing industry occupies an important position in its economy. With a coastal length of 590 Km in length, 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. Pathanamthitta district is land locked with no coastal line or backwater and hence deprived of the benefit of immense wealth of marine fish landing. FFDA (Fish Farmers Development Agency) is a body formed in the district for the development of aquaculture. It traces out suitable water areas for pisciculture and encourages the farmers by imparting training on scientific fish culture, supplying quality fish, prawn, fingerlings, technical advice, arranging loan facilities and by giving subsidies. Inland fishing development offers scope in the district. Based on 2011-12 report there were three fishing villages where fisher folk population was 2073 and fish production 1467 MT.

Table: 17.1

FRESH WATER RESOURCES IN PATHANAMTHITTA 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	390	43.28	66	3.97	-	-	6	15.48
2010	390	43.28	66	3.97	-	-	6	15.48

Table: 17.2

LIST OF INLAND FISHING VILLAGES IN PATHANAMTHITTA DISTRICT

SI.No.	Name of Villages
1	Paramala
2	Thiruvalla
3	Maramon

Table: 17.3

CHECK DAMS IN PATHANAMTHITTA DISTRICT

Year	Name of the Check dam	Area in Ha.	Location		Type of construction	Ownership
			Block	Panchayat		
2010	Gavi Estate	2.00	Ranni	Seethathodu	Earthern	Forest Dept
	Meenar Estate	1.20	Ranni	Seethathodu	Earthern	Forest Dept
	Central Meenar	1.00	Ranni	Seethathodu	Earthern	Forest Dept
	99 Plantation	0.50	Ranni	Seethathodu	Earthern	Forest Dept
Total		4.70				

Total: 17.4

SPECIES WISE INLAND FISH LANDINGS IN PATHANAMTHITTA (QTY in MT)

2008-2009		
Sl. No.	Name of Fish	Quantity
1	Prawn	197
2	Etroplus	105
3	Murrels	40
4	Mulletts	93
5	Cat fish	91
6	Jew fish	83
7	Tilapia	166
8	Labeo fimbriatus	198
9	Barbus	3
10	Mrigal	59
11	Crabs	15
12	Common crabs	24
13	Catla	52
14	Gourami	0
15	Chamos	8
16	Eels	1
17	Labeo Rohitha	24
18	Shrimp	0
19	Mussel	0
20	Edible Oyster	0
21	Miscellaneous	84
	Total	1243

2009-2010		
Sl. No.	Name of Fish	Quantity
1	Prawn	201
2	Etroplus	105
3	Murrels	40
4	Mulletts	93
5	Cat fish	92
6	Jew fish	82
7	Tilapia	164
8	Labeo fimbriatus	199
9	Barbus	4
10	Mrigal	74
11	Crabs	19
12	Common crabs	29
13	Catla	69
14	Gourami	0
15	Chamos	8
16	Eels	1
17	Labeo Rohitha	28
18	Shrimp	0
19	Mussel	0
20	Edible Oyster	0
21	Miscellaneous	78
	Total	1286

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-riverine 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

ELANTHOOR BLOCK**(Area in Ha)**

Sl. No.	Category	Chenneerkkara	Cherukol	Elanthur	Kozhancherry	Mallappuzhasseri	Naranganam	Omaller
1	Mundakan							
2	Mundakan+Puncha							
3	Other Landuses	1554.34	1358.05	1281.06	719.92	735.41	1820.43	1126.46
4	Paddy converted to Banana	15.83	8.56	8.89		10.34	14.19	21.67
5	Paddy converted to Banana + Tapioca	12.09	18.03	15.30	14.25			3.95
6	Paddy converted to Built-up land	5.79	41.98	21.52		25.45	13.66	63.93
7	Paddy converted to Coconut	28.50	1.34	32.59	6.94	32.80	4.60	47.20
8	Paddy converted to Coconut + Tapioca							
9	Paddy converted to Cultivable Waste land							
10	Paddy converted to Mixed crops	62.88	7.33	16.77	14.01	33.39	10.16	53.37
11	Paddy converted to Mixed trees							
12	Paddy converted to Rubber	11.65	15.63	20.12	27.95	5.96	7.50	22.07
13	Paddy converted to Tapioca							
14	Puncha	36.02		82.10	33.43	231.83	85.45	2.05
15	Virippu	3.58	3.50			5.66	7.42	5.67
16	Virippu+Mundakan	127.15		44.07	77.97	14.77	3.75	74.36
17	Waterbody	34.19	92.52		104.50	48.82		19.71
	Panchayat Total	1892.02	1546.94	1522.42	998.97	1144.43	1967.16	1440.44
	Block Total	10512.38						

Table: 18.2

KOIPRAM BLOCK**(Area in Ha)**

Sl. No.	Category	Ayiroor	Ezhumattoor	Eraviperoor	Koipram	Puramattom	Thottappuzhasseri
1	Mundakan			59.94	72.61	70.09	
2	Mundakan+Puncha						
3	Other Landuses	2225.16	1886.85	1451.57	1637.91	989.36	1286.62
4	Paddy converted to Banana	29.95	9.21	42.09	8.68	56.59	50.24
5	Paddy converted to Banana + Tapioca						
6	Paddy converted to Built-up land	49.99	73.45	83.02	104.35	16.61	58.62
7	Paddy converted to Coconut	133.91	145.86	232.34	242.63	98.44	133.12
8	Paddy converted to Coconut + Tapioca		0.01				
9	Paddy converted to Cultivable Waste land			14.30			
10	Paddy converted to Mixed crops		12.10	10.02	15.33		
11	Paddy converted to Mixed trees		0.01			0.01	
12	Paddy converted to Rubber		4.86			9.03	
13	Paddy converted to Tapioca						
14	Puncha			48.26	198.05	0.02	73.85
15	Virippu						
16	Virippu+Mundakan	64.64		236.74	26		
17	Waterbody	53.86		60.65	12.40	35.89	0.38
	Panchayat Total	2557.51	2132.35	2238.93	2317.96	1276.04	1602.83
	Block Total	12125.64					

Table: 18.3

KONNI BLOCK**(Area in Ha)**

Sl. No.	Category	Aruvappulam	Konni	Malayalappuzha	Mylappra	Pramadam	Thannithodu	Vallikkodu
1	Mundakan					107.04		153.38
2	Mundakan+Puncha							
3	Other Landuses	44548.01	2497.77	3019.58	1006.88	6752.35	15756.45	1244.48
4	Paddy converted to Banana		79.98	31.23	45.89	32.58	37.09	1.61
5	Paddy converted to Banana + Tapioca							
6	Paddy converted to Built-up land	31.47	22.05	8.64	9.97	96.61	8.82	6.40
7	Paddy converted to Coconut	2.28	3.91		4.79	91.47	9.01	86.32
8	Paddy converted to Coconut + Tapioca							
9	Paddy converted to Cultivable Waste land							0.01
10	Paddy converted to Mixed crops	101.00	137.59			183.86	13.47	101.50
11	Paddy converted to Mixed trees							
12	Paddy converted to Rubber	38.72		1.41	4.49	161.55	84.31	
13	Paddy converted to Tapioca							
14	Puncha			1.39		198.25		149.49
15	Virippu							
16	Virippu+Mundakan		199.40		0.01	311.21	0.02	7.24
17	Waterbody	157.05	62.32	49.62		41.89	175.56	44.61
	Panchayat Total	44878.53	3003.02	3111.87	1072.03	7976.81	16084.73	1795.04
	Block Total	77922.03						

Table: 18.4

MALLAPPALLI BLOCK**(Area in Ha)**

Sl. No.	Category	Anikkadu	Kalluppara	Kaviyur	Kottanadu	Kottangal	Kunnanthanam	Mallappalli
1	Mundakan	19.71	48.73	8.42	36.11		25.24	
2	Mundakan+Puncha							
3	Other Landuses	1587.97	1388.35	1105.88	2121.68	2051.25	1155.55	1515.45
4	Paddy converted to Banana	3.86	6.41	11.02	35.52	25.33	12.08	12.73
5	Paddy converted to Banana + Tapioca	4.24	26.22	22.55		18.89	32.83	6.60
6	Paddy converted to Built-up land	18.64	6.29	11.42	18.62	6.15	19.89	1.76
7	Paddy converted to Coconut	90.07	92.6	80.08	10.78	42.87	90.61	123.55
8	Paddy converted to Coconut + Tapioca	58.79		8.71	26.72	38.29	17.78	102.91
9	Paddy converted to Cultivable Waste land							
10	Paddy converted to Mixed crops	20.96	9.46	46.14	4.29	47.85	38.35	64.16
11	Paddy converted to Mixed trees	46.98	17.65	45.50		61.95	40.27	56.35
12	Paddy converted to Rubber	42.42	25.60	17.24		27.72	15.13	32.98
13	Paddy converted to Tapioca							
14	Puncha	9.15	16.46	30.70	13.43	11.65	60.00	22.84
15	Virippu							
16	Virippu+Mundakan	19.19	24.91	180.59			29.58	46.92
17	Waterbody	11.59	31.90	5.16		27.07		56.31
	Panchayat Total	1933.57	1694.58	1573.41	2267.15	2359.02	1537.31	2042.56
	Block Total	13407.6						

Table: 18.5

PANDALAM BLOCK**(Area in Ha)**

Sl. No.	Category	Aranmula	Kulanada	Mezhuvveli	Pandalam	Pandalam Thekkekara	Thumbamon
1	Mundakan				27.65	97.94	51.44
2	Mundakan+Puncha						
3	Other Landuses	1548.81	1507.54	1361.17	765.57	1765.35	912.39
4	Paddy converted to Banana	19.72	19.41	46.63	51.84		71.30
5	Paddy converted to Banana + Tapioca						
6	Paddy converted to Built-up land	24.76	10.54		44.60	99.31	78.92
7	Paddy converted to Coconut	151.93	116.67	135.94	103.85	158.52	77.10
8	Paddy converted to Coconut + Tapioca						
9	Paddy converted to Cultivable Waste land					5.29	
10	Paddy converted to Mixed crops	65.51	10.19	9.97	64.07	0.02	175.64
11	Paddy converted to Mixed trees						
12	Paddy converted to Rubber					0.01	
13	Paddy converted to Tapioca						
14	Puncha	296.52	1.23	8.22	1.95	64.72	14.08
15	Virippu	44.41	86.33	0.12			
16	Virippu+Mundakan	233.26	78.06	123.09	470.35	348.88	
17	Waterbody	102.67	64.67	10.29	7.24	0.29	1.96
	Panchayat Total	2487.59	1894.64	1695.43	1537.12	2540.33	1382.83
	Block Total			11537.98			

