

GENERAL INFORMATION

Kannur is a beautiful miniature of the picturesque State of Kerala. Now history of Kannur commences since the arrival of Europeans. In 16th century Portuguese, Dutches, English and French people launched at Kannur. In February 1766 Hyderali invaded and subdued Kolathunadu, subsequently during his invasion Tippu Sultan subdued Malabar and Kannur being then in Malabar came under Mysore Regime. In 1792 the English people attacked and defeated Tippusultan and former Malabar District was brought under British Regime.

The former Kannur district was carved out of the portions of Malabar district and the Kasaragod Taluk of the Madras State, linked to Kerala as per the State Re-organisation Act. There upon 1st January 1957 it was bifurcated for administrative convenience, into three districts namely Kannur, Kozhikode and Palakkad. Then Kannur district had six taluks namely Kasaragod, Hosdurg, Taliparamba, Kannur, Thalassery and North Wayanad. On 1.1.1979 North Wayanad was linked to Wayanad District. On formation of Kasaragod district, the taluks namely Kasaragod & Hosdurg were de-linked from Kannur district and the present Kannur district was formed with the remaining taluks namely Taliparamba, Kannur and Thalassery. The district is bound by the Western Ghats in the east (Kodagu district of Karnataka), Kozhikode & Wayanad District in the South, Lakshadweep Sea in the west and Kasaragod District in the North. Kannur is located between latitudes 11^o40' to 12^o48' N and between longitude 74^o 52' to 75^o 56' E.

The old port St. Angelo built by Don. Francisco-De-Almayde the first Portugese Viceroy, in 1505 at Payyambalam Beach near Kannur Cantonment, and the Thalassery port built by the English East India Company in 1708 A.D. are monuments of historical importance which attracts tourists. The only drive-in-beach in Kerala is at Muzhappilangad in Kannur. Thalassery is also acknowledged as the home of Indian Circus which is believed to have evolved from the celebrated Martial Arts "Kalarippayattu". The pageant of impersonated local duties- Theyyams-elevates Kannur into a land of spectacular fantasies. Payyannur in Kannur district is believed to be one of the 64 villages founded by Lord Parasurama and one of the first regions in the State inhabited by Aryan Ammigrants.

The Parasinikkadavu-Muthappan Temple, Raja Rajeswari Temple, Taliparamba the Snake Park at Parasinikkadavu, the Trichambaram Sree Krishna Temple and Pythalmala are some of the other place which attracts tourists.

Dr. Heman Gundart, the famous German Missionary and lexicographer, compiled the first dictionary in Malayalam when he lived in Thalassery in the first half of the 19th century.

Head quarter of Kannur is in Kannur Town and the district has its Revenue Divisional Office in at Thalassery from 1793 (as a part of former Malabar district).

As stated earlier Kannur district is comprised of 3 taluks and the area of the district is 2966.00 Sq. Km. This is about 7.6% of the area of the State. There are 129 villages in the district. A break up of these details is as follows.

Table:- 1.1

Sl. No.	Name of Taluk	Area (in Sq. Km.)	No. of Villages
1	Thaliparamba	1330.56	47
2	Kannur	430.80	34
3	Thalassery	1206.61	48
	District	2966.00	129

Source: District Plan, Kannur

THALIPARAMBA TALUK

Thaliparamba Taluk has 47 villages. It is stretched from the coastal area of Ramanthali to Nuchiyard and Vayathur Villages touching the Karnataka border.

KANNUR TALUK

Kannur Taluk has 34 Villages from Muzhippilangadu in the south to Kadannappally and Panappuzha Villages in the North, which are seen spread into the Taliparamba Taluk.

THALASSERY TALUK

This Taluk has 48 villages. Western boundary of the taluk in the Lakshadweep Sea and eastern boundary in Karnataka border.

Based on the Geological features the district may be classified into three regions. Coastal region of about 157 Sq. Km touching the Lakshadweep Sea, midland comprised of small hills, sloped area and plain surface of about 1216.82 Sq. Km and hilly forest area of about 1594 Sq. Km.

A distribution of area according land position is as follows.

Table:- 1.2

Taluk	Coastal plain	Highland	Midland	Total
Taliparamba		667.86	632.70	1330.56
Kannur	127.20	303.60	-----	430.80
Thalassery	-----	622.51	584.10	1206.61
Total	157.20	1593.97	1216.80	2966.00

It is rainy season in the district from June to August due to South-west monsoon and from September to November, due to North-east monsoon. From December to February it is cold season and from March to the end May the weather is hot.

Red laterite stone is abounded in Kannur; besides this red laterite soil and sand are also seen in plenty. A number of groves attached to temples seen in the district also a source of natural resources. Out of 44 rivers in Kerala 7 are in Kannur district. They are Ramapuram river, Kuppam river, Peruvamba river, Valapattanam river, Ancharakandy river, Thalassery river and Mahe river. Valapattanam is the longest river which is of 110 Km long of which 45.06 Km are navigable.

DEPOSITS OF MINERALS:

Deposits of China Clay, Bauxite, illuminate, Monocite are seen in the district. China Clay is mostly seen in Pattuvam, Perumba, Karivellur and Vadakkumbade in the district. Illuminate and monocite are seen in the southern part of Valapattanam River and in Azhikode. Deposits of bauxite are seen in Payyannur and Pattuvam. Since its quality is poor it is used for the manufacture of cement.

TEMPERATURE:

When it is examined the past 10 years data, the maximum temperature noticed in the district is found to be 38.8⁰ Celsius (in March 1996 and in April 1997) and a minimum of 18.2⁰ Celsius (in January 1992).

RAINFALL:

Rainfall is found maximum during the month of June and July. 70% of the rainfall is got in the district during this period. During the past 10 years rainfall was maximum in 1994 (4993.6m.m) Month(s) in which the district had maximum days (31 days) of rainfall are July 1994, July 1995, July 1997, June 2001, June 2002, June 2003 and June 2004.

INDUSTRY:

There are 14 medium scale industrial units in the district. Handloom forms a major portion of the industrial units in the district. The district is also well known for its Beedi industry. Prohibition of smoking has adversely affected this industry recently. The major Beedi Company viz; Dinesh Beedi has adopted product diversification.

In the small scale sector there are 9731 industrial units as on 31-3-2006. Kerala small industries development corporation (KSIDC) is having a development plot a Valiyavelicham with 256 Acres of Land and one unit, Kerala Infrastructure Development Corporation (KINFRA) is having a development plot at Chonadam, Thalassery with 50.12 Acres of Land and is running 8 units.

INSTITUTIONAL AND INFRASTRUCTURAL FACILITIES:

The district has one University (Kannur University), One Medical College (Allopathy), One Medical College (Ayurveda), Four Engineering Colleges, 3 Polytechniques, 22 Arts and Science Colleges, 24 Professional Colleges and 1300 Schools.

KERALA AT A GLANCE

Location	:	North Latitude between 8 ⁰ 18' and 12 ⁰ 48' East Longitude between 74 ⁰ 52' and 77 ⁰ 22'
Area	:	38863 sq. km.
Forests	:	11309.42 sq. km.
Wetlands	:	1941 sq. Km
Percentage of area to the area of Indian Union	:	1.18
Length of Coastal Line	:	580 km
Highest Peak : Anamudi	:	2694 metres
Longest River : Periyar	:	244 km
Rivers		
West flowing	:	41 Nos
East flowing	:	3 Nos
Administration		
Districts	:	14 Nos
Taluks	:	63 Nos
Revenue Villages	:	1478 Nos
Village Panchayats	:	978 Nos
Corporations	:	5 Nos
Municipalities	:	60 Nos
Cantonments	:	1 No
Community Development Blocks	:	152 Nos
Average Annual Rainfall	:	2900 mm
Cultivated Area (million hectares)	:	2.292 mh
Per capita land	:	0.13 ha.
Per capita cultivated land	:	0.10 ha.
Per capita production food grain	:	37 kg/annum
Members in State Legislature		
Elected	:	140 Nos
Nominated	:	1 No
Members of Parliament		
Lok Sabha	:	20 Nos
Rajya Sabha	:	9 Nos.

Table 1.3

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 (per cent)	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	
Urban population (lakhs)	76.80	82.67	
Growth of population (per cent)	13.88	9.43	4.86
Life Expectancy (years)	68	-	
Infant mortality (per 1000)	22	16*	
Birth Rate (per 1000)	19.8	18.3	

Source:- Census Report, Govt. of India

Table 1.4

KANNUR AT A GLANCE

General Features

Date of Formation **Ist January, 1957**

District Head Quarters **Kannur**

Sl. No.	Administrative set-up	Kannur	State
1	Number of Revenue Divisions	1	21
2	Number of Taluks	3	63
3	Number of Revenue Villages	129	1452
4	Number of Corporations	-	5
5	Number of Corporation Wards	-	359
6	Number of Municipalities	6	60
7	Number of Municipality Wards	244	2216
8	Number of Block Panchayat	11	152
9	Number of Block Panchayat Wards	155	2095
10	Number of Grama Panchayat	81	978
11	Number of Grama Panchayat Wards	1345	16680
12	Number of Assembly Constituencies	11	140
13	Number of Parliament Constituencies	1	20
14	Number of Cantonments	1	1

Geographical particulars

1	Total Area (Sq. Km)	2966	38863
	Wet Area (hect.)	31385	462797
	Dry Area (hect.)	237154	2273603
2	Forest Area (hect.)	24145	1130941

Table 1.5

DEMOGRAPHIC PARTICULARS

Sl.No.	Particulars	Kannur	State
1	Total Population (2001 Census)	2408956	31841374
	Male	1152817	15468614
	Female	1256139	16372760
2	Total rural Population	1196058	23574449
	Male	578544	11451282
	Female	617514	12123167
3	Total Urban Population	1212898	8266925
	Male	574273	4017332
	Female	638625	4249593
4	Total SC Population	98991	3123941
	Male	48275	1525114
	Female	50716	1598827
5	Total SC Rural Population	52442	2553725
	Male	25693	1247537
	Female	26749	1306188
6	Total SC Urban Population	46549	570216
	Male	22582	277577
	Female	23967	292639
7	Total ST Population	19969	364189
	Male	9793	180169
	Female	10176	184020
8	Total ST Rural Population	19417	350019
	Male	9501	173267
	Female	9916	176752
9	Total ST Urban Population	552	14170
	Male	292	6902
	Female	260	7268
10	Total Number of Households	457368	6726356
	Rural Households	237932	5010259
	Urban Households	219436	1716097
11	Religion wise population		
	Hindu	1480748	17883449
	Muslims	665648	7863842
	Christians	261019	6057427
	Others	1541	36656
12	Density of Population	812	819
13	Growth Rate (1991 to 2001)	6.98	9.43
14	Sex Ratio	1090	1058
15	Child sex ratio	962	963
16	Literacy Rate	92.59	90.86
	Male	96.13	94.24
	Female	89.4	87.72

Table 1.6

EDUCATION

Sl. No.	Institutions	Kannur	State
1	Lower Primary Schools	732	6827
2	Upper Primary Schools	374	3037
3	High Schools	186	2790
4	Higher Secondary Schools	116	1664
5	Vocational Higher Secondary Schools	16	375
6	Technical Higher Secondary Schools	3	39
7	Teachers Training Institute	12	202
8	Kendriya Vidyalaya	5	32
9	Navodaya Vidyalaya	1	13
10	CBSE School	35	483
11	ICSE Schools	1	78
12	ITI s	2	32
13	Allopathic Medical Colleges	1	14
14	Ayurveda Medical Colleges	1	12
15	Dental Colleges	1	11
16	Nursing Colleges	5	51
17	Pharmacy Colleges	3	21
18	Engineering Colleges	4	84
19	Polytechnic Colleges	3	52

Table 1.7

HEALTH

Sl. No.	Institutions	Kannur	State
1	Government Hospitals (Allopathic)	11	132
2	Number of Child health centres	9	115
3	Number of Primary Health Centres	82	931
4	Number of Dispensaries and Mobiles Units	1	59
5	Number of TB Centre/Clinic	1	18
6	Number of community health centres	9	115
7	Number of Ayurveda hospitals	6	107

Table 1.8

COMMUNICATION

Sl. No.	Institutions	Kannur	State
1	No. of Post offices	434	5083
2	No. of Head Post offices	10	51
3	No. of sub Post offices	103	1464
4	No. of ED sub offices	67	526