Table: 18.6

PARAKKOD BLOCK**(Area in Ha)**

Sl. No.	Category	Enadi mangalam	Erath	Ezhamkulam	Kadambanadu	Kalanjoor	Kodumon	Pallickal
1	Mundakan		241.67	102.93	78.61		267.13	287.87
2	Mundakan+Puncha		5.46	8.35	49.67			3.31
3	Other Landuses	2632.15	1787.21	2289.43	3363.26	4256.90	1087.32	1810.00
4	Paddy converted to Banana	118.85	34.31	32.57	48.50	25.47	0.03	36.08
5	Paddy converted to Banana + Tapioca							
6	Paddy converted to Built-up land	60.26	59.62	71.88	18.79	46.58	24.07	58.78
7	Paddy converted to Coconut	51.25	72.70	195.97	134.9		37.62	188.78
8	Paddy converted to Coconut + Tapioca							
9	Paddy converted to Cultivable Waste land							
10	Paddy converted to Mixed crops	56.20	10.01	9.64	185.5	16.66		
11	Paddy converted to Mixed trees							
12	Paddy converted to Rubber	196.62	20.08	65.45		228.19	86.71	6.82
13	Paddy converted to Tapioca							
14	Puncha	0.01	0.02	40.35			10.25	
15	Virippu					1.52		
16	Virippu+Mundakan	41.01	11.65	65.22	316.09	37.51	18.34	29.52
17	Waterbody							
	Panchayat Total	3156.35	2242.73	2881.79	4195.32	4612.83	1531.47	2421.16
	Block Total				21041.44			

Table: 18.7

PULIKEEZHU BLOCK**(Area in Ha)**

Sl. No.	Category	Kadapra	Kuttoor	Nedumbram	Niranam	Peringara
1	Mundakan	161.91		40.75	542.19	606.73
2	Mundakan+Puncha	178.19	49.67		96.56	1.03
3	Other Landuses	91.79	0.16	0.05	83.76	843.65
4	Paddy converted to Banana	65.48	59.47	50.99	10.34	69.18
5	Paddy converted to Banana + Tapioca					
6	Paddy converted to Built-up land	357.78	323.51	165.78	128.51	626.03
7	Paddy converted to Coconut	465.59	223.84	339.86	192.09	544.48
8	Paddy converted to Coconut + Tapioca					
9	Paddy converted to Cultivable Waste land		3.02			5.79
10	Paddy converted to Mixed crops		103.32	50.05		11.71
11	Paddy converted to Mixed trees					0.01
12	Paddy converted to Rubber					
13	Paddy converted to Tapioca					
14	Puncha	108.02	53.52	17.08		13.09
15	Virippu					0.02
16	Virippu+Mundakan	137.67	0.01	227.77	0.04	889.65
17	Waterbody	164.07	41.98	38.22	19.4	104.7
	Panchayat Total	1730.5	858.5	930.55	1072.89	3716.07
	Block Total	8308.51				

Table: 18.8

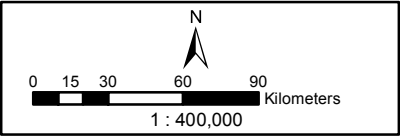
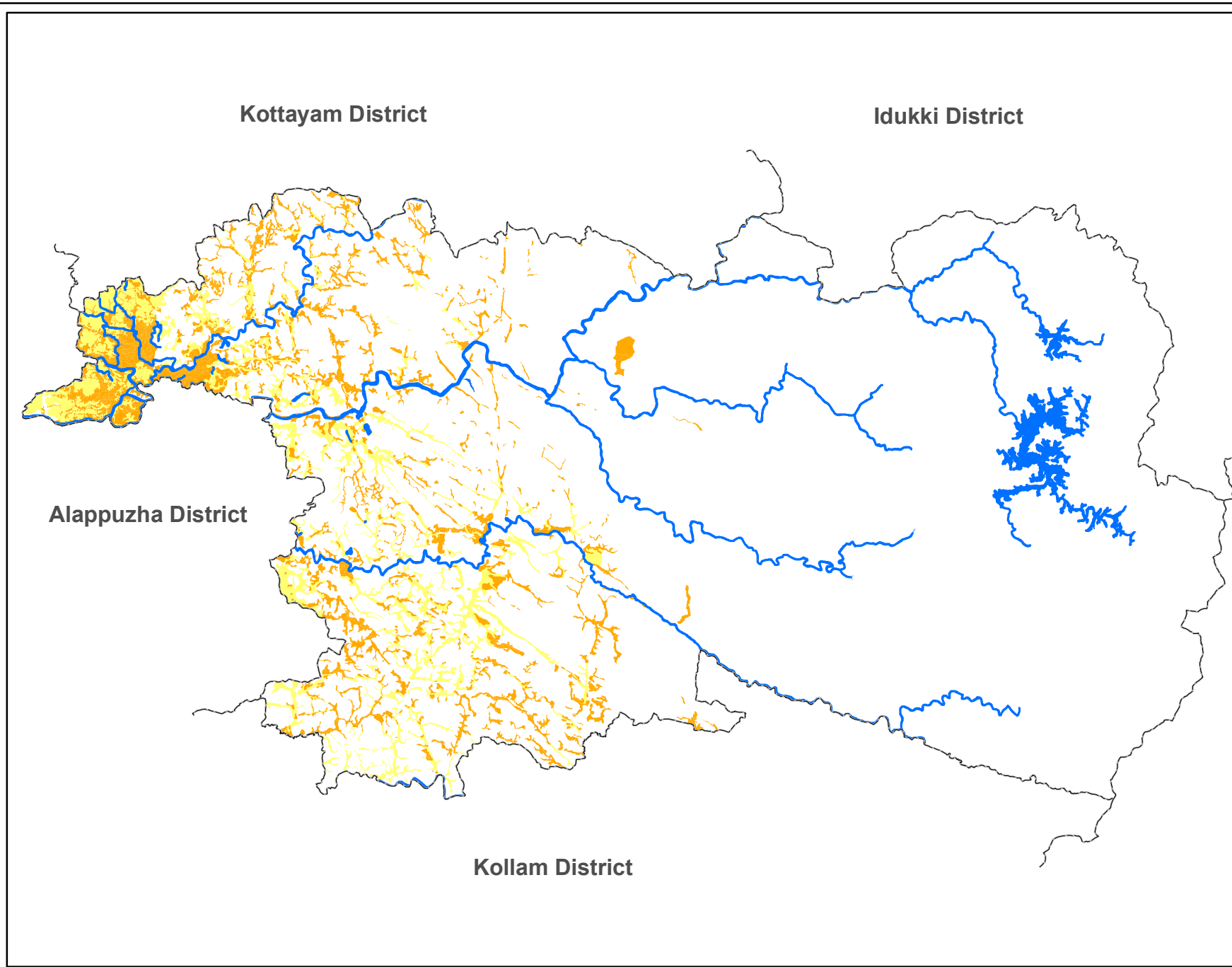
RANNI BLOCK**(Area in Ha)**

Sl. No.	Category	Chittar	Narana moozhi	Ranni	Ranni-Angadi	Ranni - Pazhavangadi	Ranni-Perunadu	Seethathodu	Vadasseri kvara	Vechuchira
1	Mundakan				0.01					
2	Mundakan+Puncha									
3	Other Landuses	14671.48	1511	1297.33	1900.79	2523.97	4380.45	66122.23	4017.38	4914.33
4	Paddy converted to Banana	6.10		52.74	6.62	20.42				
5	Paddy converted to Banana + Tapioca									
6	Paddy converted to Built-up land			10.13	77.54	78.61	39.85	0.12	14.37	41.38
7	Paddy converted to Coconut				64.26	9.26				6.14
8	Paddy converted to Coconut + Tapioca									
9	Paddy converted to Cultivable Waste land									
10	Paddy converted to Mixed crops				4.48					9.09
11	Paddy converted to Mixed trees									
12	Paddy converted to Rubber	11.70				14.88	221.78		23.49	33.01
13	Paddy converted to Tapioca									
14	Puncha				50.73					
15	Virippu									
16	Virippu+Mundakan									
17	Waterbody	168.92	82.64	38.23	13.56	17.39	122.34	2372.04	112.27	72.51
	Panchayat Total	14858.20	1593.64	1398.43	2117.99	2664.53	4764.42	68494.39	4167.51	5076.46
	Block Total	105135.57								

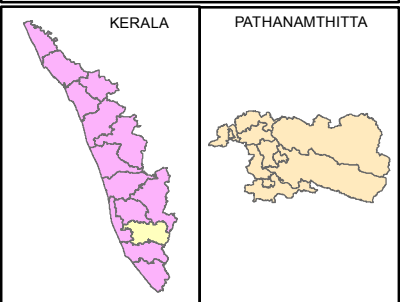
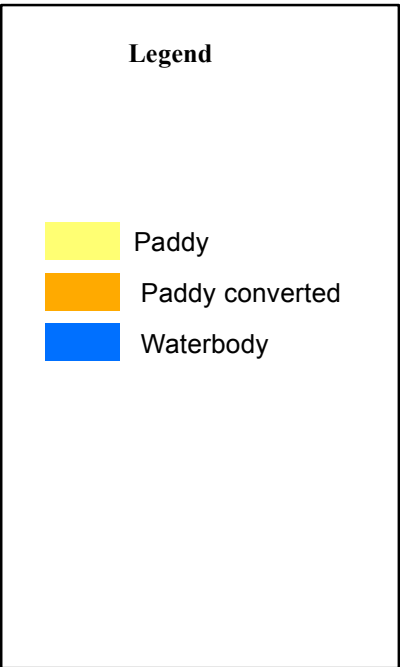
Table: 18.9

MUNICIPALITY**(Area in Ha)**

Sl. No.	Category	Adoor Municipality	Pathanamthitta Municipality	Thiruvalla Municipality
1	Mundakan	142.91	119.40	28.38
2	Mundakan+Puncha			
3	Other Landuses	1570.25	2244.79	589.89
4	Paddy converted to Banana	16.84	35.56	0.01
5	Paddy converted to Banana + Tapioca			
6	Paddy converted to Built-up land	24.80	148.40	17.62
7	Paddy converted to Coconut	63.93	77.04	22.87
8	Paddy converted to Coconut + Tapioca			
9	Paddy converted to Cultivable Waste land		3.12	0.01
10	Paddy converted to Mixed crops	69.22	10.96	11.87
11	Paddy converted to Mixed trees			
12	Paddy converted to Rubber	5.27	5.79	
13	Paddy converted to Tapioca	3.84		
14	Puncha	69.84	17.7	132.11
15	Virippu			28.08
16	Virippu+Mundakan	208.850	39.16	8.37
17	Waterbody		31.27	26.49
	Municipality Total	2175.75	2733.19	865.70



**WETLAND
PATHANAMTHITTA DISTRICT**



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 a 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 Pathanamthitta 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
1	Barren rocky area	231.09	0.08
2	Land with dense scrub	10060.23	3.79
3	Land with open scrub	727.40	0.27

- 1. Barren rocky area:** - This category of wasteland mapped in an area of 231.09 ha. covering 0.08% of the total geographical area of the district. It is mainly distributed in Seethathodu (166.19 ha.), Pramadam (47.14 ha.), Vallikkode (14.57 ha) Panchayats.
- 2. Land with dense scrub:** - This category of wasteland occurs in an area of 10060.23 ha. covering 3.79% of the total geographical area of the district. It is mostly located in Aruvappulam (1584.59 ha), Vechuchira (689.73 ha) Pramadam (603.17 ha) Panchayats.
- 3. Land with open scrub:** - This category of wasteland covers an area of 727.40 ha. comes to 0.27% of the total geographical area of the district. Panchayat having maximum area under this category are Malayalappuzha (237.55 ha.), Aruvappulam (170.93 ha.) and Ranni-Angadi (32.04 ha.) Panchayats.

Table: 19.2

ELANTHOOR BLOCK**(Area in Ha)**

Sl. No.	Category	Chenneerkkara	Cherukol	Elanthur	Kozhancherry	Mallappuzhasseri	Naranganam	Omallur
1	Barren Rocky Area							
2	Land with Dense Scrub	1.55	24.58	19.55			60.79	
3	Land with Open Scrub						10.51	10.12
4	Scrub Dominated Forest							
	Panchayat Total	1.55	24.58	19.55	0	0	71.3	10.12
	Block Total	127.1						

Table: 19.3

KONNI BLOCK**(Area in Ha)**

Sl. No.	Category	Aruvappulam	Konni	Malayalappuzha	Mylappra	Pramadam	Thannithodu	Vallikkodu
1	Barren Rocky Area					47.14		14.57
2	Land with Dense Scrub	1584.59	122.80	92.44	55.48	603.17	526.78	5.84
3	Land with Open Scrub	170.93	18.75	237.55	2.27		1.77	
4	Scrub Dominated Forest	45.38						
	Panchayat Total	1800.9	141.55	329.99	57.75	650.31	528.55	20.41
	Block Total	3529.46						

Table: 19.4

RANNI BLOCK**(Area in Ha)**

Sl. No.	Category	Chittar	Naranamoozhi	Ranni	Ranni-Angadi	Ranni - Pazhavangadi	Ranni-Perunadu	Seethathodu	Vadasserikkara	Vechuchira
1	Barren Rocky Area							166.19		
2	Land with Dense Scrub	243.25	255.43	164.96	32.04	505.16	537.53	3002.48	393.16	689.73
3	Land with Open Scrub		15.05		0.78	14.67			3.53	21.24
4	Scrub Dominated Forest									
	Panchayat Total	243.25	270.48	164.96	32.82	519.83	537.53	3168.67	396.69	710.97
	Block Total	6045.20								

Table: 19.5

MALLAPALLI BLOCK**(Area in Ha)**

Sl. No.	Category	Anikkadu	Kalluppara	Kaviyur	Kottanadu	Kottangal	Kunnan thanam	Mallappalli
1	Barren Rocky Area							
2	Land with Dense Scrub		5.72	2.58	155.44	173.24	45.45	6.86
3	Land with Open Scrub	37.07	0.11	6.33	2.44	32.11	7.92	7.11
4	Scrub Dominated Forest							
	Panchayat Total	37.07	5.83	8.91	157.88	205.35	53.37	13.97
	Block Total	482.38						

Table: 19.6

PARAKKOD BLOCK**(Area in Ha)**

Sl. No.	Category	Enadi mangalam	Erath	Ezhamkulam	Kadambanadu	Kalanjoor	Kodumon	Pallickal
1	Barren Rocky Area							3.19
2	Land with Dense Scrub	149.88	60.02	104.24	18.39	199.45	3.44	
3	Land with Open Scrub		2.39	19.01	18.06	22.04		5.61
4	Scrub Dominated Forest							
	Panchayat Total	149.88	62.41	123.25	36.45	221.49	3.44	8.8
	Block Total	605.72						

Table: 19.7

KOIPRAM BLOCK**(Area in Ha)**

Sl. No.	Category	Ayiroor	Ezhumattoor	Eraviperoor	Koipram	Puramattom	Thottappuzhasseri
1	Barren Rocky Area						
2	Land with Dense Scrub	5.28	53.00		7.54	13.23	74.56
3	Land with Open Scrub	15.56		4.63			20.46
4	Scrub Dominated Forest						
	Panchayat Total	20.84	53	4.63	7.54	13.23	95.02
	Block Total	194.26					

Table: 19.8

PANDALAM BLOCK**(Area in Ha)**

Sl. No.	Category	Aranmula	Kulanada	Mezhuveli	Pandalam	Pandalam Thekkekara	Thumbamon
1	Barren Rocky Area						
2	Land with Dense Scrub	32.60	2.62	10.03		11.13	4.22
3	Land with Open Scrub	4.38	3.94				11.06
4	Scrub Dominated Forest						
	Panchayat Total	36.98	6.56	10.03	0	11.13	15.28
	Block Total	79.98					

Table: 19.9

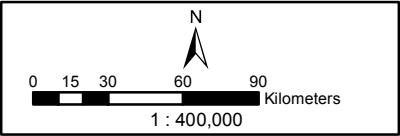
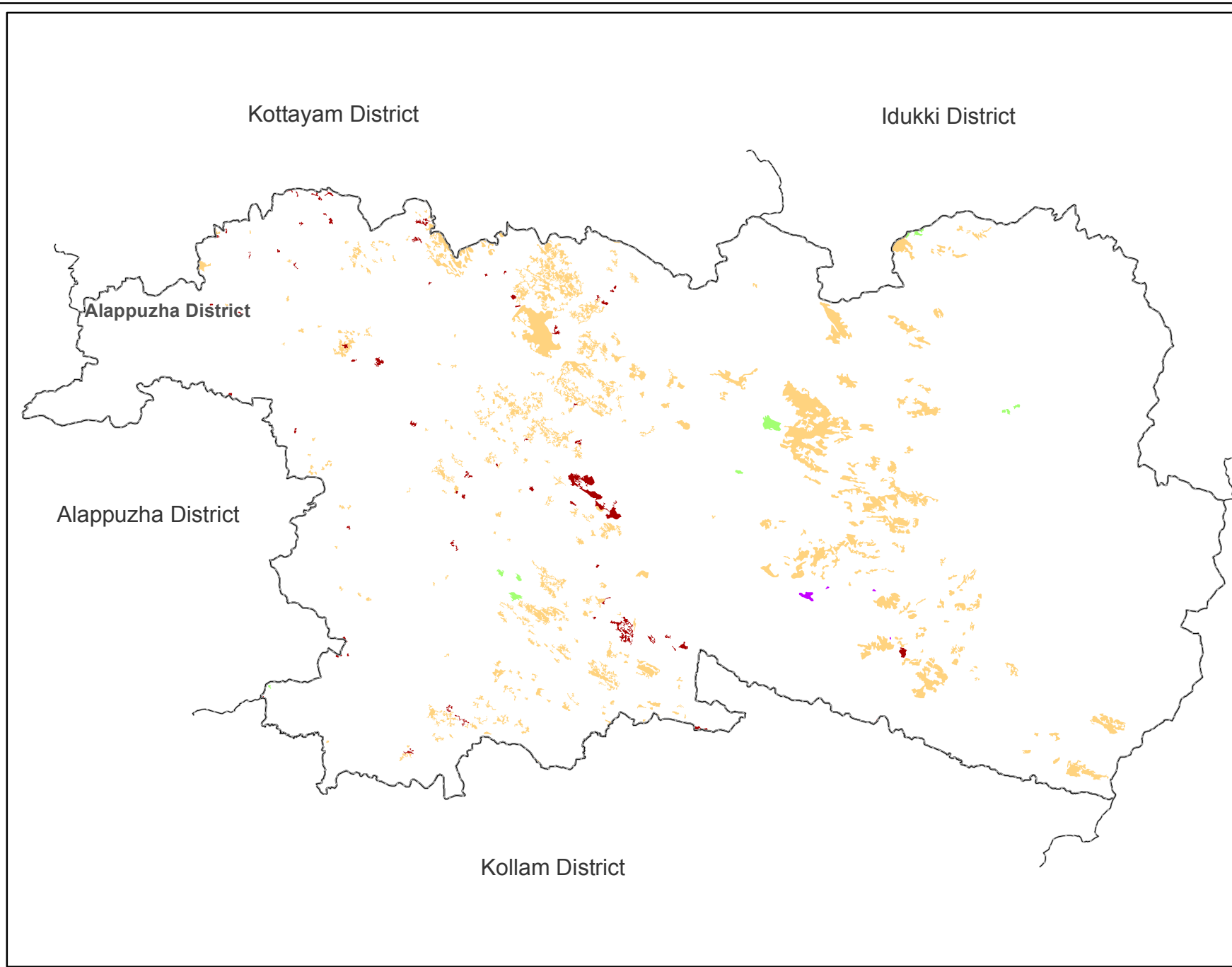
PULIKEEZHU BLOCK**(Area in Ha)**

Sl. No.	Category	Kadapra	Kuttoor	Nedumbram	Niranam	Peringara
1	Barren Rocky Area					
2	Land with Dense Scrub					
3	Land with Open Scrub					
4	Scrub Dominated Forest					
	Panchayat Total	0.00	0.00	0.00	0.00	0.00
	Block Total	0.00				

Table: 19.10

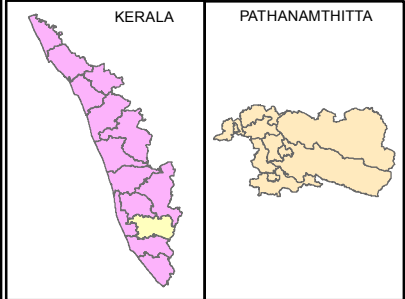
MUNICIPALITY**(Area in Ha)**

Sl. No.	Category	Adoor Municipality	Pathanamthitta Municipality	Thiruvalla Municipality
1	Barren Rocky Area			
2	Land with Dense Scrub		40.46	
3	Land with Open Scrub		26.58	
4	Scrub Dominated Forest			
	Municipality Total	0	67.04	0



**WASTE LAND
PATHANAMTHITTA DISTRICT**

- Legend**
- Barren Rocky Area
 - Land with Dense Scrub
 - Land with Open Scrub
 - Scrub Dominated Forest



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	Panchayat	WS Code	Area (Ha)	
Adoor Municipality		7K7a	14.13	
		8P10a	376.50	
		8P10b	920.71	
		8P10c	118.48	
		9A39c	308.93	
		9A41b	141.41	
		9A42b	295.58	
		Municipality Total	2175.74	
	Elanthoor	Chenneerkkara	10P59b	163.41
10P59c			29.18	
9A10a			1036.27	
9A11a			601.82	
9A13a			42.93	
9A40a			18.40	
			Panchayat Total	1892.01
Cherukol			10P16c	1.09
		10P17a	12.68	
		10P54a	24.23	
		10P55a	503.90	
		10P56a	668.76	
		10P57a	329.15	
		10P58a	7.13	
			Panchayat Total	1546.95
		Elanthoor	10P58b	2.06
			10P58c	15.63
			10P59a	5.64
10P59b			866.45	
10P59c	374.70			
9A13a	212.88			
9A13b	45.06			
	Panchayat Total		1522.43	
Kozhancherry	10P14a	12.16		
	10P15a	22.68		
	10P57a	222.11		
	10P58a	463.54		
	10P58c	278.47		
		Panchayat Total	998.97	
Mallappuzhasseri	10P14a	26.67		
	10P58c	304.67		