POPULATION

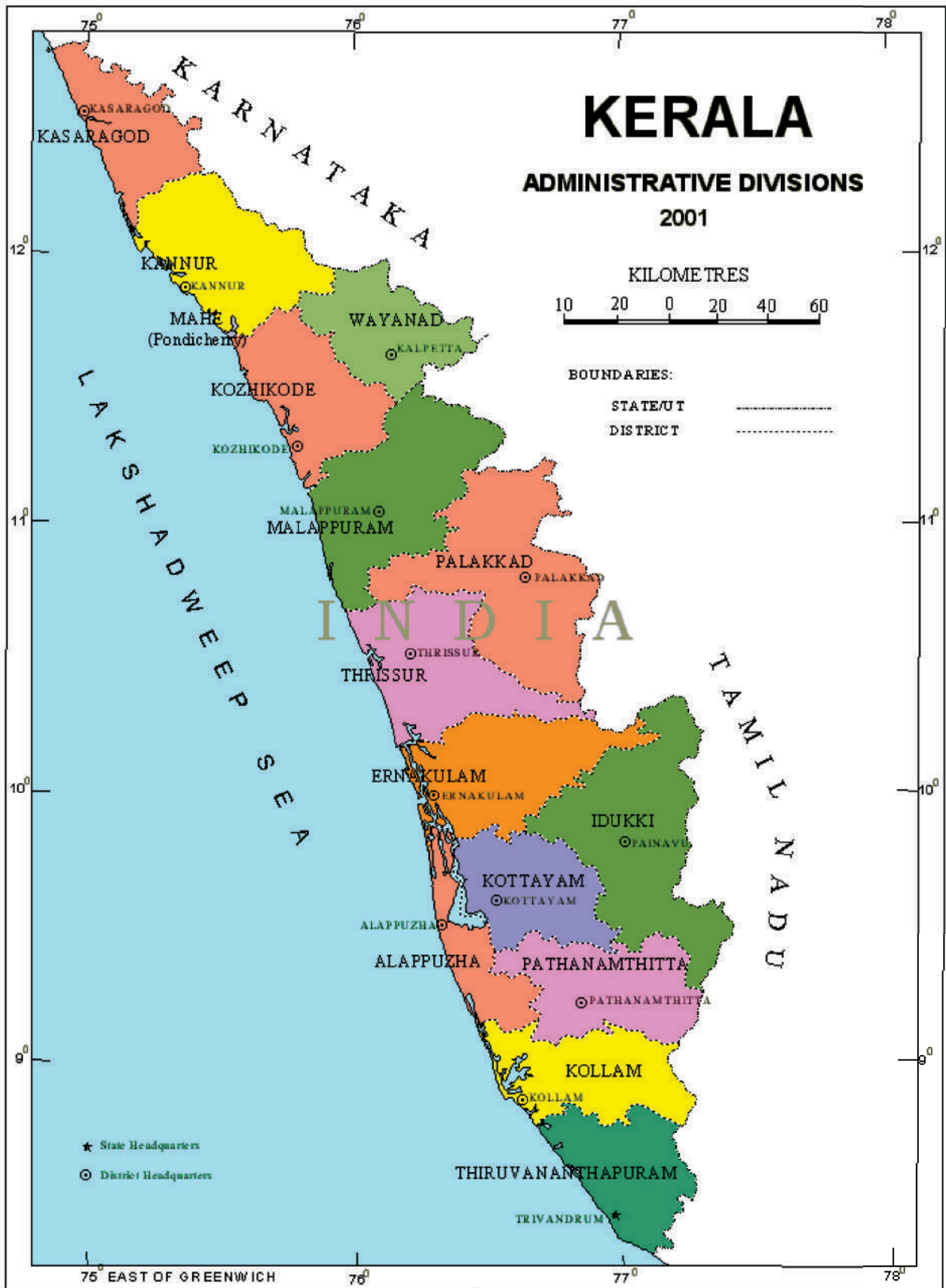
Table 1.9
PANCHAYAT/WARD WISE DETAILS OF DEMOGRAPHIC PARTICULARS

Sl. No.	Name of Panchayat / Block/ Municipality	Grade	Area (in sq.kms)	No. of wards	No. of occupied residential houses	No. of house-holds	Density of Population	Sex ratio	Effective literacy rate
1	2	3	4	5	6	7	8	9	10
1	Edakkad	I st	18.26	20	5313	6779	1991	1153	84.45
2	Muzhappilangad	I st	7.19	14	2641	3562	3053	1112	82.75
3	Chembilode	I st	20.99	18	4257	5411	1486	1121	83.03
4	Peralasseri	I st	19.4	17	4242	5304	1431	1119	84.7
5	Munderi	I st	20.42	19	4362	5614	1637	1115	81.18
6	Anjarakandy	I st	15.47	14	3402	4229	1414	1108	85.08
7	Chelora	Special	21.18	19	4588	5890	1620	1127	82.85
8	Elayavoor	Special	11.57	18	4575	5835	2726	1117	85.1
9	Kadambur	II nd	7.95	12	2509	3161	2194	1143	84.48
	Edakkad Block		142.43	151	35889	45785	1786	1124	83.74
10	Cheruthazham	I st	32.18	16	4138	5484	815	1115	82.59
11	Ezhome	Special	18.95	13	2917	3566	975	1122	81.23
12	Kunhimangalam	I st	15.44	13	2869	3653	1167	1183	80.22
13	Madayil	Special	16.71	19	4580	5618	2093	1143	77.89
14	Mattool	II nd	12.82	16	3064	3619	2035	1157	77.76
15	Ramanthali	I st	29.99	14	3210	3816	731	1156	78.08
16	Kadannappally Panapuzha	II nd	53.75	14	3665	4459	394	1098	80.16
17	Karivellur Peralam	I st	22.23	13	3664	4448	888	1114	82.4
18	Kankole Alappadamba	II nd	42.07	13	3070	4012	418	1081	81.33

1	2	3	4	5	6	7	8	9	10
19	Eramam Kuttoor	I st	75.14	16	4958	6124	360	1079	80.22
20	Peringome Vayakkara	Special	76.98	15	10592	5303	315	1077	78.82
21	Cherupuzha	I st grd	75.64	18		7194	422	1009	82.41
	Payannur Block		471.9	180	46727	57296	609	1212	87.56
22	Pattuvam	I st	16.85	12	2260	2778	890	1150	77.16
23	Cherukunnu	II nd	15.37	12	2625	2939	1041	1193	80.67
24	Kalliassery	Special	15.73	17	4118	5525	1784	1120	84.38
25	Kannapuram	I st	14.39	13	3130	3792	1287	1169	83.25
26	Pappinassery	Special	15.24	19	4793	5933	2183	1089	82.14
27	Chengala	I st	67.33	17	4487	5597	427	1044	79.7
28	Kurumathur	II nd	50.79	16	3789	5149	516	1084	78.48
29	Pariyaram	II nd	54.77	17	4256	5713	523	1062	77.71
30	Narath	I st	17.24	16	3332	4222	1462	1111	78.27
31	Chapparapadavu	II nd	69.99	17	4969	6064	424	1037	78.15
32	Naduvil	I st	87.97	18	5753	6861	356	1012	79.69
33	Udayagiri	II nd	51.8	14	3990	4632	393	992	82.55
34	Alakode	Special	77.7	20	3775	8037	466	1013	80.63
	Taliparamba Block		555.17	208	54177	67242	608	1083	80.21
35	Eruvassy	I st	49.09	13	3447	4271	391	998	82.06
36	Irikkur	I st	11.22	12	1450	1774	1115	1000	73.55
37	Malappattam	II nd	19.3	12	1448	1911	500	1045	77.53
38	Payyavoor	I st	67.34	15	4407	5285	345	994	81.73
39	Kolacherry	I st	20.72	16	3269	4215	1252	1108	78.05
40	Kuttiyattoor	II nd	35.1	15	3533	4499	699	1067	80.18
41	Mayyil	I st	33.08	17	3531	5067	834	1072	79.29
42	Sreekantapuram	I st	69	19	5555	6927	481	1020	80.59
43	Padiyoor Kalliad	I st	54.09	14	9230	4162	380	1004	78.42
44	Ulikkal	Special	74.68	19		7302	460	1001	80.8

1	2	3	4	5	6	7	8	9	10
	IRIKKUR BLOCK		433.62	152	36310	45413	532	10309	79.22
45	Chirakkal	Special	13.56	22	6003	7612	3192	1082	83.16
46	Pallikkunnu	Special	6.9	16	3897	4943	3908	1142	86.64
47	Puzhathi	Special	9.17	19	4440	5673	3650	1030	83.39
48	Valapattanam	Special	2.04	12	946	1194	4103	1014	80.02
49	Azhikode	Special	16.04	22	6324	8141	2865	1070	84.56
	KANNUR BLOCK		47.71	91	21610	27563	3313	1067	83.55
50	Dharmadam	I st	10.66	17	4119	5301	2736	1121	85.93
51	Erancholi	I st	10.08	15	3874	4743	2441	1169	86.87
52	Kadirur	I st	12.3	17	4184	5372	2357	1157	86.67
53	Kottayam	II nd	8.43	13	2345	2952	2076	1108	83.28
54	Pinarayi	I st	20.04	18	4809	6157	1561	1115	85.77
55	Chokli	I st	11.98	16	4002	4719	2188	1211	84.55
56	Kariyad	II nd	9.81	13	2766	3360	1974	1208	80.11
57	Peringalam	II nd	10.65	13	2584	3265	1722	1186	82.22
58	New Mahi	II nd	5.08	12	2337	2559	3305	1204	84.05
	THALASSERY BLOCK		99.03	134	30920	38428	2143	1164	84.38
59	Mokeri	II nd	10.53	13	2770	3448	1787	1155	83.74
60	Panniyannur	II nd	10.02	14	3092	3830	2082	1181	85.21
61	Panoor	I st	8.54	12	2445	2945	1907	1191	80.99
62	Thriprangottur	I st	32.29	17	4348	5346	858	1178	78.9
63	Chittariparambe	I st	33.81	14	3554	4309	660	1102	80.37
64	Kunnothuparamba	II nd	29.77	20	5756	7006	1230	1161	80.18
65	Mangittidom	I st	33.31	18	4739	5841	930	1104	83.66
66	Pattiom	II nd	27.88	17	4449	5583	1040	1146	82.74
67	Vengad	I st	28.09	20	4943	6426	1274	1078	82.59

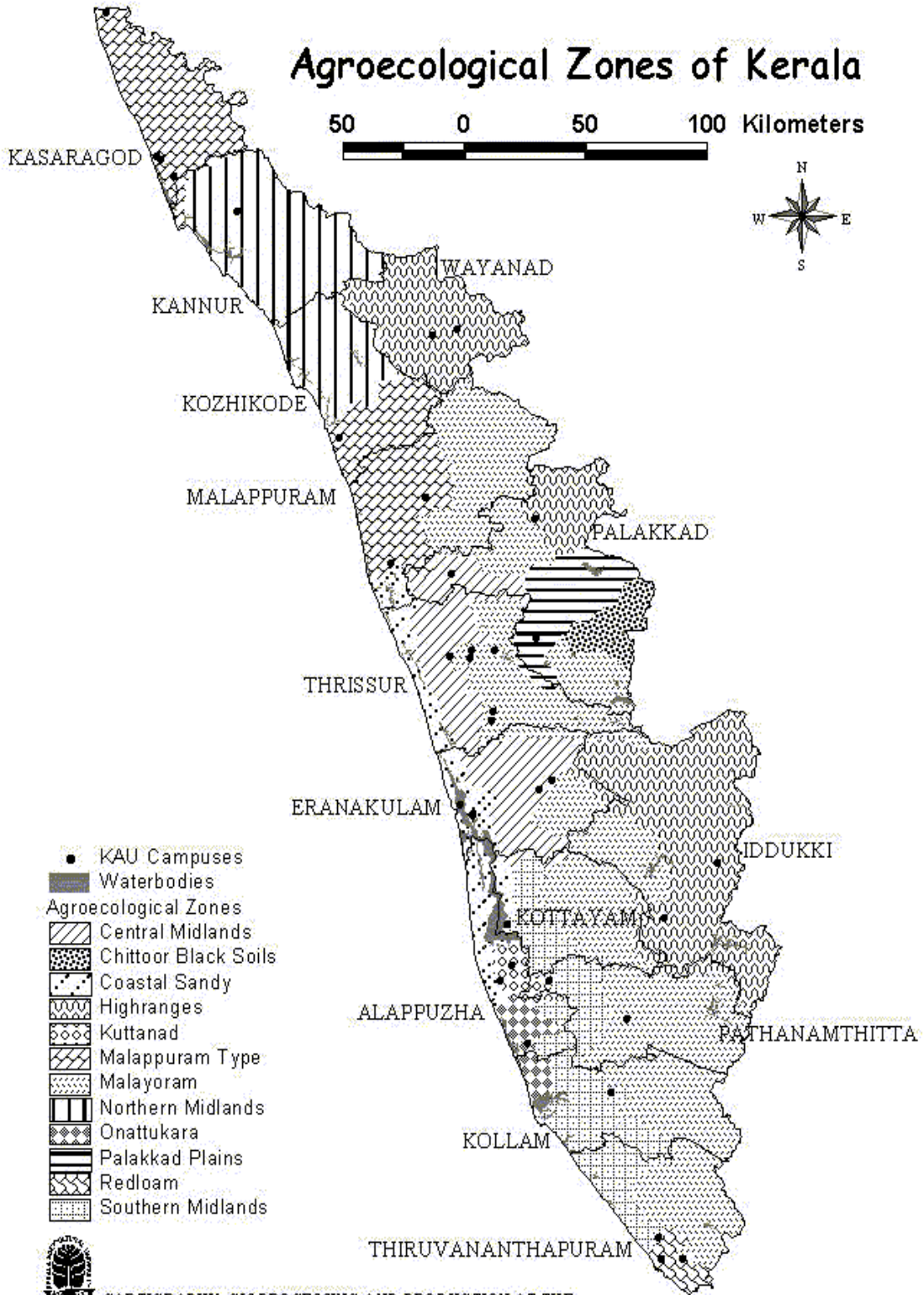
1	2	3	4	5	6	7	8	9	10
	KUTHUPARAMBA BLOCK		214.34	145	36106	44734	1113	1144	82.04
68	Aralam	I st	77.93	16	4427	5340	340	1009	78.81
69	Ayyankunnu	I st	122.8	15	3966	4996	190	985	82.57
70	Keezhallur	II nd	29.02	13	2801	3540	659	1076	81.64
71	Thilankerry	III rd	25.06	12	2117	2698	545	1086	79.04
72	Koodali	I st	40.27	17	4066	5262	708	1049	81.97
73	Payam	I st	31.21	17	4525	5657	882	1048	81.86
74	Keezhur Chavassery	Special	45.65	20	5187	6619	818	1035	79.2
	IRITTY BLOCK		372.94	110	27089	34112	472	1041	80.73
75	Kanichar	II nd	51.96	12	2869	3458	303	1018	80.8
76	Kelakom	II nd	77.92	12	3170	3825	221	1017	80.55
77	Kottivoor	II nd	155.87	13	3255	3905	114	1012	81.91
78	Muzhakkunnu	II nd	31.04	14	3223	4105	680	1051	79.54
79	Kolayad	II nd	33.15	13	3304	3952	567	1065	78.9
80	Malur	II nd	41.38	14	3378	4161	514	1081	78.93
81	Peravoor	I st	34.1	15	3819	4748	673	1053	81.14
	PERAVOOR BLOCK		425.42	93	23018	28154	317	1042	80.25
	Municipalities								
1	Payyannur	III rd	54.63	41	10885	13904	1258	1102	82.32
2	Taliparamba	III rd	43.08	41	9473	12537	1567	1074	80.9
3	Kannur	I st	11.03	39	9357	11034	5784	1091	82.84
4	Thalassery	I st	23.96	50	14743	17144	4148	1125	85.4
5	Koothuparamba	III rd	16.76	25	4407	5329	1762	1124	85.04
6	Mattannur	III rd	54.15	28	6261	7950	818	1045	81.17
	Municipalities		205.4	232	55126	67898	15337	6561	82.95
	Kannur Cantonment	Class II	1.79	8	696	743	2625		89.08
	Rural		2762.57	1264	311846	388727	10903	19186	82.41
	District Total		2969.76	1504	367668	457368	28865	19186	84.81