Block	Panchayat	WS Code	Area (Ha)
		10P59a	435.99
		10P59b	28.88
		10P59c	148.75
		10P59d	199.49
	Panchayat Total		1144.44
	Naranganam	10P56a	537.21
		10P57a	20.18
		10P58a	165.32
		10P58b	725.62
		10P58c	112.88
		10P59b	249.65
		9A13b	156.30
	Panchayat Total		1967.15
	Omallur	10P59b	27.22
		9A11a	895.39
		9A12a	462.76
		9A13a	32.08
		9A38a	8.16
		9A40a	14.84
	Panchayat Total		1440.45
	Block Total		10512.39
Koipram	Ayiroor	10P15a	185.07
		10P16a	377.83
		10P16b	334.54
		10P16c	534.48
		10P17a	1008.39
		10P18a	4.22
		10P56a	1.43
		10P57a	5.73
		11M49c	1.86
		11M52a	18.44
		11M52b	85.51
	Panchayat Total		2557.51
	Ezhumattoor	10P14a	82.08
		11M49c	316.52
		11M49d	71.12
		11M50a	142.21
		11M51a	313.67
		11M52a	516.21
		11M52b	487.04
		11M52c	203.50
	Panchayat Total		2132.35
	Eraviperoor	10P12a	571.83

Block	Panchayat	WS Code	Area (Ha)
		11M22a	2.61
		11M53a	17.18
		11M54a	1647.32
	Panchayat Total		2238.94
	Koipram	10P12a	1364.70
		10P14a	374.96
		11M53a	416.93
		11M54a	161.38
	Panchayat Total		2317.96
	Puramattom	10P14a	15.25
		11M24a	6.11
		11M25a	2.11
		11M51a	223.28
		11M52a	108.36
		11M52c	51.67
		11M53a	850.87
		11M54a	18.39
	Panchayat Total		1276.04
	Thottappuzhasseri	10P14a	928.92
		10P15a	620.93
		11M52b	52.97
	Panchayat Total		1602.82
	Block Total		12125.63
Konni	Aruvappulam	10P39b	10.76
		10P39c	2.78
		10P41b	23.83
		10P41c	12.99
		10P53d	10.95
		10P53f	1.36
		10P53g	531.48
		10P53h	776.73
		10P53i	1144.97
		10P53j	1973.66
		10P53k	2919.99
		10P53l	498.47
		10P53m	1318.63
		10P53n	251.38
		7K10f	98.79
		9A21c	1.39
		9A22a	677.88
		9A22b	1578.33
		9A22c	262.24
		9A23a	1038.69

Block	Panchayat	WS Code	Area (Ha)
		9A24a	738.70
		9A24b	1850.69
		9A24c	1376.36
		9A25a	637.35
		9A25b	868.66
		9A25c	529.54
		9A26a	585.26
		9A26b	2975.03
		9A26c	1036.04
		9A26d	3629.57
		9A26e	2629.74
		9A26f	5715.78
		9A26g	599.38
		9A26h	1624.75
		9A27a	1993.68
		9A28a	543.99
		9A28b	1644.66
		9A34c	96.77
		9A35a	1380.72
		9A36a	340.85
		9A36b	744.10
		9A36c	163.36
		9A37a	38.24
	Panchayat Total		44878.54
	Konni	10P53b	2.48
		10P53o	65.86
		10P53p	410.15
		9A14a	5.50
		9A15a	312.83
		9A16a	503.78
		9A17a	567.48
		9A18a	280.01
		9A19a	61.85
		9A36b	61.60
		9A36c	17.99
		9A37a	713.52
	Panchayat Total		3003.04
	Malayalappuzha	10P53a	14.72
		10P53b	15.82
		10P53p	275.42
		10P53q	838.78
		10P53r	664.95
		9A13b	16.13

Block	Panchayat	WS Code	Area (Ha)
		9A14a	205.76
		9A15a	247.02
		9A16a	762.92
		9A17a	70.35
	Panchayat Total		3111.87
	Mylappra	10P53r	156.07
		10P54a	222.97
		10P56a	147.62
		9A13b	523.37
		9A14a	22.01
	Panchayat Total		1072.04
	Pramadam	7K10b	19.12
		7K10d	1055.83
		7K10f	201.97
		9A15a	1.76
		9A36b	1039.61
		9A37a	776.26
		9A38a	1120.87
		9A39a	1762.54
		9A39b	1816.21
		9A39c	28.21
		9A39d	106.94
		9A40a	47.49
	Panchayat Total		7976.81
	Thannithodu	10P52q	0.02
		10P52r	715.24
		10P52s	6.70
		10P52t	2.77
		10P53a	138.95
		10P53b	1631.53
		10P53c	1395.01
		10P53d	1614.13
		10P53e	767.28
		10P53f	178.64
		10P53h	3.13
		10P53m	1.89
		10P53n	1123.27
		10P53o	1365.10
		10P53p	179.02
		10P53s	2540.47
		9A17a	12.33
		9A18a	501.90
		9A19a	1147.29

Block	Panchayat	WS Code	Area (Ha)
		9A20a	477.50
		9A21a	164.48
		9A21b	949.84
		9A21c	695.97
		9A22a	342.90
		9A22b	78.25
		9A22c	1.67
		9A35a	31.00
		9A36a	17.29
		9A36c	1.15
	Panchayat Total		16084.75
	Vallikkodu	9A11a	1.16
		9A38a	247.58
		9A39a	339.07
		9A39d	128.01
		9A40a	876.89
		9A41b	202.33
	Panchayat Total		1795.04
	Block Total		77922.08
Mallapalli	Anikkadu	11M23b	90.56
		11M25a	931.76
		11M26a	495.59
		11M26c	415.66
	Panchayat Total		1933.57
	Kalluppara	11M23a	4.33
		11M23b	207.28
		11M23c	512.71
		11M24a	853.19
		11M25a	92.78
		11M51a	2.01
		11M53a	16.85
		11M54a	5.45
	Panchayat Total		1694.59
	Kaviyur	11M22a	834.59
		11M23a	666.65
		11M23b	43.79
		11M23c	14.77
		11M54a	13.60
	Panchayat Total		1573.41
	Kottanadu	10P16b	209.40
		10P17a	23.70
		10P18a	362.18
		10P18b	369.92

Block	Panchayat	WS Code	Area (Ha)
		11M49a	114.20
		11M49b	511.34
		11M49c	591.46
		11M49d	53.14
		11M52a	31.80
	Panchayat Total		2267.15
	Kottangal	10P18b	35.24
		11M26a	1.42
		11M26c	11.73
		11M47c	100.33
		11M48a	689.40
		11M49a	466.17
		11M49b	155.58
		11M49d	178.13
		11M50a	610.17
		11M51a	110.86
	Panchayat Total		2359.03
	Kunnanathanam	11M22a	465.18
		11M23a	6.06
		11M23b	1029.34
		12M39l	36.72
	Panchayat Total		1537.30
	Mallappalli	11M23b	295.52
		11M24a	28.19
		11M25a	561.23
		11M50a	10.53
		11M51a	1138.41
		11M52a	8.67
	Panchayat Total		2042.55
	Block Total		13407.61
Pandalam	Aranmula	10P12a	49.87
		10P14a	27.02
		10P59a	271.31
		10P59d	382.83
		10P59e	600.74
		10P60a	632.61
		10P60b	523.20
	Panchayat Total		2487.59
	Kulanada	10P59d	23.98
		10P60b	9.33
		9A10a	16.39
		9A40a	2.56
		9A41c	19.51

Block	Panchayat	WS Code	Area (Ha)
		9A42a	24.38
		9A9a	1798.48
	Panchayat Total		1894.63
	Mezhuveli	10P59c	167.91
		10P59d	574.27
		10P60b	26.61
		9A10a	660.88
		9A11a	15.19
		9A40a	7.02
		9A9a	243.57
	Panchayat Total		1695.44
	Pandalam	9A41c	128.29
		9A42a	1408.82
	Panchayat Total		1537.11
	Pandalam Thekkekara	8P10b	5.06
		9A39c	10.82
		9A39d	3.62
		9A40a	130.42
		9A41a	68.37
		9A41b	1762.57
		9A41c	217.12
		9A42b	342.34
	Panchayat Total		2540.34
	Thumbamon	9A40a	43.20
		9A41a	88.69
		9A41c	237.91
		9A42a	397.90
		9A42b	615.14
	Panchayat Total		1382.84
	Block Total		11537.96
Parakkod	Enadimangalam	7K10a	615.45
		7K10b	1160.08
		7K10c	624.65
		7K10d	114.67
		7K9a	425.19
		8P10b	3.77
		9A39b	177.53
		9A39c	35.01
	Panchayat Total		3156.35
	Erath	7K6a	42.35
		7K6b	554.66
		7K6c	92.27
		7K7a	1095.25

Block	Panchayat	WS Code	Area (Ha)
		7k8a	58.60
		8P10a	22.73
		8P10b	30.46
		8P10c	346.40
	Panchayat Total		2242.72
	Ezhamkulam	7K10b	130.47
		7K7a	381.96
		7k8a	706.79
		7K9a	493.45
		8P10b	663.31
		9A39c	505.81
	Panchayat Total		2881.80
	Kadambanadu	7K5a	256.71
		7K6a	683.87
		7K6b	9.51
		7K6c	482.79
		7K7a	278.01
		8P10a	853.92
		8P10c	187.03
		8P11a	610.59
		8P8b	96.47
		8P9a	101.42
		9A42b	635.00
	Panchayat Total		4195.32
	Kalanjoor	7K10b	10.38
		7K10c	702.51
		7K10d	220.50
		7K10e	338.50
		7K10f	1672.32
		9A32a	242.30
		9A34b	758.54
		9A34c	652.94
		9A35a	10.44
		9A36b	4.39
	Panchayat Total		4612.82
	Kodumon	8P10b	4.21
		9A39b	341.63
		9A39c	844.75
		9A39d	212.63
		9A41b	128.04
	Panchayat Total		1531.27
	Pallickal	8P10a	51.62
		8P11a	1.09