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Agroecological Zones of Kerala



- KAU Campuses
- Waterbodies
- Agroecological Zones
- ▨ Central Midlands
- ▩ Chittoor Black 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, KAU P.O., THRISSUR - 680 656

DEMOGRAPHY

Table:- 4.1

INDIA'S POPULATION –CENSUS 2011

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

KEY FINDINGS OF THE CENSUS

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

Source:- Census Report- 2011

Table:- 4.2

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

India/State/ District	Total Population			Population in age group 0-6			Number of Literates			Literacy rate (in Percentage)			Percentage decadal growth rate of population	Sex Ratio (Number of Females per 1000 Males)	Sex Ratio 0- 6 populati on
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females			
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
INDIA	1,21,01,93,422	62,37,24,248	586,469,174	158,789,287	82,952,135	7,56,37,152	778,454,120	44,42,03,762	33,42,50,358	74.04	82.14	65.46	17.64	940	914
KERALA	33,387,677	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	93.91	96.02	91.98	4.86	1084	959
Kasaragod	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	89.95	93.93	86.13	8.18	1079	960
Kannur	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	95.41	97.54	93.57	4.84	1133	962
Wayanad	8,16,558	4,01,314	4,15,244	89,720	45,776	43,944	6,49,186	3,30,093	3,19,093	89.32	92.84	85.94	4.6	1035	960
Kozhikode	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	95.24	97.57	93.16	7.31	1097	963
Malappuram	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	93.55	95.78	91.55	13.39	1096	960
Palakkad	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	88.49	92.27	84.99	7.39	1067	962
Thrissur	31,10,327	14,74,665	16,35,662	2,89,126	1,48,428	1,40,698	26,89,229	12,86,141	14,03,088	95.32	96.98	93.85	4.58	1109	948
Ernakulam	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	95.68	97.14	94.27	5.6	1028	954
Idukki	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	92.2	94.84	89.59	1.93	1006	958
Kottayam	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	96.4	97.14	95.67	1.32	1040	957
Alappuzha	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	96.26	97.9	94.8	0.61	1100	947
Pathanamthitta	11,95,537	5,61,620	6,33,917	91,501	46,582	44,919	10,70,120	5,03,171	5,66,949	96.93	97.7	96.26	3.12	1129	964
Kollam	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	93.77	95.83	91.95	1.72	1113	960
Thiruvananthapuram	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	92.66	94.6	90.89	2.25	1	

Source:- Census Report - 2011

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

INDIA/ STATE/ DISTRICT	Total/ Rural/ Urban	Population			Percentage of child population in the age-group 0-6			Literacy Rate			Sex ratio of total population	Sex ratio of child population in the age group 0-6	Percent age share of urban population	
		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	40,51,70,510	17.19	14.11	14.32	13.90	68.91	78.57	58.75	947	919	
	U	37,71,05,760	19,56,07,196	18,12,96,564	18.12	10.93	11.07	10.78	84.98	89.67	79.92	926	902	25.96
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	96.29	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	3,97,324	4,10,100	-17.82	11.07	11.61	10.56	88.71	93.11	84.51	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	25,25,537	11,84,012	13,41,525	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	9.80	96.23	98.12	94.54	1166	965	
Wayanad District	T	7,84,981	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	3,15,777	1,53,392	1,61,885	4.52	10.99	11.40	10.59	89.22	92.77	85.52	1034	960	
	U	30,89,543	14,73,028	16,16,515	7.31	10.47	11.19	9.82	95.24	97.42	93.16	1097	963	67.15
Kozhikode District	T	10,14,765	4,85,654	5,29,111	-42.93	10.91	11.63	10.25	94.78	97.57	92.41	1089	961	
	R	20,74,778	9,87,374	10,87,404	88.42	10.26	10.97	9.81	95.47	97.64	93.52	1101	964	
	U	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
Malappuram District	T	22,84,473	10,95,465	11,89,008	-29.82	13.40	14.31	12.56	92.57	94.97	90.51	1095	961	
	R	8,65,549	4,10,934	4,54,615	410.00	13.51	14.47	12.64	94.66	96.81	92.74	1099	959	
	U	28,10,892	13,60,067	14,50,825	7.39	10.26	10.80	9.75	88.48	92.27	84.99	1067	962	24.09
Palakkad District	T	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	
	R	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	
	U	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
Thrissur District	T	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	
	R	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	
	U	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	
Ernakulam District	T	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	68.07
	R	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	
	U	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
Idukki District	T	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	
	R	52,025	25,524	26,501	-9.67	9.49	9.83	9.16	95.74	97.10	94.45	1038	968	
	U	19,79,384	9,70,140	10,09,244	1.32	8.52	8.88	8.17	96.40	97.17	95.57	1040	957	28.68
Kottayam District	T	14,13,773	6,94,308	7,19,465	-14.52	8.56	8.91	8.23	97.17	97.97	96.40	1036	957	
	R	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	
	U	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
Alappuzha District	T	9,74,916	4,52,571	5,12,345	-34.47	9.06	9.82	8.42	96.72	98.24	95.38	1108	950	
	R	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	
	U	11,95,537	5,61,820	6,33,917	-3.12	7.65	8.29	7.09	96.93	97.70	96.26	1129	964	11.00
Pathanamthitta District	T	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	
	R	1,31,461	61,875	69,586	6.19	7.70	8.32	7.15	97.42	98.15	96.79	1125	967	
	U	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
Kollam District	T	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	
	R	11,86,340	5,55,846	6,20,494	154.59	9.09	9.73	8.50	93.38	95.46	91.52	1097	958	
	U	33,07,284	15,84,200	17,23,084	2.25	8.79	9.33	8.29	92.66	94.60	90.99	1088	967	53.80
Thiruvananthapuram District	T	15,28,030	7,25,230	8,02,800	-28.69	9.15	9.82	8.55	91.98	94.27	89.95	1107	963	
	R	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	14
No. of Sub-Districts (Talukas)	63	63	520	1,018
No. of Towns	159	159	520	1,018
No. of Villages	1,364	1,364	520	1,018
Percentage of urban population	2001	2011	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
STs	60	59
CTs	99	461
Total	159	520
% Growth (Rounded to next digit)	-2%	366%
	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 *

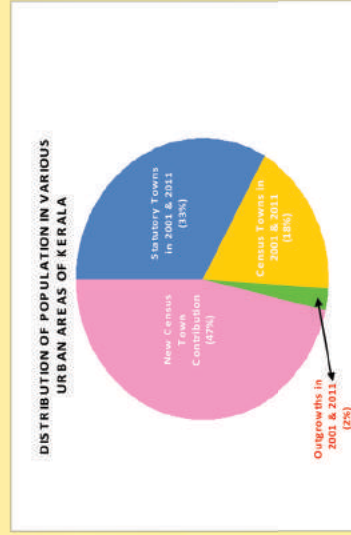
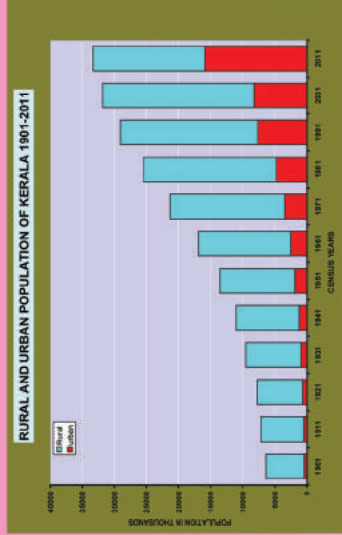
Out Growth (OG): Out Growth should be a viable unit such as a village or part of a village contiguous to a statutory town and possess the urban features in terms of infrastructure and amenities such as pucca roads, electricity, taps, drainage system, education institutions, post offices, medical facilities, 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

RAIN FALL DISTRIBUTION OF KANNUR

Table: 5.1

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Actual	Normal	Deviation
1997	0	0	8	10	46	923	1566	804	143	132	259	70	3961	3375	586
State Average (Total/14)	3	4	37	62	133	562	942	521	290	283	285	92	3213	3052	161
1998	0	0	0	3	156	1029	964	278	480	418	96	60	3484	3375	109
State Average (Total/14)	8	1	11	65	171	725	601	365	516	439	129	84	3115	3052	63
1999	0	0	0	11.8	431	754	972	415	66	349	38	0	3036.8	3375	-338.2
State Average (Total/14)	2	24	22	124	459	614	657	250	86	545	71	5	2859	3052	-193
2000	38	1	6	87	207	822	543	605	242	338	24	120	3033	3321.8	-288.8
State Average (Total/14)	14	68	23	99	130	649	336	580	249	216	81	70	2515	2919	-404
2001	0	3	0	64	262	916	746	482	51	298	111	11	2944	3322	-378
State Average (Total/14)	20	29	7	113	247	709	587	348	231	320	178	11	2800	2929	-129
2002	0	1	0	41	295	775	325	674	159	746	70	1	3087	3322	-235
State Average (Total/14)	7	10	35	117	341	491	319	435	94	519	148	2	2518	2929	-411

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Actual	Normal	Deviation
2003	0	3	2	112	40	1071	854	432	118	201	32	0	2865	3339	-474
State Average (Total/14)	1	50	71	139	93	571	530	345	94	396	82	10	2380	2948	-568
2004	0	0	21	49	772	1034	405	571	129	261	128	0	3370	3373	-3
State Average (Total/14)	3	8	38	114	622	665	373	405	197	327	119	2	2877	3092	-215
2005	10	0	0	321	20	733	850	267	290	179	162	13	2845	3374	-529
State Average (Total/14)	21	6	27	225	136	628	789	274	400	249	194	62	3011	3091	-80
2006	0	0	16	5	617	735	674	491	570	267	97.5	2	3475	3373.5	101
State Average (Total/14)	10	1	75	71	525	574	551	388	475	380	219	2	3271	3091	180
2007	1	0	0	66	214	950	1116	784	596	315	72.3	0	4113	3373.5	739
State Average (Total/14)	0	7	8	152	210	729	953	492	534	357	101	11	3554	3091	463
2008		0.5	250.2	23.7	56.6	725.8	483.6	480.3	396.4	392.5	3.0	9.8	NA	NA	NA
State Average (Total/14)	0.8	29.7	215.9	103.7	78.5	477.9	508.6	347.8	343.9	354.2	56.8	16.1	NA	NA	NA
2009	NA	NA	NA	97.2	169.6	625.3	NA	NA	NA	NA	NA	NA	NA	NA	NA
State Average (Total/14)	3.2	1.3	9.7	67.8	190.4	433.5	NA	NA	NA	NA	NA	NA	NA	NA	NA

Source:- Agricultural Statistics, DES

Table:- 5.2

DETAILS OF RAIN FALL RECORDED IN THE RAIN GAUGE DURING 2007-2008(mm)

Sl. No.	Division / Centre	April	May	June	July	August	Sep	October	Nov	Dec	Jan	February	March
1	Thenmala	159.85	291.80	311.45	452.66	261.45	302.75	316.25	112.20	52.55	-	113.80	173.45
2	Achencoil	4.00	10.00	13.50	13.00	11.00	15.00	10.00	9.50	-	2.00	10.00	6.50
3	Konni	378.00	236.00	587.00	778.00	308.00	467.70	595.40	198.00	16.20	-	97.00	163.40
4	Munnar	13.86	6.00	66.62	105.50	66.32	53.42	49.78	18.37	6.87	-	3.78	20.83
5	Thrissur	5.77	17.19	75.73	120.30	48.02	53.31	35.47	5.14	1.33	-	3.10	14.12
6	Vazhachal	166.96	359.30	776.67	1,521.04	763.23	726.38	348.37	174.75	24.40	-	51.00	104.30
7	Chalakkudy	6.12	14.45	51.44	97.19	48.63	50.29	43.42	5.38	2.22	-	2.61	24.84
8	Malayattoor	164.07	194.44	608.16	859.44	373.84	519.90	416.34	252.77	56.41	13.99	13.11	174.44
9	Palakkad	3.91	2.01	28.51	21.97	19.34	15.48	19.76	3.23	2.49	0.61	2.02	0.96
10	Mannarkkad	156.00	275.00	736.00	1,100.00	553.00	556.00	329.00	111.00	16.00	-	27.00	286.00
11	Nilambur North	2.23	8.03	23.03	46.12	20.72	19.02	4.83	0.28	0.25	-	0.51	4.09
12	Kannur	74.80	74.00	388.85	568.50	325.15	319.75	71.80	107.40	30.00	-	-	1,907.85
13	Wildlife Division, Thiruvananthapuram	96.00	510.00	362.00	353.00	389.00	498.00	517.00	377.00	158.00	45.00	84.00	35.00
14	Periyar East, Thekkady	111.83	250.41	261.02	335.16	223.06	347.24	545.44	269.21	29.32	23.99	5.65	7.21
15	Eravikulam, Munnar	-	106.50	66.05	59.00	92.00	103.90	144.90	43.20	95.02	51.00	-	111.02
16	Periyar West Peerumadu	49.30	608.10	315.51	1,367.50	872.30	1,324.80	1,137.40	476.15	51.40	15.00	54.30	254.00
17	Silent Valley	169.98	308.80	1,693.55	2,402.98	1,378.08	1,000.78	412.55	63.53	16.27	9.00	47.20	186.80
18	Aralam	-	116.00	980.00	1,075.00	670.00	520.00	230.00	110.00	37.00	-	-	-
19	Wildlife Wayanad	165.35	84.53	312.90	636.75	426.31	299.54	144.54	59.50	15.00	25.00	29.34	182.34
20	Sendurney	-	-	-	-	-	-	-	-	-	-	-	-
21	Parambikulam	155.00	260.00	684.00	785.00	621.00	520.00	446.00	24.00	113	24	-	102

Source: Forest Statistics

Table:- 5.3

MEAN MONTHLY HUMIDITY DURING THE YEAR 2005-2007 (in %)

Year	Jan		Feb		March		April		May		June		July		Aug		Sep		Oct		Nov		Dec	
	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.	8.30 A.M.	5.30 P.M.
2005	73	64	69	52	73	63	74	64	72	65	87	82	94	89	88	79	86	80	88	82	74	68	75	67
2006	68	64	62	57	76	64	75	64	81	72	92	83	93	85	93	85	90	85	87	78	83	76	64	59
2007	60	4	73	59	80	64	75	62	70	61	90	85	96	88	95	86	93	86	90	80	69	69	67	65

Table:- 5.4

MONTHLY MEAN MINIMUM-MAXIMUM TEMPERATURE (°C) for the year 2007

Stations	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
TVPM City	21.8	33.0	22.4	33.1	24.1	34.1	25.3	33.8	25.2	32.8	24	31.2	23.5	30.2	23.9	30.7	23.7	30.7	23.4	31.2	23.0	32.0	22.7	32.2
Kozhikode City	22.8	33.1	23.7	33.1	25.9	33.7	26.3	34.7	25.7	33.2	24.6	30.4	24	29.1	23.7	29.4	24.0	30.0	24.1	31.4	23.3	32.7	23.4	32.8
Velanikkara	22.0	32.5	22.2	34.2	24.4	36.0	25.0	35.7	24.7	32.7	23.5	30.0	22.9	28.4	22.9	29.0	23.0	29.4	22.5	30.5	21.6	31.7	22.6	36.6
Alappuzha	21.6	31.8	22.5	31.7	24.9	32.5	24.5	32.8	25	32.3	23	29.2	22	28.4	22.4	29.1	22.9	30.0	22.9	30.9	22.7	31.4	22.1	32.1
Thiruvananthapuram AP	22.4	31.3	22.9	31.5	24.9	32.5	25.6	33.0	25.6	32.3	23.9	30.7	23.4	29.7	24.1	30.0	23.9	30.2	23.7	30.2	23.4	30.9	22.9	31.3
Kannur	20.6	33.5	21.5	34.3	24.3	34.9	25.2	35.7	25	34.2	23.2	30.4	22.5	29.7	22.4	29.9	22.9	30.5	22.8	31.8	21.7	33.9	22.8	33.4
Punalur	19.9	35.2	20.5	36.0	22.4	38.0	24.3	36.1	24.3	34.7	23.2	31.9	22.8	29.7	23.1	31.6	23.0	31.3	23.1	30.5	22.3	31.7	21.8	31.0
Kozhikode AP	21.8	33.0	22.5	33.0	25.0	33.9	25.2	34.3	25	32.9	23.6	29.7	22.7	28.1	22.7	29.0	22.8	29.2	22.8	30.9	22.3	32.9	22.0	33.0
Kottayam	21.3	33.7	21.9	33.8	24.4	34.7	24.1	33.9	24.4	32.6	23.4	30.2	22.7	28.7	23.1	30.0	23.1	30.0	22.7	31.0	22.5	31.9	21.7	32.4
Palakkad	21.8	32.1	21.9	34.2	24.5	38.4																		
Kochi	22.5	32.3	23.4	32.3	25.9	33.0	25.6	33.4	25.5	32.4	23.8	30.2	23.1	29.3	23.6	29.5	23.5	29.7	23.5	31.3	23.3	31.3	23.1	31.8

Data not available

Source: Farm Guide

GEOLOGY

Geology is the study of earth, the materials of which it is made the structure of those materials and the process acting upon them. It mainly includes study of rocks of which it is composed and the processes by which it evolves. Geology gives insight into the history of the earth the better we can understand Earth's history the better we can for see how events and process of the past might influence the future.

In modern times geology is commercially important for mineral and hydrocarbon exploration and for evaluating water resources, is publicly important for the prediction and understanding of natural hazards the remediation of environmental problems and for providing insights into past climate change.

The study of the physical material of the earth dates back at least to ancient Greece. Some modern scholars such as fielding H. Garrison are of the opinion that modern geology began in the Medieval Islamic World. Abu-al- Ranhan Al Bismi was one of the earliest Muslim Geologists whose works included the earliest writing, on the Geology of India, in which he says that the Indian subcontinent was once a sea.

The world geology was first used by Ulisse Aldrovandi in 1603, and introduced as a fixed term by Horace-Benedict De Sanssure in 1779. The word is derived from Greek James Hintton is often viewed as the first modern geologist.

Majority of geological data comes from research on Solid Earth materials. These typically fall into two categories rock and unconsolidated materials. There are three major types of rocks, Igneous, Sedimentary and metamorphic. The rock cycle is an important concept in geology which illustrates the relationships between these three types of rock. When a rock crystallizes from melt (magma or lava) it is an igneous rock. The rock can be weathered and eroded and then redeposited and lithified into a sedimentary rock or be turned into a metamorphic rock due to heat and pressure. The mineral content of the rock and give it a characteristic fabric.

The unlithified material which typically comes from more recent deposits. Because of this the study of such material is often known as quaternary geology after the recent quaternary period. This includes the study of sediment and soils and is important to some studies in geomorphology, sedimentology and palaeo climatatology.

Plate Tectonics, Petrology, Structural Geology, Stratigraphy, Palaeontology, Economic Geology, Mining Geology, Petroleum Geology, Hydrogeology etc. are different fields of geology.

Kannur district forms a peninsular shield which is composed of crystalline rocks of Pre Cambrian age, which include Archaen metamorphic rocks like charnockites, gneisses and schist. These are intruded by basic dykes in some areas. Younger sedimentary rocks of miopliocene and sub recent are seen overlaying these along the coastal track of the district. Most of the midland areas are covered by thick laterite formation, a product of typical weathering.

Stratigraphic Succession

Recent unconsolidated formation, Alluvium, Sand clay and salt

..... unconformity

Pleistocene - Residual formation laterite

Miocene - Semi consolidated sediments equivalent to warkalai beds

..... unconformity.....

Archaens (crystalline rocks) charnockite, hornblend gneiss and other associated rocks.

Kannur district has an area of 2966 Sq. Km. The terrain of the district in general is rugged and slopes west from the Western Ghats to the coast. Main rock types in the district are charnockites, gneisses and schist of Archaen group and are seen in the midland and eastern highland area.

The district can be broadly divided into seven geological belts trending North West – South East.

- Northern belt of charnockite group extending further north and east to the adjacent districts.
- North Central belt of Wayanad Schist Complex.
- Central belt of peninsular gneissic complex extending to the South East.
- South Central belt of Vengad group equivalent to Dharwars.

- Southern most belt of migmatite complex which extends further south to the adjacent district of Kozhikode.
- Sedimentary (Warkalai) beds in the western part near the coast.
- Quarternary sediments along the coast.

The lithology of Kannur district is grouped under Precambrian, Late tertiary and quarternary periods the Precambrian rocks dominate the other two. Charnockite group includes pyroxene granulites charnockite (hypersthene granite) and hornblende–diopside granulites. While hornblende granulites and charnockite occupy large areas Pyroxene granulite occurs as linear bodies in the south east. Hornblende biotite gneiss constitutes the litho unit of migmatite complex. It has a large areal extent along the coast, south of Kannur. Towards east and southeast discrete metasedimentary and ultramafic sequences occur which have been designated as Wayanad schist complex and are considered equivalent of Sargur group of Karnataka. They occur as isolated bands within charnockite and gneiss. Their contacts are generally concordant due to later folding metamorphism and migmatization. The group comprises quartzite, magnetite quartzite, garnet - kyanite sillimanite gneiss, quartz - mica -kyanite - schist, quartz sericite schist, amphibolite, kyanite sillimanite - seriate quartzite and metaultramafites, garnet-kyanite, sillimanite gneiss/schist, is wide spread in the east where as the other members of Wayanad complex occur as linear bands Leusoidal bodies and vestiges to the west Peninsular gneissic complex represented by hornblende biotite gneiss comprises a complex suit of gneiss and granites representing the anatexic phase of migmatization of the schist complex. East of Kannur and extending up to Tallassery in the south a large body of quartz mica schist is separated from the other schistone rocks by a conglomerate horizon extending over 8km. This litho unit known as Vengad formation characterized by lack of migmatization presence of primary structures and absence of high grade minerals is correlatable with rocks of Dhanwar super group.

Large bodies of Anorthosite gabbro, granite and granophyre from the post Vengad basic and acid intensives. Dolerite dykes trending North West- South East represent the younger basic intensives.. Late tertiary sedimentary rocks (Warkalli Beds) occur as isolated patches along the coast near Kannur, Pazhayamgadi and east of Payyannur. They comprise variegated clays and friable sand stone. At Kannur and Pazhayangadi carbonaceous clay with thin seam of Lignite is reported towards the

bottom of the sedimentary sequence. The tertiaries as well as the basement rocks are extensively lateralized. The pebble bed reported near Valapattanam River is considered to be quaternary age. Quaternary alluvial deposit occur along the coast and in the valleys they constitute palaeo marine deposit (Guruvayur Formation) fluvial deposit (Perriyar formation) of Valapattanam and Dharmadom rivers, fluvial marine deposits (Viyyan formation) and beach deposits (Kadappuram formation).

MINERAL RESOURCES

Clay, bauxite, lime shell, lignite and laterite are the major economic minerals of the district. The district has large resources of good quality China clay used for a variety of industries. Good deposits are seen at Pazhayangadi and Kannapuram. Apart from china clay the district resource of ball clay, fire clay and tile clay. Low-grade bauxite is associated with laterite. Bauxite occurs at Madayi, Pattuvankunnu and east of Payyannur. The sedimentary sequence of Madayi has thin seams of lignite with a cumulative thickness of 5m. Lignite is also reported from Kannur, Meenkunnu and Azhikode. The backwaters along the coast have good resources of lime shell. The alluvial deposit of Kanadankali, South of Payyannur is also rich in lime shell. Laterite the main construction material of the area has a very wide distribution. It is quarried in the form of large bricks and is used in building construction. The basement rocks are also good source of construction material Valapattanam River provide sand used for masonry work concentration of heavy sand is seen along the beach at Valapattanam. Talc and steatite bands are reported from Thalasseri and Koothuparambu.

China clay is found in abundance in Thalipparambu and Kannur taluks of Kannur district. These resources are not fully utilised in the district. The district is endowed with rich deposits of clay of which various types are mined at many places for potteries, tiles and ceramic industries. The most important areas where clay has been found are Pattuvam, Korom, Perumba and Kariverlore. Good quality kaolin occurs below the laterite capping around Pilathara and Thaliparamba.

Laterite is quarried for bricks throughout the district on a small scale to meet the local demand. Thin horizons of lignite are noted in the cliff sections at Kannur coast, Pazhayangadi and Meenkunnu. Beach sands containing illuminates monazite iron, and thorianite occur along the coast, especially to the south of Valapattanam river mouth

and near Azhikode. Many occurrences of bauxite deposits have been brought to light in the district at Madayi, Korom, Payyavur and Pattuam a near Thaliparamba.

GEOMORPHOLOGY

Based on physiography, the district is divisible into three units.

- i) Coastal Plain
- ii) The Mid land
- iii) The High hills

The coastal plain is a narrow region of depositional land forms; it comprises narrow beaches interrupted by cliffs promontories and rocky beaches. Estuaries, lagoons, tidal flats, flood plain and Palaeobeach ridges are the other land forms of the area. The region has a maximum height of about 7m in the east. The midland region a relatively wide zone represents denudational land form exhibiting laterite capped flats meases ridges, spurs, laterite interfluves and narrow alleviated valleys. Elevation of these areas displays remnants of plantation surfaces as well. Two former plantation surfaces with fairly extensive remnants are characterized by laterite capping, vestiges of still older surfaces are identifiable at higher attitudes. The hilly region in the east is structural cum denudational land form. Here the elevation is generally above 500m. Hills have very steep slopes. Land forms of intrusive origin are also noticed near Peralimala and Ezhimala some of the highest peaks in the east are 1598 m, Karimala 1335 m, Kumanthodu mala 1037 m, hill South East of Kannavan and 1045 m West of Kottiyur. Valapattanam and Pazhayangadi Rivers drain the northern part of the district, while the Dharmadom puzha drain the south.

GEOHYDROLOGY

The area lies in the high rainfall belt of the western coast. The district is divisible into four geo hydro geological promises from coast to the east, based on yield of ground water. The coastal alluvium in the west has fairly good yield with depth to water table from 0.5 to 3m. In the laterite capped midland region, open dug wells are suitable where the depth to ground water is between 5 and 20 m. Further east, the area is mostly covered by the weathered rock and laterite soil. Here the valleys and lowlands have good yield of water from dug wells while in other areas bore wells are suitable. In the hills further east fracture plains the areas is mostly covered by weathered rock and laterite soil. Here the valleys and lowlands have good yield of water from dug wells while

in other arrear bore wells are suitable. In the hills further east fracture plains the areas is mostly covered by weathered rock and laterite soil. Here the valleys and low lands have good yield of water from dug wells while in other areas bore wells are suitable. In the hills further east fracture plains are potential zones of ground water can sustain bore wells.