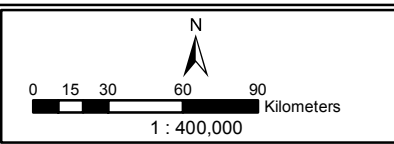
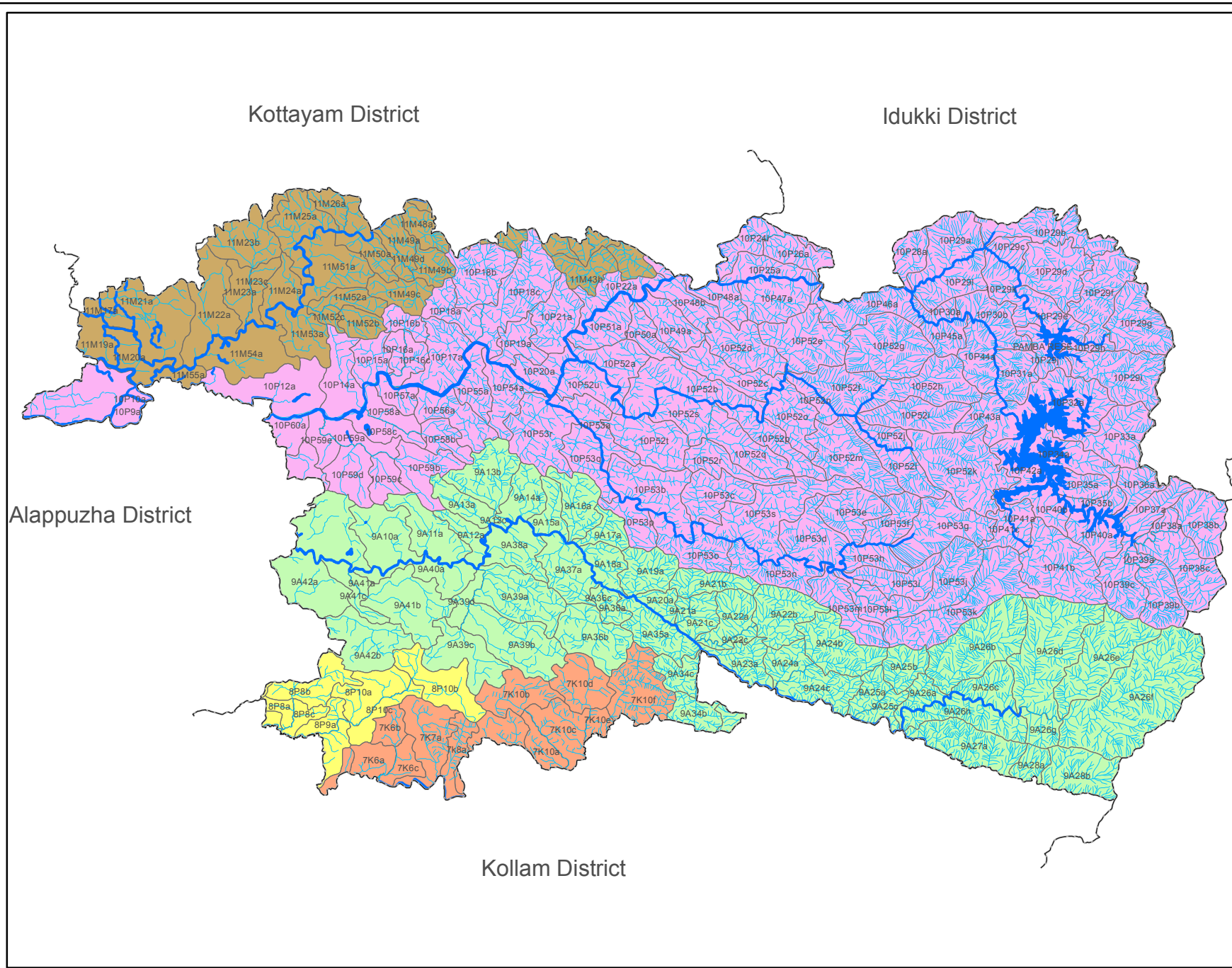
Block	Panchayat	WS Code	Area (Ha)
		8P7b	27.66
		8P7c	144.55
		8P8a	289.98
		8P8b	1096.44
		8P8c	403.34
		8P9a	393.29
		9A42b	13.19
	Panchayat Total		2421.16
	Block Total		21041.45
Pathanamthitta Municipality		9A12a	197.29
		9A13a	533.32
		9A13b	941.23
		9A13c	39.95
		9A14a	842.75
		9A15a	150.68
		9A37a	1.20
		9A38a	26.77
	Municipality Total		2733.20
Pulikeezhu	Kadapra	10P10a	110.50
		10P8a	1101.91
		10P9a	436.77
		11M19a	31.10
		11M20a	50.22
	Panchayat Total		1730.50
	Kuttoor	10P12a	269.18
		11M20a	7.79
		11M54a	181.35
		11M55a	400.17
	Panchayat Total		858.49
	Nedumbram	11M19a	385.09
		11M20a	532.50
		11M21a	1.54
		11M55a	11.41
	Panchayat Total		930.55
	Niranam	10P8a	1072.90
	Panchayat Total		1072.90
	Peringara	11M17a	418.88
		11M18a	173.66
		11M19a	428.70
		11M20a	241.11
		11M21a	1776.32
		11M22a	673.45
		11M54a	3.94

Block	Panchayat	WS Code	Area (Ha)
	Panchayat Total		3716.07
	Block Total		8308.51
Ranni	Chittar	10P22a	3.40
		10P24l	901.42
		10P25a	911.35
		10P26a	911.41
		10P26b	72.65
		10P46a	236.70
		10P47a	1531.16
		10P48a	818.55
		10P48b	895.19
		10P49a	1049.53
		10P50a	54.56
		10P52b	690.27
		10P52c	1239.02
		10P52d	1471.71
		10P52e	629.94
		10P52o	7.66
		10P52p	343.40
		10P52q	540.15
		10P52r	8.68
		10P52s	1053.40
		10P52t	1033.01
		10P53a	85.94
		10P53b	369.11
	Panchayat Total		14858.20
	Naranamoozhi	10P20a	11.73
		10P21a	744.38
		10P22a	181.45
		10P49a	16.37
		10P50a	9.13
		10P51a	595.13
		10P52a	27.36
		11M43b	8.10
	Panchayat Total		1593.65
	Ranni	10P17a	12.69
		10P53r	226.12
		10P54a	727.98
		10P55a	431.63
	Panchayat Total		1398.44
	Ranni-Angadi	10P17a	552.28
		10P18a	611.49
		10P18b	949.96

Block	Panchayat	WS Code	Area (Ha)
		10P18c	2.01
		11M49b	2.24
	Panchayat Total		2117.98
	Ranni-Pazhavangadi	10P18a	4.89
		10P18b	184.34
		10P18c	1156.58
		10P19a	692.56
		10P20a	168.43
		10P21a	452.00
		10P54a	3.63
		10P55a	2.11
	Panchayat Total		2664.54
	Ranni-Perunadu	10P20a	77.39
		10P49a	21.72
		10P50a	644.99
		10P51a	507.87
		10P52a	1196.22
		10P52b	1453.41
		10P52s	14.48
		10P52t	2.68
		10P52u	835.52
		10P53a	10.15
	Panchayat Total		4764.42
	Seethathodu	10P28a	772.29
		10P29a	1574.99
		10P29b	1736.84
		10P29c	521.02
		10P29d	1889.92
		10P29e	871.21
		10P29f	1852.56
		10P29g	1824.83
		10P29h	251.46
		10P29i	2169.65
		10P29j	645.34
		10P29k	1026.00
		10P29l	1239.70
		10P30a	382.37
		10P30b	1236.44
		10P31a	1034.94
		10P32a	2344.24
		10P33a	1875.31
		10P34a	1513.07
		10P35a	784.30

Block	Panchayat	WS Code	Area (Ha)
		10P35b	564.60
		10P36a	811.09
		10P37a	969.26
		10P38a	347.42
		10P38b	1405.19
		10P38c	1940.25
		10P39a	208.46
		10P39b	1259.83
		10P39c	1297.33
		10P40a	1114.66
		10P40b	862.58
		10P41a	496.32
		10P41b	2566.09
		10P41c	515.72
		10P42a	1095.89
		10P43a	1095.67
		10P44a	1173.64
		10P45a	714.68
		10P46a	1279.93
		10P52c	68.48
		10P52d	123.33
		10P52e	1475.12
		10P52f	1401.35
		10P52g	2424.21
		10P52h	1846.86
		10P52i	1454.01
		10P52j	498.66
		10P52k	3044.57
		10P52l	1141.41
		10P52m	2081.70
		10P52n	457.13
		10P52o	1340.64
		10P52p	880.87
		10P52q	935.86
		10P52r	272.45
		10P53e	574.29
		10P53f	848.15
		10P53g	1622.09
		10P53j	98.79
		10P53s	388.42
		9A26d	1.73
		9A26e	1.98
		PAMBA RESE	247.19

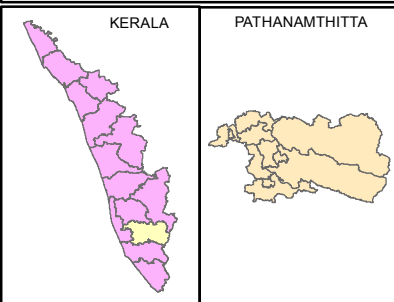
Block	Panchayat	WS Code	Area (Ha)
	Panchayat Total		68494.38
	Vadasserikkara	10P18c	22.58
		10P19a	188.27
		10P20a	571.20
		10P52b	3.89
		10P52s	55.49
		10P52t	697.96
		10P52u	237.90
		10P53a	891.74
		10P53q	242.73
		10P53r	1047.98
		10P54a	207.76
	Panchayat Total		4167.51
	Vechuchira	10P18b	219.88
		10P18c	1133.94
		10P21a	210.50
		10P22a	841.68
		10P23a	136.79
		10P48b	6.55
		10P49a	8.07
		10P51a	12.67
		11M42d	587.92
		11M43a	213.40
		11M43b	897.72
		11M43c	222.34
		11M44a	275.35
		11M47b	309.65
	Panchayat Total		5076.46
	Block Total		105135.57
Thiruvalla Municipality		11M20a	97.10
		11M21a	677.43
		11M22a	70.97
		11M55a	20.19
Municipality Total			865.69
District Total			265765.83



**WATERSHEDS
PATHANAMTHITTA DISTRICT**

Legend

- River
- Drains
- Achancovil
- Kallada
- Manimala
- Pallikkal
- Pamba



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

PAMBA IRRIGATION PROJECT

The Pamba Irrigation Project aims at the utilisation of tail race water of Sabarigiri Hydro Electric Project in Pamba river basin for irrigating 21135 ha. (net) or 49460 ha. (gross) of land in Pathanamthitta and Alappuzha Districts. The project is intended to stabilise the first and second crops paddy in the ayacut and to raise a 3rd crop in a portion of the ayacut.

The barrage constructed at Maniyar across Kakkad river, a tributary of Pamba river, diverts the water into a main canal on the left bank. The main canal

then bifurcates into two viz, the left and right canals at Vazhakunnam. Right bank canal crosses the Pamba river and has 16 branches with distributaries. The left bank canal proceeding on the left side of the Pamba river has 30 branches and distributaries.