GEOTECHNICAL CHARACTERISTICS AND NATURAL HAZARDS

The area has been demarcated into three engineering geological provinces mainly based on the bearing capacity/compressive strength the foundation characteristics. They are quaternary sediments deformed Meta sediments and basement Crystalline. Permeability ranges from low to very high bearing capacity/compressive strength varies from low to medium. Foundation characteristics vary from poor to good there is an irrigation dam near Pazhassi across the river Valapattanam. The district falls in the seismic zones No.111. Several places along the coast are prone to coastal erosion.

Table:- 6.1

GEOLOGY DETAILS

BLOCK	PANCHAYAT	ROCK-TYPE	AREA (Ha.)
Edkkad Block	Chelora	Laterite	268.93
		Low grade metasedimentary rocks	1533.45
		Migmatite Complex	25.16
		Tank/WB/River	292.79
			2120.34
	Chembilode	Laterite	395.77
		Low grade metasedimentary rocks	1533.42
		Migmatite Complex	131.27
			2060.46
	Edakkad	Laterite	113.11
		Low grade metasedimentary rocks	99.93
		Migmatite Complex	1353.20
		Sandstone and clay with lignite interc	312.76
			1878.99
	Elayavoor	Laterite	115.16
		Low grade metasedimentary rocks	570.69
		Migmatite Complex	431.05
		Sandstone and clay with lignite interc	10.72
		Tank/WB/River	10.29
			1137.91
	Kadamboor	Low grade metasedimentary rocks	374.89
		Migmatite Complex	559.19
			934.07
	Kolacherry	Laterite	69.89
		Penisular Gneissic Complex	1258.58
		Sand and Silt	388.64
		Tank/WB/River	204.21
		1921.33	
Munderi	Low grade metasedimentary rocks	1782.02	
	Penisular Gneissic Complex	52.87	
	Tank/WB/River	139.10	
		1973.99	
Peralassery	Laterite	291.01	
	Low grade metasedimentary rocks	942.32	
	Migmatite Complex	690.63	
		1923.95	
		13951.03	
Irikkur Block	Eruvassy	Charnockite group of rocks	5072.04
			5072.04
	Irikkur	Penisular Gneissic Complex	1108.14
		1108.14	
	Kuttiyattoor	High grade metasedimentary rocks	183.07
		Laterite	604.76
		Low grade metasedimentary rocks	16.57
Penisular Gneissic Complex		2715.30	
	Tank/WB/River	16.21	
		3535.91	

BLOCK	PANCHAYAT	ROCK-TYPE	AREA (Ha.)
Iritti Block	Malapattom	High grade metasedimentary rocks	76.44
		Migmatite Complex	108.19
		Penisular Gneissic Complex	1732.58
			1917.20
	Mayyil	Laterite	610.31
		Penisular Gneissic Complex	2650.94
			3261.25
	Padiyur	Charnockite group of rocks	2515.01
		High grade metasedimentary rocks	395.70
		Laterite	3.46
		Metabasic and Ultra basic rocks	28.36
		Penisular Gneissic Complex	2426.65
			5369.18
	Payyavoor	Charnockite group of rocks	6705.46
			6705.46
	Srekandapuram	Charnockite group of rocks	4026.36
		Metabasic and Ultra basic rocks	300.49
		Migmatite Complex	598.44
		Penisular Gneissic Complex	1858.18
			6783.46
	Ulickal	Basic Rocks	32.35
		Charnockite group of rocks	7288.54
		High grade metasedimentary rocks	26.44
		Penisular Gneissic Complex	49.79
			7397.13
			41149.76
	Aralam	Basic Rocks	211.64
		High grade metasedimentary rocks	213.92
		Penisular Gneissic Complex	3903.63
			4329.19
	Ayyankunnu	Basic Rocks	53.76
		Charnockite group of rocks	4851.70
		High grade metasedimentary rocks	493.83
		Khondalite Group of rocks	3310.29
		Metabasic and Ultra basic rocks	46.17
	Penisular Gneissic Complex	6669.11	
			15424.86
	Keezhallur	Basic Rocks	5.90
		High grade metasedimentary rocks	28.75
		Laterite	132.87
		Low grade metasedimentary rocks	0.07
		Penisular Gneissic Complex	2585.83
		2753.41	
Keezhur-Chavassery	Charnockite group of rocks	420.27	
	Laterite	1050.21	
	Metabasic and Ultra basic rocks	44.97	
	Penisular Gneissic Complex	3075.85	
		4591.30	

BLOCK	PANCHAYAT	ROCK-TYPE	AREA (Ha.)
Kalliassery Block	Koodali	Basic Rocks	72.42
		High grade metasedimentary rocks	705.97
		Laterite	465.84
		Low grade metasedimentary rocks	152.09
		Penisular Gneissic Complex	2722.03
			4118.35
	Payam	Charnockite group of rocks	1644.46
		High grade metasedimentary rocks	335.83
		Metabasic and Ultra basic rocks	23.82
		Penisular Gneissic Complex	3226.11
			5230.21
	Thillankeri	Acidic rocks	1248.49
		High grade metasedimentary rocks	229.21
		Metabasic and Ultra basic rocks	50.53
		Penisular Gneissic Complex	954.65
			2482.87
			38930.21
	Cherukunnu	Penisular Gneissic Complex	136.79
		Sand and Silt	1087.36
		Tank/WB/River	314.22
			1538.37
	Cheruthazham	Charnockite group of rocks	494.38
		Laterite	134.83
		Migmatite Complex	765.05
		Penisular Gneissic Complex	579.67
		Sand and Silt	1291.54
			3265.47
	Ezhome	Migmatite Complex	228.22
		Penisular Gneissic Complex	1155.96
		Sand and Silt	232.67
		Tank/WB/River	225.30
			1842.15
Kalliasseri	Low grade metasedimentary rocks	230.46	
	Sand and Silt	1407.78	
	Tank/WB/River	22.70	
		1660.93	
Kannapuram	Low grade metasedimentary rocks	41.27	
	Penisular Gneissic Complex	560.37	
	Sand and Silt	814.15	
	Tank/WB/River	102.22	
		1518.01	
Madayi	Basic Rocks	0.83	
	Sand and Silt	1637.21	
	Tank/WB/River	62.59	
		1700.63	
Mattool	Sand and Silt	816.20	
	Tank/WB/River	538.92	
		1355.12	

BLOCK	PANCHAYAT	ROCK-TYPE	AREA (Ha.)	
Kannur Municipality	Narath	Penisular Gneissic Complex	1232.84	
		Sand and Silt	12.35	
		Tank/WB/River	454.92	
			1700.11	
	Kannur Block		Migmatite Complex	600.77
			Sandstone and clay with lignite interc	754.08
				1354.85
		Azhikode	Sand and Silt	0.00
			Sandstone and clay with lignite interc	596.08
			Tank/WB/River	774.55
Chirakkal		232.35		
		1602.98		
	High grade metasedimentary rocks	55.57		
	Migmatite Complex	73.54		
Pallikunnu	Sandstone and clay with lignite interc	829.90		
	Tank/WB/River	346.53		
		1305.53		
Pappinisseri	High grade metasedimentary rocks	198.44		
	Sandstone and clay with lignite interc	487.70		
Koothuparamba Block	Puzhathi		686.14	
		Low grade metasedimentary rocks	364.13	
		Penisular Gneissic Complex	3.24	
		Sand and Silt	888.77	
	Valapattanam	Tank/WB/River	203.44	
			1459.58	
		High grade metasedimentary rocks	3.06	
		Low grade metasedimentary rocks	2.98	
		Migmatite Complex	326.34	
		Penisular Gneissic Complex	1.27	
Chittariparamba	Sandstone and clay with lignite interc	356.97		
	Tank/WB/River	180.16		
		870.78		
	Sand and Silt	7.44		
Kottayam	Kunnothuparamba	Sandstone and clay with lignite interc	116.73	
		Tank/WB/River	85.56	
			209.74	
	Kottayam		6134.75	
		Charnockite group of rocks	963.65	
		High grade metasedimentary rocks	411.20	
		Migmatite Complex	2.36	
		Penisular Gneissic Complex	2081.08	
			3458.29	
		Low grade metasedimentary rocks	901.12	
	901.12			
Kunnothuparamba	Basic Rocks	316.55		
	Charnockite group of rocks	789.25		
	Low grade metasedimentary rocks	3.29		
	Migmatite Complex	1861.95		
		2971.04		

BLOCK	PANCHAYAT	ROCK-TYPE	AREA (Ha.)	
Municipality	Mangattidom	Basic Rocks	32.56	
		Charnockite group of rocks	164.21	
		High grade metasedimentary rocks	7.63	
		Low grade metasedimentary rocks	1210.85	
		Penisular Gneissic Complex	1847.80	
			3263.04	
	Pattiom	Basic Rocks	169.08	
		Charnockite group of rocks	2479.66	
		Low grade metasedimentary rocks	728.31	
		Migmatite Complex	62.30	
		Penisular Gneissic Complex	210.45	
			3649.80	
	Thriprangottur	Basic Rocks	78.57	
		Charnockite group of rocks	1475.09	
		Migmatite Complex	1679.71	
			3233.37	
			17476.66	
	Mattannur Municipality		Basic Rocks	114.12
			Charnockite group of rocks	615.86
			Low grade metasedimentary rocks	842.17
		Penisular Gneissic Complex	147.55	
		1719.70		
		1719.70		
Pannur Block		Acidic rocks	279.87	
		Basic Rocks	76.24	
		Charnockite group of rocks	361.09	
		High grade metasedimentary rocks	219.07	
		Laterite	344.91	
		Penisular Gneissic Complex	3088.78	
			4369.94	
		4369.94		
		0.00		
Chokli	Basic Rocks	54.55		
	Migmatite Complex	1104.44		
		1158.99		
Kariyad	Migmatite Complex	1082.27		
		1082.27		
Kathirur	Low grade metasedimentary rocks	217.16		
	Migmatite Complex	996.28		
		1213.44		
Mokeri	Basic Rocks	16.07		
	Charnockite group of rocks	201.66		
	Low grade metasedimentary rocks	685.64		
	Migmatite Complex	227.76		
		1131.13		
Panniyannur	Low grade metasedimentary rocks	142.28		
	Migmatite Complex	850.11		
		992.39		

BLOCK	PANCHAYAT	ROCK-TYPE	AREA (Ha.)	
Payyannur Block	Panoor	Basic Rocks	0.46	
		Low grade metasedimentary rocks	264.93	
		Migmatite Complex	552.33	
				817.72
	Peringalam	Low grade metasedimentary rocks	127.46	
		Migmatite Complex	895.22	
			1022.68	
				7418.62
	Cherupuzha	Charnockite group of rocks	6247.18	
		High grade metasedimentary rocks	9.22	
				6256.40
	Erimam-Kuttoor	Charnockite group of rocks	6256.61	
		Laterite	0.28	
		Sand and Silt	647.10	
		Ultrabasic rocks	496.45	
				7400.44
	Kankole-Alapadamba	Charnockite group of rocks	1634.59	
		Laterite	206.24	
Sand and Silt		991.78		
Ultrabasic rocks		1368.69		
			4201.30	
Karivellur-Peralam	Charnockite group of rocks	351.74		
	Sand and Silt	1118.69		
	Ultrabasic rocks	749.65		
			2220.08	
Kunjimangalam	Sand and Silt	1514.21		
			1514.21	
Peringome-Vavakkara	Charnockite group of rocks	8019.14		
	Laterite	152.79		
	Ultrabasic rocks	556.62		
			8728.55	
Ramanthali	Acidic rocks	1140.32		
	Basic Rocks	1495.22		
	Sand and Silt	390.09		
		3025.63		
			33346.62	
Payyannur Municipality	Acidic rocks	1.91		
	Basic Rocks	2.90		
	Charnockite group of rocks	695.48		
	Laterite	306.12		
	Sand and Silt	3445.04		
	Ultrabasic rocks	918.01		
			5369.45	
			5369.45	
Peravoor Block	Kanichar	Acidic rocks	617.11	
		Basic Rocks	58.89	
Penisular Gneissic Complex		3407.70		
			4083.69	
Kelakom	Acidic rocks	102.15		
	Basic Rocks	1334.53		
	High grade metasedimentary rocks	26.84		
	Penisular Gneissic Complex	2397.54		
			3861.06	

BLOCK	PANCHAYAT	ROCK-TYPE	AREA (Ha.)
Thalassery Block	Kolayade	Basic Rocks	22.51
		Charnockite group of rocks	3904.30
		Metabasic and Ultra basic rocks	85.23
		Migmatite Complex	104.68
		Penisular Gneissic Complex	7116.63
			11233.36
	Kottiyoor	Basic Rocks	7.89
		High grade metasedimentary rocks	1055.11
		Penisular Gneissic Complex	8858.92
			9921.92
	Malur	Acidic rocks	1858.25
		Basic Rocks	30.50
		High grade metasedimentary rocks	115.27
		Migmatite Complex	11.89
		Penisular Gneissic Complex	3175.19
			5191.09
	Muzhakkunnu	Acidic rocks	983.06
		High grade metasedimentary rocks	108.53
		Laterite	103.60
		Metabasic and Ultra basic rocks	34.78
		Penisular Gneissic Complex	1942.25
			3172.22
	Peravoor	Acidic rocks	1703.63
		Basic Rocks	44.59
		Penisular Gneissic Complex	1129.59
			2877.80
			40341.15
	Ancharakandy	Basic Rocks	18.61
		Laterite	134.04
		Low grade metasedimentary rocks	1170.93
		Penisular Gneissic Complex	298.22
			1621.80
	Dharmadom	Migmatite Complex	1125.96
		1125.96	
Eranjoli	Migmatite Complex	1043.73	
		1043.73	
Muzhappilangad	Migmatite Complex	716.74	
		716.74	
New Mahe	Basic Rocks	35.52	
	Migmatite Complex	444.69	
		480.22	
Pinarayi	Low grade metasedimentary rocks	848.75	
	Migmatite Complex	1098.25	
		1946.99	
Vengad	Basic Rocks	67.06	
	High grade metasedimentary rocks	5.79	
	Low grade metasedimentary rocks	2480.79	
	Migmatite Complex	159.83	
	Penisular Gneissic Complex	123.51	
		2836.97	
		9772.40	