BASIC INFORMATION

District	:	Pathanamthitta
Ayacut area in Ha.	:	Net 21135 Gross 49460 (Potential) Net 20710 Gross 48480 (Achieved)
River	:	Kakkad (Pamba)
Benefited District	:	Pathanamthitta, Alappuzha
Year of Starting	:	1961
Year of Completion	:	1994

LOCATION OF THE PROJECT

The head works of the project is a barrage across Kakkad river at Maniyar in the Pathanamthitta district in which the tail race water of the Sabarigiri Hydro-Electric Project is let in. The headwork is located at latitude $9^{\circ} 20'$ N and longitude $76^{\circ} 58'$ E. The site is approachable by a road along the left bank starting from Pathanamthitta-Chittar road 25 Kms. from Pathanamthitta.

The headwork consists of a barrage of height 16.76m and 115.22m long across the river with head sluice consisting of one vent $3.51\text{m} \times 3.05\text{m}$. The barrage has a central spillway portion flanked on either side by bulk head sections.

The bulk head is straight gravity type masonry dam flanking the spillway portion of either end. The bulk head has a maximum top width of 5.48m and

maximum bottom width of 13.25m. The bulk head is in random rubble in cement mortar with a facing of coursed rubble masonry. The roadway at top has a clear width of 4.26m with parapet 0.60 m thick and 76 cm height. Three expansion joints are provided in the barrage and are located in the 1st, 3rd and 5th spans of spillway.

The command area mainly lies between Pamba and Manimala river on the right bank of Pamba and between Pamba and Achancovil river in the left bank of Pamba. In its tail reaches it covers Onattukara and southern fringes of Kuttanad fields. The projects area lies between latitude 9° 8' N and longitudes 76° 27' and 76° 45' E.

SOURCE OF IRRIGATION

The source of irrigation is the firm discharge of 916 cusecs (25.94 cumecs) available as tail race water of Kakkad river after utilisation for power generation on the Moozhiyar Power Station of Sabarigiri Hydro- Electric Project. There are six generators working in the Power Station. Even a single generator working at full load is capable of discharging 300 cusecs (8.5 cumecs). At normal seasons atleast four generators are expected to run. During the summer months atleast three generators will work. The ayacut comprises of 16,599 Ha. paddy fields. Out of which a 3rd crop is proposed to be traced only in 11,741 Ha. The peak demand for 3rd crop occurs during the month of February. The demand comes nearly to 720 cusecs (20.39 cumecs) for which capacity of the main canal have been designed.

AYACUT AREA

The ayacut achieved as on 3/2002 is 20,710 ha. against the target of 21,135 ha.

SALIENT FEATURES

HEAD WORKS

Length	:	115.22 m
Length of Spillway	:	64.31 m, Max. Ht. 16.76 m
MWL	:	35.35 m
Maximum Flood Discharge	:	1280 Cumecs
Crest Gates	:	5 Nos. (Steel vertical lift type 10.7 M x 55 M)
River Sluice Discharge	:	21.24 Cumecs

HEAD SLUICE

Size	:	1 No. 3.51 m x 3.05 m
Discharge	:	20.39 Cumecs
Sill Level	:	31.09 m

CANALS

(1) Main Canal

Length	:	20 Km
FSD	:	3.05 M
Tunnels	:	8 Nos. (9969 m)
Aqueducts	:	10 Nos. (1103 m)
Capacity	:	20.39 Cumecs

(2) R.B.Canal

Length	:	20 Km.
Aqueducts	:	10 Nos (2674 m)
Capacity at Head Regulator	:	8.541 Cumecs

(3). L.B.Canal

Length	:	47.15 Km.
Tunnel	:	350 m (1 No.)
Aqueduct	:	20 Nos. 4752 M
Capacity at Head Regulator	:	19.83 Cumecs
Classification	:	Major
Crops	:	Paddy, Plantain & Banana, Coconut.

MINOR IRRIGATION CENSUS (2006-07)

Table:21.1

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	Adoor (M)	1	195	0	0	195	15	0	15	210	1
2	Elanthoor	7	593	4	0	597	19	2	21	618	7
3	Koipram	6	783	1	0	784	0	5	5	789	6
4	Konni	7	492	0	0	492	58	10	68	560	7
5	Kulanada	3	809	0	0	809	0	5	5	814	3
6	Mallappalli	7	835	39	7	881	16	116	132	1013	7
7	Pandalam	3	591	2	0	593	60	18	78	671	3
8	Parakkod	7	2067	2	0	2069	18	2	20	2089	7
9	Pathanamthitta (M)	1	55	0	0	55	0	0	0	55	1
10	Pulikeezhu	5	362	4	0	366	0	32	32	398	5
11	Ranni	9	664	4	4	672	4	1	5	677	9
12	Thiruvalla (M)	1	67	1	2	70	4	1	5	75	1
District Total		57	7513	57	13	7583	194	192	386	7969	57

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		
		Nos.	Potential Created	Potential Utilised	Nos.	Potential Created	Potential Utilised	Nos.	Potential Created	Potential Utilised	Nos.	Potential Created	Potential Utilised
1	Adoor (M)	195	81	69	0	0	0	0	0	0	195	81	69
2	Elanthoor	593	290	289	4	2	2	0	0	0	597	293	291
3	Koipram	783	266	223	1	0	0	0	0	0	784	266	223
4	Konni	492	198	194	0	0	0	0	0	0	492	198	194
5	Kulanada	809	202	190	0	0	0	0	0	0	809	202	190
6	Mallappalli	835	352	330	39	24	23	7	4	4	881	380	356
7	Pandalam	591	120	113	2	5	0	0	0	0	593	125	113
8	Parakkod	2067	515	408	2	1	1	0	0	0	2069	516	409
9	Pathanamthitta (M)	55	16	16	0	0	0	0	0	0	55	16	16
10	Pulikeezhu	362	173	159	4	3	3	0	0	0	366	176	162
11	Ranni	664	132	118	4	3	3	4	5	5	672	141	126
12	Thiruvalla (M)	67	45	42	1	1	1	2	2	2	70	48	45
	District Total	7513	2390	2151	57	39	33	13	11	11	7583	2442	2194

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		
		Nos.	Potential Created	Potential Utilised	Nos.	Potential Created	Potential Utilised	Nos.	Potential Created	Potential Utilised
1	Adoor (M)	15	643	643	0	0	0	15	643	643
2	Elanthoor	19	314	314	2	90	90	21	404	404
3	Koipram	0	0	0	5	383	231	5	383	231
4	Konni	58	1021	558	10	294	157	68	1315	715
5	Kulanada	0	0	0	5	727	470	5	727	470
6	Mallappalli	16	527	527	116	901	901	132	1428	1428
7	Pandalam	60	422	333	18	632	622	78	1054	955
8	Parakkod	18	933	706	2	2	1	20	935	707
9	Pathanamthitta (M)	0	0	0	0	0	0	0	0	0
10	Pulikeezhu	0	0	0	32	1071	1041	32	1071	1041
11	Ranni	4	21	21	1	0	0	5	21	21
12	Thiruvalla (M)	4	22	0	1	30	24	5	52	24
	District Total	194	3903	3102	192	4130	3537	386	8033	6639

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 (3to8)	Electric Pump	Diesel Pump	Wind Mills	Solar Pumps	Manual/ Annual	Others	Total (10to15)
1	Elanthoor	549	0	0	0	48	0	597	2	0	0	0	0	0	2
2	Koipram	269	122	0	0	331	62	784	5	0	0	0	0	0	5
3	Konni	248	114	0	0	130	0	492	5	0	0	0	0	5	10
4	Kulanada	563	17	0	0	214	15	809	4	1	0	0	0	0	5
5	Mallappalli	298	13	0	0	556	14	881	116	0	0	0	0	0	116
6	Pandalam	551	13	0	0	22	7	593	17	0	0	0	0	1	18
7	Parakkod	1434	3	0	0	630	2	2069	1	0	0	0	0	1	2
8	Pulikeezhu	341	21	0	0	4	0	366	32	0	0	0	0	0	32
9	Ranni	275	0	0	1	393	3	672	0	0	0	0	1	0	1
10	Adoor (M)	177	0	0	0	18	0	195	0	0	0	0	0	0	0
11	Pathanamthitta (M)	55	0	0	0	0	0	55	0	0	0	0	0	0	0
12	Thiruvalla (M)	70	0	0	0	0	0	70	1	0	0	0	0	0	1
	District Total	4830	303	0	1	2346	103	7583	183	1	0	0	1	7	192

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		
		Nos.	Potential Created	Potential Utilised	Nos.	Potential Created	Potential Utilised	Nos.	Potential Created	Potential Utilised
1	Adoor (M)	195	81	69	15	643	643	210	724	712
2	Elanthoor	597	293	291	21	404	404	618	697	695
3	Koipram	784	266	223	5	383	231	789	649	454
4	Konni	492	198	194	68	1315	715	560	1513	909
5	Kulanada	809	202	190	5	727	470	814	929	660
6	Mallappalli	881	380	356	132	1428	1428	1013	1808	1784
7	Pandalam	593	125	113	78	1054	955	671	1179	1068
8	Parakkod	2069	516	409	20	935	707	2089	1451	1116
9	Pathanamthitta (M)	55	16	16	0	0	0	55	16	16
10	Pulikeezhu	366	176	162	32	1071	1041	398	1247	1203
11	Ranni	672	141	126	5	21	21	677	162	147
12	Thiruvalla (M)	70	48	45	5	52	24	75	100	69
	District Total	7583	2442	2194	386	8033	6639	7969	10475	8833

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	Elanthoor	0	593	593	0	4	4	0	0	0	0	19	19	0	2	2	0	618	618
2	Koipram	0	783	783	0	1	1	0	0	0	0	0	0	0	5	5	0	789	789
3	Konni	0	492	492	0	0	0	0	0	0	0	58	58	0	10	10	0	560	560
4	Kulanada	0	809	809	0	0	0	0	0	0	0	0	0	0	5	5	0	814	814
5	Mallappalli	0	835	835	0	39	39	0	7	7	0	16	16	0	116	116	0	1013	1013
6	Pandalam	0	591	591	0	2	2	0	0	0	0	60	60	0	18	18	0	671	671
7	Parakkod	0	2067	2067	0	2	2	0	0	0	0	18	18	0	2	2	0	2089	2089
8	Pulikeezhu	0	362	362	0	4	4	0	0	0	0	0	0	0	32	32	0	398	398
9	Ranni	0	664	664	0	4	4	0	4	4	0	4	4	0	1	1	0	677	677
10	Adoor (M)	0	195	195	0	0	0	0	0	0	0	15	15	0	0	0	0	210	210
11	Pathanamthitta (M)	0	55	55	0	0	0	0	0	0	0	0	0	0	0	0	0	55	55
12	Thiruvalla (M)	0	67	67	0	1	1	0	2	2	0	4	4	0	1	1	0	75	75
	District Total	0	7513	7513	0	57	57	0	13	13	0	194	194	0	192	192	0	7969	7969

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				
		Kharrif	Rabi	Perennial	Others	Total (3 to 7)	Kharrif	Rabi	Perennial	Others	Total (8 to 11)	Kharrif	Rabi	Perennial	Others	Total (13 to 16)
1	Elanthoor	74	70	70	77	291	116	113	91	84	404	190	183	161	161	695
2	Koipram	65	40	69	49	223	115	115	0	0	230	180	155	69	49	453
3	Konni	99	68	25	1	193	352	120	156	87	715	451	188	181	88	908
4	Kulanada	64	58	49	19	190	235	235	0	0	470	299	293	49	19	660
5	Mallappalli	189	117	29	21	356	1149	166	47	67	1429	1338	283	76	88	1785
6	Pandalam	32	31	41	9	113	244	695	6	10	955	276	726	47	19	1068
7	Parakkod	119	108	145	37	409	210	241	92	164	707	329	349	237	201	1116
8	Pulikeezhu	64	50	27	21	162	548	493	0	0	1041	612	543	27	21	1203
9	Ranni	55	29	24	19	127	10	10	0	0	20	65	39	24	19	147
10	Adoor (M)	17	35	17	0	69	173	269	172	30	644	190	304	189	30	713
11	Pathanamthitta (M)	13	0	2	1	16	0	0	0	0	0	13	0	2	1	16
12	Thiruvalla (M)	16	15	7	7	45	5	5	8	6	24	21	20	15	13	69
	District Total	807	621	505	261	2194	3157	2462	572	448	6639	3964	3083	1077	709	8833

Table:21.8

MINOR IRRIGATION SCHEMES ACCORDING TO WATER LIFTING DEVICES

Sl. No.	Name of Block/Mun./Cor.	Ground Water Schemes						Surface Water Schemes (Surface Lift Schemes only)					
		Submersible Pump	Centrifugal Pump	Turbine	Manual/Annual	Others	Total (3 to 7)	submersible Pump	Centrifugal Pump	Turbine	Manual/Annual	Others	Total (9 to 13)
1	Elanthoor	0	549	0	48	0	597	0	2	0	0	0	2
2	Koipram	0	373	0	331	80	784	0	5	0	0	0	0
3	Konni	1	361	0	130	0	492	0	5	0	0	5	0
4	Kulanada	18	562	0	214	15	809	0	5	0	0	0	0
5	Mallappalli	17	294	0	556	14	881	0	116	0	0	0	0
6	Pandalam	1	560	3	22	7	593	0	17	0	0	1	0
7	Parakkod	1	1433	2	630	3	2069	0	1	0	0	1	16
8	Pulikeezhu	0	362	0	4	0	366	0	32	0	1	0	2
9	Ranni	0	274	2	393	3	672	0	0	0	0	0	0
10	Adoor (M)	0	177	0	18	0	195	0	0	0	0	0	0
11	Pathanamthitta (M)	0	55	0	0	0	55	0	0	0	0	0	0
12	Thiruvalla (M)	0	70	0	0	0	70	0	1	0	0	0	0
	District Total	38	5070	7	2346	122	7583	0	184	0	1	7	192

Table:21.9

NUMBER OF GROUND WATER SCHEMES AND POTENTIAL UTILISED BY WATER DISTRIBUTION DEVICE

Sl. No.	Name of Block/ Mun./Cor.	Ground Water Schemes According to Water Distribution System															
		Open Water Channel				Underground pipe		Surface pipe		Drip		Sprinkler		Others		Total	
		Lined/Pucca		Unlined/Kuchha		No.	PU	No.	PU	No.	PU	No.	PU	No.	PU	No.	PU
		No.	PU	No.	PU												
1	Elanthoor	19	6	10	3	366	216	62	20	3	1	2	2	135	44	597	292
2	Koipram	0	0	214	50	0	0	225	95	1	0	0	0	326	78	766	223
3	Konni	0	0	178	115	2	1	1	1	0	0	0	0	311	76	492	193
4	Kulanada	1	0	346	72	12	3	198	65	0	0	0	0	237	50	794	190
5	Mallappalli	115	48	264	127	70	34	147	55	4	2	0	0	267	91	867	357
6	Pandalam	9	3	1	0	194	34	277	52	0	0	0	0	105	24	586	113
7	Parakkod	3	3	8	1	814	181	458	97	82	21	70	16	632	90	2067	409
8	Pulikeezhu	12	8	41	25	44	25	199	76	28	13	5	2	37	14	366	163
9	Ranni	7	0	0	0	114	35	170	32	0	0	0	0	378	59	669	126
10	Adoor (M)	0	0	0	0	0	0	177	66	0	0	0	0	18	3	195	69
11	Pathanamthitta (M)	0	0	0	0	0	0	54	15	0	0	0	0	1	1	55	16
12	Thiruvalla (M)	10	9	5	5	25	8	30	22	0	0	0	0	0	0	70	44
	District Total	176	77	1067	398	1641	537	1998	596	118	37	77	20	2447	530	7524	2195

Table:21.10

NUMBER OF SURFACE WATER SCHEMES AND POTENTIAL UTILISED BY WATER DISTRIBUTION DEVICE

Sl. No.	Name of Block/ Mun./Cor.	Surface Water Schemes According to Water Distribution System															
		Open Water Channel				Underground pipe		Surface pipe		Drip		Sprinkler		Others		Total	
		Lined/Pucca		Unlined/Kuchha		No.	PU	No.	PU	No.	PU	No.	PU	No.	PU	No.	PU
		No.	PU	No.	PU												
1	Elanthoor	2	90	19	314	0	0	0	0	0	0	0	0	0	0	21	404
2	Koipram	4	230	1	1	0	0	0	0	0	0	0	0	0	0	5	231
3	Konni	5	157	58	558	0	0	0	0	0	0	0	0	0	0	63	715
4	Kulanada	4	468	0	0	0	0	0	0	0	0	0	0	1	2	5	470
5	Mallappalli	11	1159	102	255	0	0	19	15	0	0	0	0	0	0	132	1429
6	Pandalam	5	353	67	600	0	0	0	0	0	0	1	2	0	0	73	955
7	Parakkod	1	55	0	0	0	0	1	1	0	0	0	0	13	651	15	707
8	Pulikeezhu	9	1029	7	3	4	3	5	1	0	0	0	0	7	4	32	1040
9	Ranni	0	0	0	0	2	0	0	0	0	0	0	0	3	21	5	21
10	Adoor (M)	15	643	0	0	0	0	0	0	0	0	0	0	0	0	15	643
11	Pathanamthitta (M)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	Thiruvalla (M)	1	24	0	0	0	0	0	0	0	0	0	0	0	0	1	24
	District Total	57	4208	254	1731	6	3	25	17	0	0	1	2	24	678	367	6639

Table:21.11

NUMBER OF GROUND WATER SCHEMES AND POTENTIAL UTILISED BY WATER DISTRIBUTION DEVICE

Sl. No.	Name of Block/ Mun./Cor.	Minor Irrigation Schemes According to Water Distribution System															
		Open Water Channel				Underground pipe		Surface pipe		Drip		Sprinkler		Others		Total	
		Lined/Pucca		Unlined/Kuchh		No.	PU	No.	PU	No.	PU	No.	PU	No.	PU	No.	PU
		No.	PU	No.	PU												
1	Elanthoor	19	6	10	3	366	216	62	20	3	1	2	2	135	44	597	292
2	Koipram	0	0	214	50	0	0	225	95	1	0	0	0	326	78	766	223
3	Konni	0	0	178	115	2	1	1	1	0	0	0	0	311	76	492	193
4	Kulanada	1	0	346	72	12	3	198	65	0	0	0	0	237	50	794	190
5	Mallappalli	115	48	264	127	70	34	147	55	4	2	0	0	267	91	867	357
6	Pandalam	9	3	1	0	194	34	277	52	0	0	0	0	105	24	586	113
7	Parakkod	3	3	8	1	814	181	458	97	82	21	70	16	632	90	2067	409
8	Pulikeezhu	12	8	41	25	44	25	199	76	28	13	5	2	37	14	366	163
9	Ranni	7	0	0	0	114	35	170	32	0	0	0	0	378	59	669	126
10	Adoor (M)	0	0	0	0	0	0	177	66	0	0	0	0	18	3	195	69
11	Pathanamthitta (M)	0	0	0	0	0	0	54	15	0	0	0	0	1	1	55	16
12	Thiruvalla (M)	10	9	5	5	25	8	30	22	0	0	0	0	0	0	70	44
	District Total	176	77	1067	398	1641	537	1998	596	118	37	77	20	2447	530	7524	2195

Source: Irrigation Department

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 in to 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

GROWTH OF KERALA POWER SYSTEM AT A GLANCE 2010-13

Sl. No.	Particulars	Position as on 11/2013		
		2010-11	2011-12	2012-13
1	Installed capacity - MW	2857.59	2872.79	2881.04
2	Maximum demand (system) - MW	3119	3348	3268
3	Generation per annum - (KSEB own) - MU	7412.59	8350.74	5333.40
4	Import per annum – MU	10512.29	11270.71	12771.64
5	Export per annum - MU	130.24	201.1	0
6	Energy sales within state per annum - MU	14547.90	15980.53	16838.24
7	Percentage of energy losses to energy available for sales	17.99	17.45	16.83
8	Per capita consumption - KWH	519	567	595
9	220 KV lines – CT Kms	2701	2713	2719.55
10	110 KV lines – CT Kms	4004	4005	4044.30

11	66 KV lines – CT Kms	2387	2387	2386.76
12	33 KV lines – CT Kms	1421	1497	1561.63
13	11 KV lines – CT Kms	49232	51392	52971
14	LT lines – CT Kms	266856	270718	273274
15	Step up transformer capacity - MVA	2684	2689	2691
16	No of EHT substations			
A	400 KV	2*	2*	2*
B	220 KV	17	18	18
C	110 KV	128	131	132
D	66 KV	80	80	81
E	33 KV	113	120	128
17	Step down transformer capacity – MVA	16222.10	16556.30	16965.30
18	Distribution transformers			
A	Numbers	58427	62726	65138
B	Capacity - MVA	7320	7674	7940
19	No of villages electrified	1467	1467	1467
20	No of consumers (Lakhs)	101.28	104.58	108.07
21	Connected load - MW	16681.30	17518.42	18539.34
22	No of street lights	1196503	1218610	1257285
23	No of irrigation pumps	446460	455078	466289
24	Total revenue per annum (Lakhs)	641138	797804.89	1165810
25	Revenue from sale of power per annum (Lakhs)	495060	581781.92	722339.35

* Pallipuram 400 KV substation owned by PGCIL

Table: 22.4

ENERGY SOURCE IN KERALA (2010-13)