BLOCK	PANCHAYAT	ROCK-TYPE	AREA (Ha.)
Thalassery Municipality		Migmatite Complex	2498.09
			2498.09
Thaliparambu Block			
	Alacode	Charnockite group of rocks	8781.31
			8781.31
	Chapparapadavu	Charnockite group of rocks	6173.79
		Laterite	62.35
		Penisular Gneissic Complex	298.55
			6534.69
	Chengalai	Basic Rocks	50.63
		Charnockite group of rocks	2868.19
		High grade metasedimentary rocks	33.43
		Migmatite Complex	908.28
		Penisular Gneissic Complex	3002.91
			6863.45
	Kadannapalli-Panapuzha	Charnockite group of rocks	4625.53
		Laterite	9.47
		Migmatite Complex	476.54
		Penisular Gneissic Complex	57.71
		Ultrabasic rocks	93.57
			5262.81
	Kurumathur	Charnockite group of rocks	365.69
		Laterite	27.59
		Migmatite Complex	1355.60
		Penisular Gneissic Complex	3398.55
			5147.43
	Naduvil	Charnockite group of rocks	7898.45
			7898.45
	Pariyaram	Charnockite group of rocks	1189.79
		Migmatite Complex	2171.29
		Penisular Gneissic Complex	2237.98
			5599.06
	Pattuvam	Laterite	331.02
		Penisular Gneissic Complex	1106.64
		Tank/WB/River	172.77
			1610.43
	Udayagiri	Charnockite group of rocks	5878.98
			5878.98
			53576.61
Thaliparambu Municipality			
		Low grade metasedimentary rocks	276.53
		Migmatite Complex	246.96
		Penisular Gneissic Complex	2712.44
		Sand and Silt	1031.11
		Tank/WB/River	97.65
			4364.69
		District Total	296600.00

















0 1.5 3 6 9 12
Kilometers

1 : 400,000

GEOLOGY KANNUR DISTRICT

Geology

-  Acidic rocks
-  Basic Rocks
-  Charnockite group of rocks
-  High grade metasedimentary rocks
-  Khondalite Group of rocks
-  Laterite
-  Low grade metasedimentary rocks
-  Metabasic and Ultra basic rocks
-  Migmatite Complex
-  Peninsular Gneissic Complex
-  Sand and Silt
-  Sandstone and clay with lignite interc
-  Ultrabasic rocks
-  Tank/Waterbody/River

KERALA

KANNUR



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

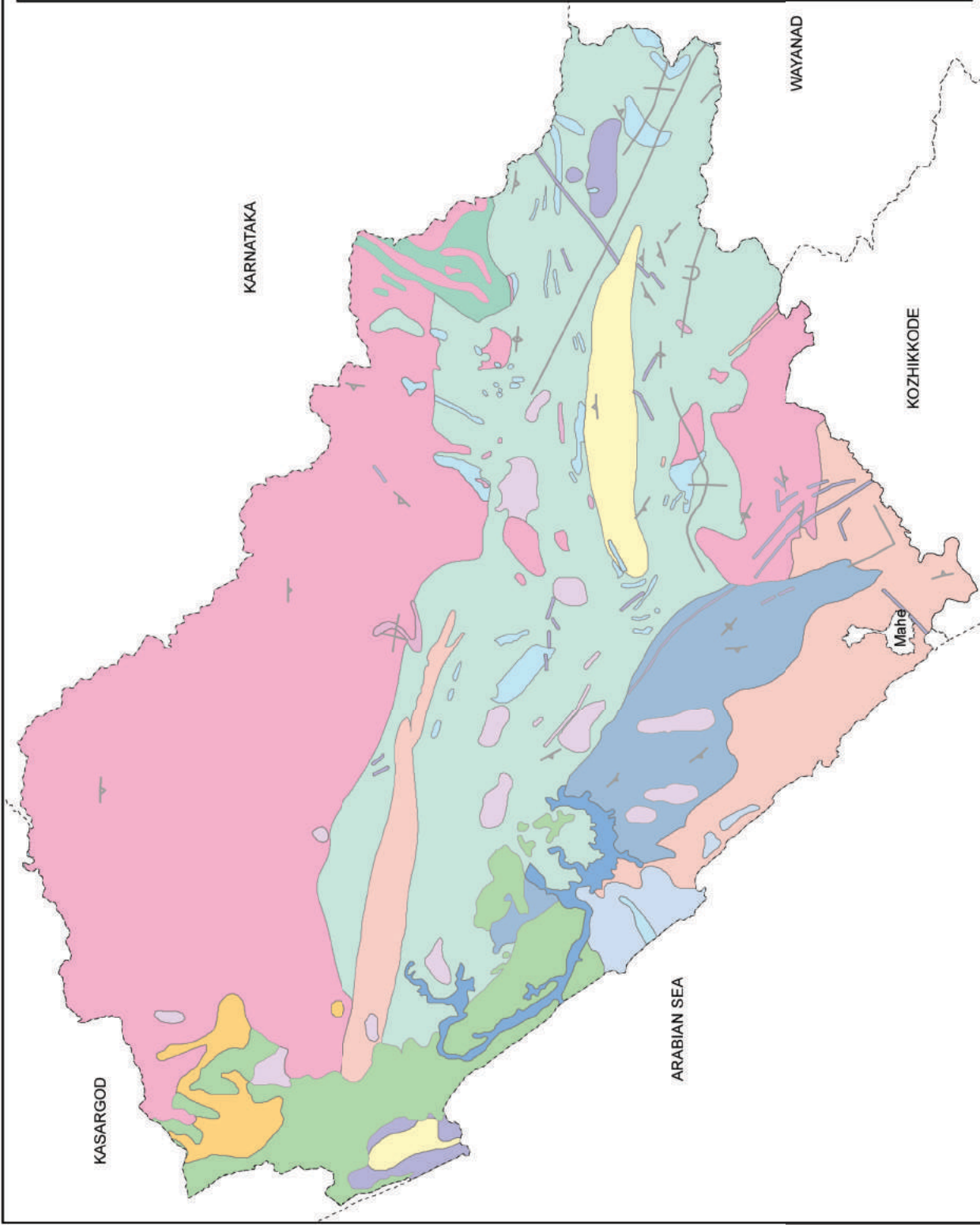


Table 6.2

GEOMORPHOLOGY DETAILS

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Edakkad Block	Chelora	Lower Plateau (Lateritic) - Dissected	1412.61
		Marshy	5.76
		Mud flat(Coastal Plain)	216.75
		Residual Mount	110.03
		Valley Fill	319.05
		Water Body	56.15
		2120.34	
	Chembilode	Lower Plateau (Lateritic) - Dissected	1537.61
		Residual Mount	249.09
		Valley Fill	273.75
		2060.46	
	Edakkad	Beach(Coastal Plain)	0.01
		Lower Plateau (Lateritic) - Dissected	1446.50
		Residual Mount	243.15
		Valley Fill	186.21
		Water Body	3.12
		1878.99	
	Elayavoor	Lower Plateau (Lateritic) - Dissected	895.19
		Mud flat(Coastal Plain)	14.17
		Residual Mount	28.02
		Valley Fill	196.18
		Water Body	4.35
		1137.91	
	Kadamboor	Lower Plateau (Lateritic) - Dissected	701.43
		Residual Mount	55.97
		Valley Fill	176.67
		934.07	
	Kolacherry	Lower Plateau (Lateritic) - Dissected	1341.85
		Mud flat(Coastal Plain)	156.40
		Residual Mount	66.06
		Valley Fill	285.73
		Water Body	71.28
		1921.33	
	Munderi	Lower Plateau (Lateritic) - Dissected	1493.53
		Mud flat(Coastal Plain)	104.88
		Residual Mount	17.24
		Valley Fill	344.29
		Water Body	14.05
		1973.99	
	Peralassery	Lower Plateau (Lateritic) - Dissected	1340.17
		Residual Mount	136.60
		Valley Fill	403.35
		Water Body	43.82
		1923.95	
			13951.03

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Irikkur Block	Eruvassy	Denudational Structural Hills	1124.22
		Lower Plateau (Lateritic) - Dissected	2449.61
		Piedmont Zone	570.33
		Residual Hill	230.61
		Residual Mount	49.39
		Rock Exposure	1.15
		Valley Fill	646.16
		Water Body	0.57
			5072.04
	Irikkur	Lower Plateau (Lateritic) - Dissected	925.28
		Point bar(Flood Plain)	14.92
		Residual Hill	16.86
		Residual Mount	10.32
		Valley Fill	78.27
		Water Body	62.49
		1108.14	
	Kuttiyattoor	Lower Plateau (Lateritic) - Dissected	2866.20
		Mud flat(Coastal Plain)	16.46
		Residual Mount	217.73
		Valley Fill	410.89
		Water Body	24.63
		3535.91	
	Malapattom	Lower Plateau (Lateritic) - Dissected	1542.87
		Residual Mount	68.96
		Valley Fill	235.98
		Water Body	69.39
		1917.20	
	Mayyil	Channel bar(Flood Plain)	40.05
		Lower Plateau (Lateritic) - Dissected	2204.79
		Residual Mount	270.92
		Stabilized channel bar (Flood Plain)	28.30
		Valley Fill	501.48
		Water Body	215.71
		3261.25	
	Padiyur	Lower Plateau (Lateritic) - Dissected	3410.90
		Point bar(Flood Plain)	29.80
		Residual Hill	1235.93
		Residual Mount	142.71
		Valley Fill	462.76
		Water Body	87.09
		5369.18	

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)	
Iritti Block	Payyavoor	Denudational Structural Hills	2012.74	
		Lower Plateau (Lateritic) - Dissected	2596.58	
		Piedmont Zone	1107.56	
		Point bar(Flood Plain)	9.80	
		Residual Hill	194.91	
		Residual Mount	91.18	
		Valley	5.36	
		Valley Fill	654.74	
		Water Body	32.60	
			6705.46	
	Sreekandapuram	Channel bar(Flood Plain)	1.11	
		Lower Plateau (Lateritic) - Dissected	4648.15	
		Point bar(Flood Plain)	12.24	
		Residual Hill	884.23	
		Residual Mount	155.96	
		Valley	174.66	
		Valley Fill	809.85	
		Water Body	97.24	
				6783.46
	Ulickal	Denudational Structural Hills	2328.71	
		Lower Plateau (Lateritic) - Dissected	2718.71	
		Piedmont Zone	1084.03	
		Point bar(Flood Plain)	0.42	
		Residual Hill	58.30	
		Residual Mount	99.85	
		Valley	267.34	
		Valley Fill	807.64	
		Water Body	32.13	
			7397.13	
			41149.76	
	Aralam	Channel bar(Flood Plain)	13.68	
		Denudational Structural Hills	1414.75	
		Lower Plateau (Lateritic) - Dissected	3.92	
		Piedmont Zone	2234.24	
		Point bar(Flood Plain)	1.50	
		Residual Hill	181.70	
		Valley Fill	357.26	
		Water Body	122.15	
				4329.19
		Ayyankunnu	Channel bar(Flood Plain)	4.54
			Denudational Structural Hills	6006.40
			Lower Plateau (Lateritic) - Dissected	4252.95
Piedmont Zone			3173.02	
Point bar(Flood Plain)			27.70	
Residual Hill			334.07	
Residual Mount	130.07			
Valley	260.86			
Valley Fill	1079.56			
Water Body	155.69			
		15424.86		

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Kalliassery Block	Keezhallur	Lower Plateau (Lateritic) - Dissected	1826.06
		Residual Hill	604.19
		Residual Mount	29.71
		Valley Fill	291.98
		Water Body	1.47
			2753.41
	Keezhur-Chavassery	Lower Plateau (Lateritic) - Dissected	3003.30
		Piedmont Zone	3.13
		Point bar(Flood Plain)	22.69
		Residual Hill	957.96
		Residual Mount	8.34
		Valley	76.97
		Valley Fill	439.65
		Water Body	79.28
			4591.30
	Koodali	Lower Plateau (Lateritic) - Dissected	3100.27
		Point bar(Flood Plain)	11.41
		Residual Hill	222.68
		Residual Mount	309.15
		Valley Fill	428.06
		Water Body	46.79
		4118.35	
	Payam	Channel bar(Flood Plain)	0.93
		Denudational Structural Hills	203.66
		Lower Plateau (Lateritic) - Dissected	3202.49
		Piedmont Zone	416.62
		Point bar(Flood Plain)	46.50
		Residual Hill	524.89
		Residual Mount	149.45
		Valley	44.85
		Valley Fill	505.42
		Water Body	135.40
		5230.21	
Thillankeri	Denudational Structural Hills	520.23	
	Lower Plateau (Lateritic) - Dissected	694.13	
	Piedmont Zone	907.82	
	Residual Hill	34.97	
	Valley	87.14	
	Valley Fill	238.60	
	2482.87		
	38930.21		
Cherukunnu	Channel bar(Flood Plain)	9.70	
	Coastal Plain	469.45	
	Lower Plateau (Lateritic) - Dissected	212.37	
	Mud flat(Coastal Plain)	108.54	
	Residual Mount	25.94	
	Swale(Coastal Plain)	21.06	
	Valley Fill	361.16	
	Water Body	330.15	
	1538.37		