Sl. No.	Source of Energy	Installed Capacity (MW)		
		2010-11	2011-12	2012-13
1	Hydel: KSEB	1997.80	2008.80	2010.05
2	Thermal: KSEB	234.60	234.60	234.60
3	Wind: KSEB	2.03	2.03	2.03
4	NTPC	359.58	359.58	359.58
5	Thermal: IPP	188.93	198.93	198.93
6	Hydel: Captive	33.00	33.00	33.00
7	Hydel: IPP	10.00	10.00	10.00
8	Wind: IPP	31.65	32.85	32.85
	Total	2857.59	2879.79	2881.04

Source: Economic Review

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

Table: 23.1

NEWLY REGISTERED VEHICLES IN PATHANAMTHITTA DISTRICT FOR THE YEAR 2012-13

SI.No.	Classification of Vehicles	Vehicle No.
Transport Vehicles		
1	Multiaxied Articulated Vehicles	0
2	Trucks and Lorries	22
3	Four Wheelers	2275
4	Three Wheelers	2610
Total		4907
5	Stage Carriage	491
6	Contract Carriage	588
7	Private Service Vehicles	137
8	Other Buses	0
Total		1216
9	Motor Cabs	1545
10	Maxi Cabs/Taxi	8
11	Other Taxis	47
12	LMV 3 Seater	3180
13	LMV 4 to 6 Seater	0
14	Motor Cycle Hire	0
Total		4780
15	Other TVs	0
Total Transport		10903
16	Scooters	0
17	Mopads	0
18	Motor Cycles including above & below 95cc	24518
Total		24518
19	Cars	7146
20	Jeeps	20
21	Omni Buses	30
22	Tractors	0
23	Trailors	119
24	Others	5539
Total		12854
Total Non Transport		37372
Grand Total		48275

Table: 23.2

**NUMBER OF MOTOR VEHICLE HAVING VALID REGISTRATION IN
PATHANAMTHITTA DISTRICT AS ON 2013**

Goods Vehicle	Four Wheelers and above	12756
	Three Wheelers including tempos	5839
Buses	Stage carriages	1026
	Contract Carriages/Omni Buses	5253
Four Wheelers	Cars	75854
	Taxis	2202
	Jeeps	3480
Three Wheelers	Autorickshaws	23094
	Motorized Cycle Rickshaws	0
Two Wheelers	Motorized Cycles	0
	Scooter/Motor Cycles	182652
Tractors/Trailors	Tractors/Trailors	264
	Tillers	52
	Trailors	292
	Others	1904
Grand Total		314668

Table: 23.3

LENGTH OF ROADS MAINTAINED BY PWD (R & B) AS ON 31-03-2012

(in Kms)

District/State	State Highways	Major District Roads	Total
Pathanamthitta	249.19	1790.57	2039.76
State	4341.65	27469.95	31811.60

Source: Infrastructure Statistics of Kerala

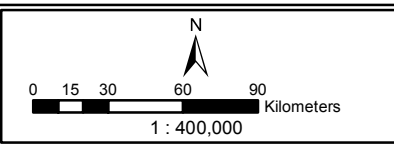
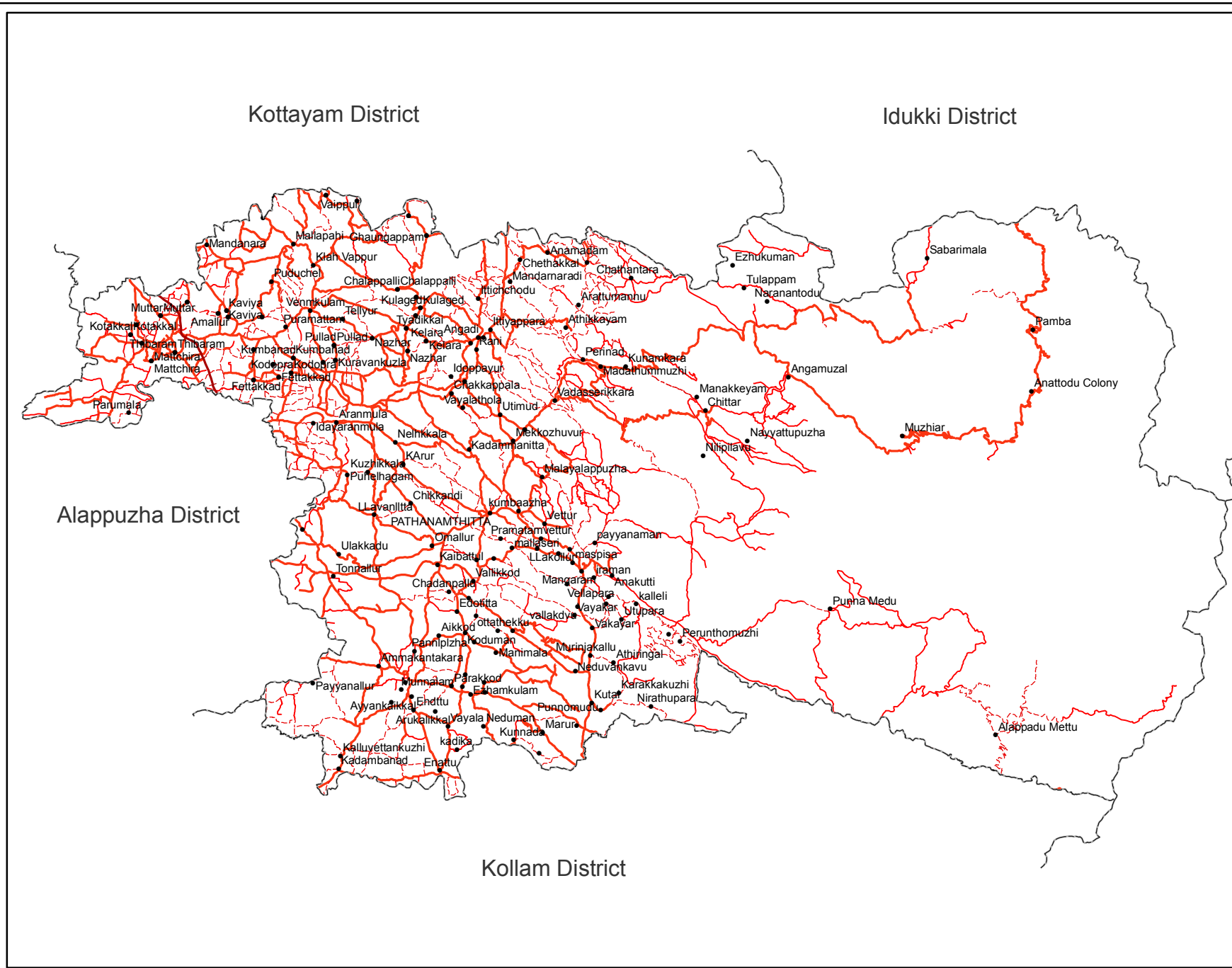
Table: 23.4

STANDARDISED LIST OF INSTITUTIONS IN PATHANAMTHITTA DISTRICT

Sl. No.	Institutions	Location	No. of Beds	Health Block
1	CHC	Pamba	0	CHC Ranni
2	CHC	Kalluppara	32	CHC Mallappalli
3	CHC	Kanjettukara	30	CHC Kanjettukara
4	CHC	Ezhumattoor	24	CHC Ezhumattoor
5	CHC	Enadimangalam	24	CHC Enadimangalam
6	CHC	Kunnanthanam	0	CHC Kunnanthanam
7	CHC	Konni	24	CHC Konni
8	CHC	Thumbamon	24	CHC Thumbamon
9	CHC	Vallana	0	CHC Vallana
10	CHC	Elanthur	24	CHC Elanthur
11	CHC	Chathangari	24	CHC Chathangari
12	CHC	Vechuchira	24	CHC Vechuchira
13	CHC	Ranni Perunadu	12	CHC Vechuchira
14	24X7 PHC	Chandanappalli	24	CHC Enadimangalam
15	24X7 PHC	Kottanadu	24	CHC Kunnanthanam
16	24X7 PHC	Chenneerkkara	24	CHC Elanthur
17	24X7 PHC	Thannithodu	24	CHC Konni
18	24X7 PHC	Pandalam	0	CHC Thumbamon
19	PHC	Koipram	24	CHC Kanjettukara
20	PHC	Thottappuzhasseri	0	CHC Kanjettukara
21	PHC	Thelleyoor	24	CHC Ezhumattoor
22	PHC	Puramattom	0	CHC Ezhumattoor
23	PHC	Othera	24	CHC Ezhumattoor
24	PHC	Kadambanadu	24	CHC Enadimangalam
25	PHC	Erath	0	CHC Enadimangalam
26	PHC	Ezhamkulam	0	CHC Enadimangalam
27	PHC	Pallickal	0	CHC Enadimangalam
28	PHC	Koodal	24	CHC Enadimangalam
29	PHC	Kottangal	24	PHC Kunnanthanam

Sl. No.	Institutions	Location	No. of Beds	Health Block
30	PHC	Kaviyur	0	PHC Kunnanathanam
31	PHC	Anikkadu	0	PHC Kunnanathanam
32	PHC	Vallikkodu	24	CHC Konni
33	PHC	Malayalapuzha	0	CHC Konni
34	PHC	Kokkathodu	0	CHC Konni
35	PHC	Pramadam	0	CHC Konni
36	PHC	Mylappra	0	CHC Konni
37	PHC	Pandalam Thekkekara	0	CHC Thumbamon
38	PHC	Kulanada	24	CHC Vallana
39	PHC	Mezhuvveli	0	CHC Vallana
40	PHC	Cherukol	24	CHC Elanthur
41	PHC	Mallappuzhasseri	0	CHC Elanthur
42	PHC	Kadammanitta	24	CHC Elanthur
43	PHC	Omallur	0	CHC Elanthur
44	PHC	Manjanikkara	0	CHC Elanthur
45	PHC	Kuttoor	0	CHC Chathangari
46	PHC	Kadapra	0	CHC Chathangari
47	PHC	Nedumbram	0	CHC Chathangari
48	PHC	Niranam	24	CHC Chathangari
49	PHC	Kuttappuzha	0	CHC Chathangari
50	PHC	Naranamoozhi	0	CHC Vechuchira
51	PHC	Ranni Pazhavangadi	0	CHC Vechuchira
52	PHC	Ranni Angadi	0	CHC Vechuchira
53	PHC	Chittar	0	CHC Vechuchira
54	PHC	Vadasserikkara	0	CHC Vechuchira
55	PHC	Seethathodu	0	CHC Vechuchira
56	PHC	Angamoozhi	0	CHC Vechuchira

Source: DHS



**TRANSPORT NETWORK
PATHANAMTHITTA DISTRICT**

- Legend**
- Place Names
 - +— Railway
 - Metalled Roads
 - Tracks
 - - - - Unmetalled Roads