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
	Cheruthazham	Channel bar(Flood Plain)	4.55
		Lower Plateau (Lateritic) - Dissected	2010.35
		Residual Hill	6.65
		Residual Mount	153.99
		Valley	44.74
		Valley Fill	916.03
		Water Body	129.17
			3265.47
	Ezhome	Channel bar(Flood Plain)	51.35
		Lower Plateau (Lateritic) - Dissected	688.26
		Mud flat(Coastal Plain)	1.35
		Residual Hill	32.31
		Residual Mount	89.47
		Valley Fill	713.63
		Water Body	265.77
			1842.15
	Kalliasseri	Coastal Plain	406.71
		Lower Plateau (Lateritic) - Dissected	716.05
		Mud flat(Coastal Plain)	96.88
		Swale(Coastal Plain)	21.58
		Valley Fill	370.36
		Water Body	49.34
			1660.93
	Kannapuram	Channel bar(Flood Plain)	
		Coastal Plain	403.80
		Lower Plateau (Lateritic) - Dissected	564.67
		Mud flat(Coastal Plain)	270.94
		Residual Mount	79.77
		Swale(Coastal Plain)	51.57
		Valley Fill	25.26
	Water Body	121.97	
			1518.01
	Madayi	Beach(Coastal Plain)	0.00
		Channel bar(Flood Plain)	1.52
		Coastal Plain	166.64
		Lower Plateau (Lateritic) - Dissected	599.94
		Mud flat(Coastal Plain)	323.00
		Residual Mount	176.42
		Valley Fill	322.21
	Water Body	110.89	
			1700.63
	Mattool	Beach(Coastal Plain)	0.00
		Coastal Plain	647.27
		Mud flat(Coastal Plain)	325.13
		Swale(Coastal Plain)	27.55
		Water Body	355.17
			1355.12
Narath	Channel bar(Flood Plain)	0.01	
	Lower Plateau (Lateritic) - Dissected	742.58	
	Mud flat(Coastal Plain)	371.96	
	Valley Fill	358.83	
	Water Body	226.73	
		1700.11	
		14580.79	

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Kannur Municipality		Beach(Coastal Plain)	0.00
		Lower Plateau (Lateritic) - Dissected	1241.35
		Valley Fill	101.41
		Water Body	12.09
			1354.85
Kannur Block	Azhikode	Beach(Coastal Plain)	0.00
		Coastal Plain	479.30
		Lower Plateau (Lateritic) - Dissected	628.93
		Mud flat(Coastal Plain)	250.41
		Swale(Coastal Plain)	17.46
		Valley Fill	77.29
		Water Body	149.58
			1602.98
	Chirakkal	Channel bar(Flood Plain)	5.93
		Lower Plateau (Lateritic) - Dissected	908.36
		Mud flat(Coastal Plain)	89.55
		Stabilized channel bar (Flood Plain)	0.16
		Valley Fill	155.26
		Water Body	146.27
		1305.53	
	Pallikunnu	Beach(Coastal Plain)	0.00
		Lower Plateau (Lateritic) - Dissected	472.39
		Valley Fill	213.75
		686.14	
	Pappinisseri	Channel bar(Flood Plain)	2.50
		Coastal Plain	57.27
		Lower Plateau (Lateritic) - Dissected	599.36
		Mud flat(Coastal Plain)	201.98
		Stabilized channel bar (Flood Plain)	6.54
		Swale(Coastal Plain)	65.83
		Valley Fill	242.06
		Water Body	284.03
		1459.58	
	Puzhathi	Channel bar(Flood Plain)	1.79
		Lower Plateau (Lateritic) - Dissected	616.23
		Mud flat(Coastal Plain)	97.06
		Valley Fill	89.98
Water Body		65.73	
	870.78		
Valapattanam	Coastal Plain	8.16	
	Lower Plateau (Lateritic) - Dissected	118.63	
	Mud flat(Coastal Plain)	3.09	
	Valley Fill	34.41	
	Water Body	45.45	
	209.74		
		6134.75	

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Koothuparamba Block	Chittariparamba	Denudational Hills	444.19
		Lower Plateau (Lateritic) - Dissected	511.94
		Piedmont Zone	1614.61
		Residual Hill	373.10
		Valley	336.74
		Valley Fill	177.71
			3458.29
	Kottayam	Lower Plateau (Lateritic) - Dissected	737.95
		Valley Fill	161.97
		Water Body	1.19
			901.12
	Kunnothuparamba	Lower Plateau (Lateritic) - Dissected	2068.88
		Piedmont Zone	4.82
		Residual Hill	334.15
		Residual Mount	174.31
		Valley	97.29
		Valley Fill	291.59
			2971.04
	Mangattidom	Denudational Hills	15.26
		Lower Plateau (Lateritic) - Dissected	2244.69
		Piedmont Zone	225.96
		Residual Hill	140.67
		Residual Mount	78.86
		Valley	40.51
		Valley Fill	494.31
		Water Body	22.79
			3263.04
	Pattiom	Denudational Hills	450.79
		Denudational Structural Hills	225.84
		Lower Plateau (Lateritic) - Dissected	925.29
		Piedmont Zone	1237.13
		Residual Hill	265.45
		Valley	330.76
		Valley Fill	209.62
		Water Body	4.93
			3649.80
	Thriprangottur	Denudational Structural Hills	832.06
		Lower Plateau (Lateritic) - Dissected	1423.93
		Piedmont Zone	320.43
		Residual Hill	81.90
		Residual Mount	116.65
		Valley	123.48
		Valley Fill	325.25
		Water Body	9.67
		3233.37	
		17476.66	

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Koothuparambu Municipality		Denudational Hills	99.10
		Lower Plateau (Lateritic) - Dissected	616.47
		Piedmont Zone	608.52
		Residual Hill	14.07
		Valley	143.71
		Valley Fill	237.83
		1719.70	
Mattannur Municipality		Denudational Hills	41.46
		Lower Plateau (Lateritic) - Dissected	2697.82
		Piedmont Zone	325.58
		Point bar(Flood Plain)	22.58
		Residual Hill	519.61
		Residual Mount	120.21
		Valley	17.78
		Valley Fill	564.22
		Water Body	60.68
		4369.94	
Pannur Block	Chokli	Lower Plateau (Lateritic) - Dissected	822.70
		Residual Mount	80.82
		Valley Fill	239.67
		Water Body	15.81
	1158.99		
	Kariyad	Channel bar(Flood Plain)	1.75
		Lower Plateau (Lateritic) - Dissected	631.77
		Residual Mount	128.36
		Valley Fill	265.62
	Water Body	54.77	
	1082.27		
	Kathirur	Lower Plateau (Lateritic) - Dissected	885.46
		Residual Mount	8.34
		Valley Fill	309.37
		Water Body	10.26
	1213.44		
	Mokeri	Lower Plateau (Lateritic) - Dissected	735.26
		Piedmont Zone	2.22
		Residual Hill	32.82
		Residual Mount	18.21
		Valley	28.84
		Valley Fill	303.77
		Water Body	10.01
	1131.13		
Panniyannur	Lower Plateau (Lateritic) - Dissected	713.58	
	Residual Mount	21.17	
	Valley Fill	253.09	
	Water Body	4.55	
992.39			

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Payyannur Block	Panoor	Lower Plateau (Lateritic) - Dissected	561.92
		Residual Mount	86.47
		Valley Fill	169.33
			817.72
	Peringalam	Lower Plateau (Lateritic) - Dissected	680.95
		Residual Mount	120.11
		Valley Fill	215.38
		Water Body	6.24
			1022.68
			7418.62
	Cherupuzha	Denudational Structural Hills	3459.51
		Lower Plateau (Lateritic) - Dissected	6.67
		Piedmont Zone	2331.77
		Residual Hill	0.24
		Valley Fill	350.37
		Water Body	107.84
			6256.40
	Erimam Kuttoor	Linear ridge(Lower Plateau)	179.79
		Lower Plateau (Lateritic) - Dissected	4845.84
		Residual Hill	91.71
		Residual Mount	1076.16
		Valley	518.92
		Valley Fill	659.48
		Water Body	28.53
		7400.44	
	Kankole- Alapadamba	Lower Plateau (Lateritic) - Dissected	2851.77
		Residual Hill	129.69
		Residual Mount	495.17
		Valley	244.14
		Valley Fill	480.53
		Water Body	0.00
		4201.30	
Karivellur- Peralam	Channel bar(Flood Plain)		
	Lower Plateau (Lateritic) - Dissected	1376.27	
	Mud flat(Coastal Plain)	244.58	
	Residual Hill	157.03	
	Residual Mount	9.12	
	Valley	10.46	
	Valley Fill	408.10	
Water Body	14.52		
	2220.08		
Kunjimangalam	Channel bar(Flood Plain)	17.31	
	Channel Island (Flood Plain)	71.44	
	Lower Plateau (Lateritic) - Dissected	837.78	
	Residual Mount	45.48	
	Valley Fill	400.40	
	Water Body	141.80	
	1514.21		

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)	
Payyannur Municipality	Perignome-Vayakkara	Lower Plateau (Lateritic) - Dissected	6173.38	
		Piedmont Zone	45.50	
		Residual Hill	443.17	
		Residual Mount	590.42	
		Valley	871.26	
		Valley Fill	563.94	
		Water Body	40.88	
			8728.55	
	Ramanthali	Beach(Coastal Plain)	0.08	
		Channel bar(Flood Plain)	10.87	
		Coastal Plain	165.21	
		Lower Plateau (Lateritic) - Dissected	1139.44	
		Residual Hill	857.98	
		Residual Mount	25.08	
		Valley Fill	555.52	
	Water Body	271.45		
			3025.63	
			33346.62	
	Peravoor Block	Kanichar	Channel bar(Flood Plain)	19.91
			Coastal Plain	129.08
			Lower Plateau (Lateritic) - Dissected	2437.31
			Mud flat(Coastal Plain)	0.08
			Point bar(Flood Plain)	0.00
			Residual Mount	175.53
			Valley	37.66
			Valley Fill	2205.49
			Water Body	364.40
				5369.45
Peravoor Block	Kanichar	Channel bar(Flood Plain)	0.04	
		Denudational Structural Hills	1458.61	
		Piedmont Zone	2030.34	
		Point bar(Flood Plain)	3.68	
		Residual Hill	117.79	
		Valley	119.88	
		Valley Fill	331.73	
	Water Body	21.62		
			4083.69	
	Kelakom	Channel bar(Flood Plain)	7.12	
		Denudational Structural Hills	1509.84	
		Piedmont Zone	1762.42	
		Point bar(Flood Plain)	1.55	
Residual Hill		231.46		
Valley Fill		301.88		
Water Body	46.80			
		3861.06		

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Thalassery Block	Kolayade	Residual Mount(Pediment)	11.97
		Denudational Hills	4.98
		Denudational Structural Hills	6205.78
		Piedmont Zone	3729.60
		Residual Hill	534.61
		Valley	746.41
			11233.36
	Kottiyoor	Channel bar(Flood Plain)	6.31
		Denudational Structural Hills	7550.64
		Piedmont Zone	1869.20
		Residual Hill	27.00
		Valley Fill	414.48
		Water Body	54.29
			9921.92
	Malur	Denudational Hills	241.41
		Denudational Structural Hills	1024.12
		Lower Plateau (Lateritic) - Dissected	988.10
		Piedmont Zone	2095.64
		Residual Hill	132.29
		Residual Mount	95.65
		Valley	298.65
		Valley Fill	315.22
			5191.09
	Muzhakkunnu	Denudational Structural Hills	449.93
		Lower Plateau (Lateritic) - Dissected	1114.70
		Piedmont Zone	763.16
		Point bar(Flood Plain)	51.47
		Residual Hill	429.81
		Valley	113.63
		Valley Fill	186.35
		Water Body	63.17
			3172.22
	Peravoor	Residual Mount(Pediment)	18.38
		Denudational Structural Hills	583.33
		Piedmont Zone	1805.61
		Residual Hill	176.73
		Valley	77.47
		Valley Fill	188.51
		Water Body	27.78
			40341.15
	Ancharakandy	Lower Plateau (Lateritic) - Dissected	1417.01
		Residual Hill	22.23
Valley Fill		177.52	
Water Body		5.04	
		1621.80	
Dharmadom	Beach(Coastal Plain)	0.00	
	Channel bar(Flood Plain)	6.88	
	Lower Plateau (Lateritic) - Dissected	666.99	
	Mud flat(Coastal Plain)	7.01	
	Residual Mount	39.85	
	Rock Exposure	0.00	
	Valley Fill	282.33	
	Water Body	122.90	
		1125.96	

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Thalassery Municipality	Eranjoli	Lower Plateau (Lateritic) - Dissected	699.37
		Mud flat(Coastal Plain)	54.31
		Residual Mount	51.07
		Valley Fill	196.66
		Water Body	42.31
			1043.73
	Muzhappilangad	Beach(Coastal Plain)	0.01
		Lower Plateau (Lateritic) - Dissected	506.81
		Residual Mount	15.38
		Valley Fill	143.19
		Water Body	51.34
			716.74
	New Mahe	Beach(Coastal Plain)	0.00
		Lower Plateau (Lateritic) - Dissected	403.27
		Valley Fill	53.34
		Water Body	23.61
			480.22
	Pinarayi	Lower Plateau (Lateritic) - Dissected	1270.08
		Residual Mount	26.57
		Valley Fill	599.21
		Water Body	51.13
			1946.99
	Vengad	Lower Plateau (Lateritic) - Dissected	2226.16
		Residual Hill	24.11
		Residual Mount	82.26
		Valley Fill	442.16
		Water Body	62.28
		2836.97	
		9772.40	
Thaliparambu Block	Alacode	Beach(Coastal Plain)	0.00
		Lower Plateau (Lateritic) - Dissected	1667.78
		Mud flat(Coastal Plain)	136.76
		Residual Mount	44.03
		Valley Fill	540.57
		Water Body	108.95
		2498.09	
Thaliparambu Block	Alacode	Denudational Structural Hills	3195.20
		Linear ridge(Lower Plateau)	302.32
		Lower Plateau (Lateritic) - Dissected	940.41
		Piedmont Zone	2877.79
		Residual Hill	259.10
		Valley Fill	1182.88
	Water Body	23.61	
			8781.31
	Chapparapadavu	Linear ridge(Lower Plateau)	17.70
		Lower Plateau (Lateritic) - Dissected	3548.88
		Piedmont Zone	673.10
Residual Hill		601.76	
Residual Mount		714.20	
Valley	138.49		
Valley Fill	725.18		
Water Body	115.38		
		6534.69	

BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
	Chengalai	Channel bar(Flood Plain)	39.96
		Lower Plateau (Lateritic) - Dissected	4417.94
		Residual Hill	686.30
		Residual Mount	433.02
		Valley	621.60
		Valley Fill	541.37
		Water Body	123.24
		6863.45	
	Kadannapalli-Panapuzha	Lower Plateau (Lateritic) - Dissected	3180.92
		Residual Hill	694.40
		Residual Mount	426.53
		Valley	118.15
		Valley Fill	777.72
		Water Body	65.11
		5262.81	
	Kurumathur	Channel bar(Flood Plain)	5.22
		Lower Plateau (Lateritic) - Dissected	3610.46
		Mud flat(Coastal Plain)	6.26
		Residual Hill	177.94
		Residual Mount	420.39
		Valley	265.36
		Valley Fill	601.97
	Water Body	59.83	
		5147.43	
	Naduvil	Denudational Structural Hills	3068.69
		Lower Plateau (Lateritic) - Dissected	2541.71
		Piedmont Zone	1038.34
		Residual Hill	271.02
		Residual Mount	64.55
		Valley	286.43
		Valley Fill	627.71
		7898.45	
	Pariyaram	Lower Plateau (Lateritic) - Dissected	3514.58
		Residual Hill	595.39
		Residual Mount	516.56
		Valley	116.38
		Valley Fill	728.15
		Water Body	128.00
		5599.06	
	Pattuvam	Channel bar(Flood Plain)	22.96
		Lower Plateau (Lateritic) - Dissected	660.34
		Mud flat(Coastal Plain)	2.22
		Residual Hill	144.44
Residual Mount		75.98	
Valley Fill		507.25	
Water Body		197.23	
	1610.43		
Udayagiri	Denudational Structural Hills	3884.91	
	Piedmont Zone	1570.76	
	Valley	254.60	
	Valley Fill	148.18	
	Water Body	20.54	
	5878.98		
	53576.61		

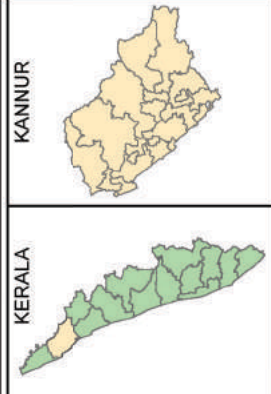
BLOCK	PANCHAYAT	DISCR-L3	AREA (Ha)
Thaliparambu Municipality		Channel bar(Flood Plain)	68.21
		Lower Plateau (Lateritic) - Dissected	2958.43
		Mud flat(Coastal Plain)	354.97
		Residual Hill	154.31
		Residual Mount	151.23
		Stabilized channel bar (Flood Plain)	32.51
		Valley Fill	355.22
		Water Body	289.82
		4364.69	
	District Total	296600.00	



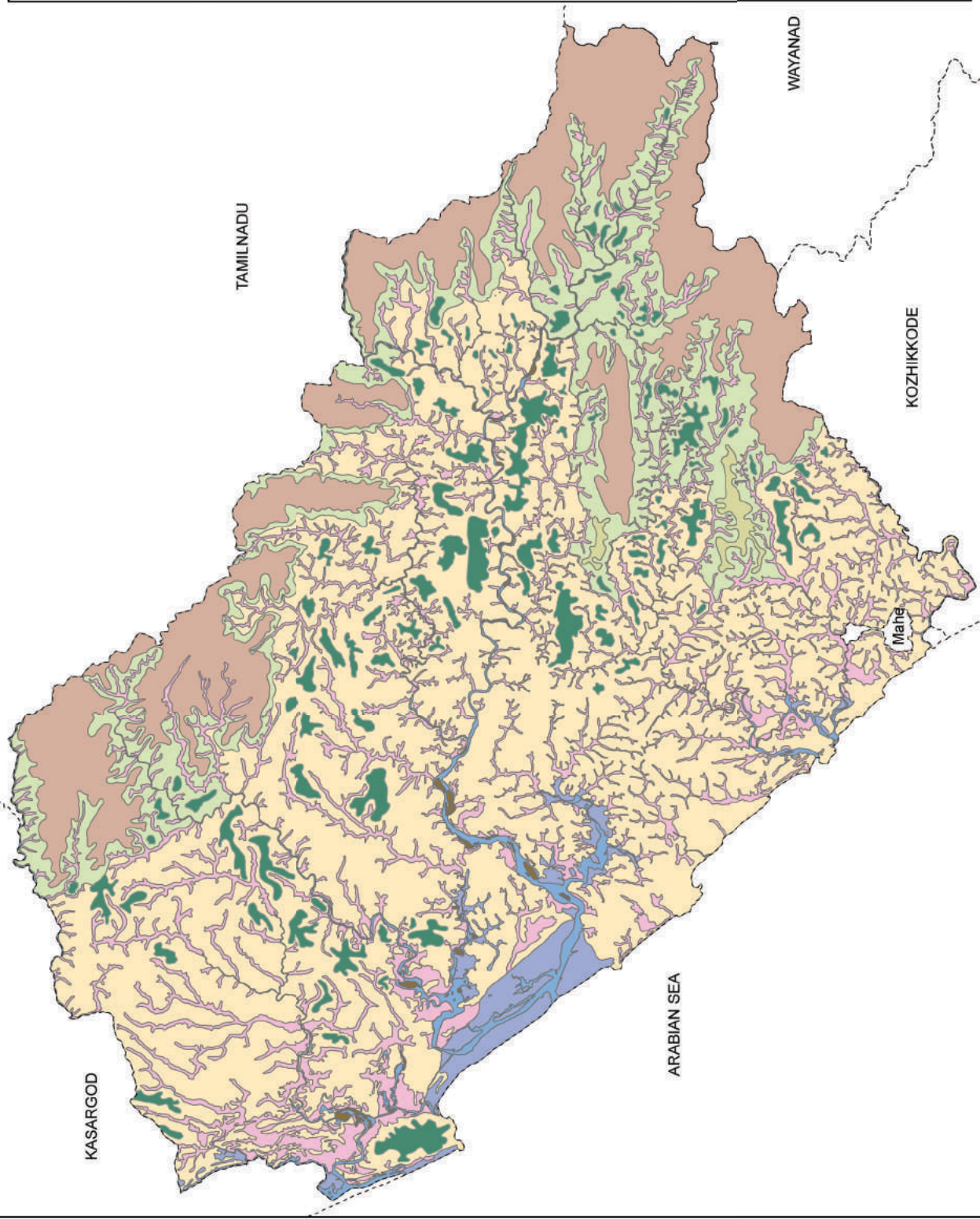
**GEOMORPHOLOGY
KANNUR DISTRICT**

Geomorphology Level 1

- Coastal Plain
- Denudational Hills
- Denudational Structural Hills
- Flood Plain
- Marshy
- Piediplain
- Piedmont Zone
- Plateau
- Residual Hill
- Rock Exposure
- Water Body



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



PHYSIOGRAPHY

Physiographically the district can be divided into coastal, midland and hilly upland regions running more or less parallel to the coast along the entire length of the district. Like other districts of the State, Kannur also is rich in its plant life with different types of forests along the eastern part, plantation crops of the hilly region and the midlands and other crops of the coastal and midland region.

Coastal region is comparatively narrow with loose coastal sand to sandy loam soils supporting coconut trees all along the coast. This narrow belt is interrupted by laterite jetting up to the seacoast at few places.

Major part of the Kannur district comes under the midland. With a number of hills and dales, it presents an undulating surface gradually ascending and merging with the slopes of the Western Ghats. Gravelly clay loam soils are seen developed over laterite or the underlying disintegrated genesis. Along saddles and gently sloping plains of this region, hard laterite, either quarriable or non quarriable type is seen to occur extensively. Side slopes and foot hills with shallow to moderately deep soils are used for cropping and the hard laterite patches are left unutilised. Valleys are under paddy arecanut, banana etc.

Eastern hilly region is part of the Western Ghats. Terrain is rough and undulating with numerous hills and valleys. Soils on the hill tops and side slopes are generally deep and gravelly clay loam in texture developed over weathered charnockite or gneiss and support a wide variety of crops like rubber, cashew, coconut, pepper etc. as well as and different types of forests.

PHYSIOGRAPHY DETAILS

Table:- 7.1

NATURAL REGIONS OF KANNUR- VILLAGE WISE AREA (Ha)

Sl. No.	Taluk/Village	Low land	Mid land	High land
Kannur District				
1. Kannur Taluk				
1	Kunhimangalam	1544	-	-
2	Madayi	1671	-	-
3	Mattool	1282	-	-
4	Cherukunnu	1537	-	-
5	Azhikode Town	1605	-	-
6	Chirakkal Town	1356	-	-
7	Muzhappilangadu Town	719	-	-
8	Pappinisseri Town	1524	-	-
9	Valapattanam Town	204	-	-
10	Kannur Town	1103	-	-
11	Kannur Contonment	179		-
12	Cheruthazham	-	3218	-
13	Kadannapalli	-	1809	-
14	Panappuzha	-	3566	-
15	Ezhome	-	1895	-
16	Kannapuram	-	1439	-
17	Kalliasseri Town	-	1573	-
18	Narath	-	835	-
19	Kannadiparamba	-	889	-
20	Puzhathi Town	-	917	-
21	Pallikunnu Town	-	690	-
22	Elayavor Town	-	1157	-
23	Valliyannur	-	983	-
24	Munderi	-	1228	-
25	Kanjirode Town	-	814	-
26	Chelora Town	-	1135	-
27	Edakkad Town	-	1826	-
28	Chala Town	-	926	-
29	Iriveri	-	1173	-
30	Anjarakandi	-	1547	-
31	Makreri	-	1081	-
32	Mavilayi	-	859	-
33	Kadachira Town	-	795	-
Total		12724	30355	-
2. Taliparamba Taluk				
1	Ramantali	2999	-	-
2	Karivellur	-	1131	-
3	Peralam	-	1092	-
4	Eramam	-	2111	-

Sl. No.	Taluk/Village	Low land	Mid land	High land
5	Kanakole	-	1680	-
6	Korome	-	1973	-
7	Vellur	-	1487	-
8	Pariyaram	-	3274	-
9	Kooveri	-	3831	-
10	Chuzhali	-	4619	-
11	Panniyur	-	2454	-
12	Kuttiyeri	-	2203	-
13	Pattuvam	-	1685	-
14	Morazha	-	1476	-
15	Kurumathur	-	2625	-
16	Chengalayi	-	2114	-
17	Kairalam	-	2034	-
18	Andhur	-	1012	-
19	Kolacheri	-	1214	-
20	Cheleri	-	858	-
21	Maniyur	-	1414	-
22	Mayyil	-	1274	-
23	Kuttiyathur	-	2096	-
24	Malappattam	-	1930	-
25	Sreekantapuram	-	3379	-
26	Irikkur	-	1122	-
27	Kalliyad	-	5864	-
28	Padiyur	-	7013	-
29	Payyannur	-	2003	-
30	Thaliparamba Town	-	1821	-
31	Alappadamba	-	-	2527
32	Peringome	-	-	6064
33	Vayakkara	-	-	9198
34	Thadikkadavu	-	-	12483
35	Kuttur	-	-	5403
36	Naduvil	-	-	12432
37	Eruvassi	-	-	11643
38	Nediyanga	-	-	3521
Total		2999	66789	63271
3. Thalasseri Taluk				
1	Koodali	-	4027	-
2	Kezhallur	-	2902	-
3	Kolari	-	3240	-
4	Chavasseri	-	2311	-
5	Keezhur	-	1862	-
6	Payam	-	3612	-
7	Thillenkeri	-	2506	-
8	Sivapuram	-	2528	-
9	Pazhassi	-	2175	-

Sl. No.	Taluk/Village	Low land	Mid land	High land
10	Pduvilayi	-	1508	-
11	Mangattidam	-	1638	-
12	Kadankunnu	-	1693	-
13	Kottayam (malabar) Town	-	843	-
14	Puthiriyad	-	1301	-
15	Eruvatti (P)	-	1041	-
16	Eranholi Town	-	1008	-
17	Pinarayi Town	-	963	-
18	Dharmadam Town	-	1066	-
19	Kodiyeri Town	-	1144	-
20	Kadirur	-	1239	-
21	Pattiyam	-	1267	-
22	Mekeri	-	1053	-
23	Paniyannur	-	1002	-
24	Chokli	-	1424	-
25	Peringattur	-	2046	-
26	Thrippangottur	-	3239	-
27	Kolavallur	-	1411	-
28	Panoor	-	854	-
29	Puthur	-	1566	-
30	Cheruvanchery	-	1521	-
31	Manatheri	-	1706	-
32	Kannavam	-	1674	-
33	Kolayad	-	1685	-
34	Koothuparamba Town	-	1676	-
35	Thalassery (M)	-	1535	-
36	Aralam	-	-	20073
37	Mehakunnu	-	-	3103
38	Tholambra	-	-	1610
39	Vekkalam	-	-	1630
40	Vellaravalli	-	-	1608
41	Manathana	-	-	1802
42	Kappad & Konnath Range	-	-	28576
	Total	-	62257	58402



1 : 400,000

PHYSIOGRAPHY KANNUR DISTRICT

Physiography

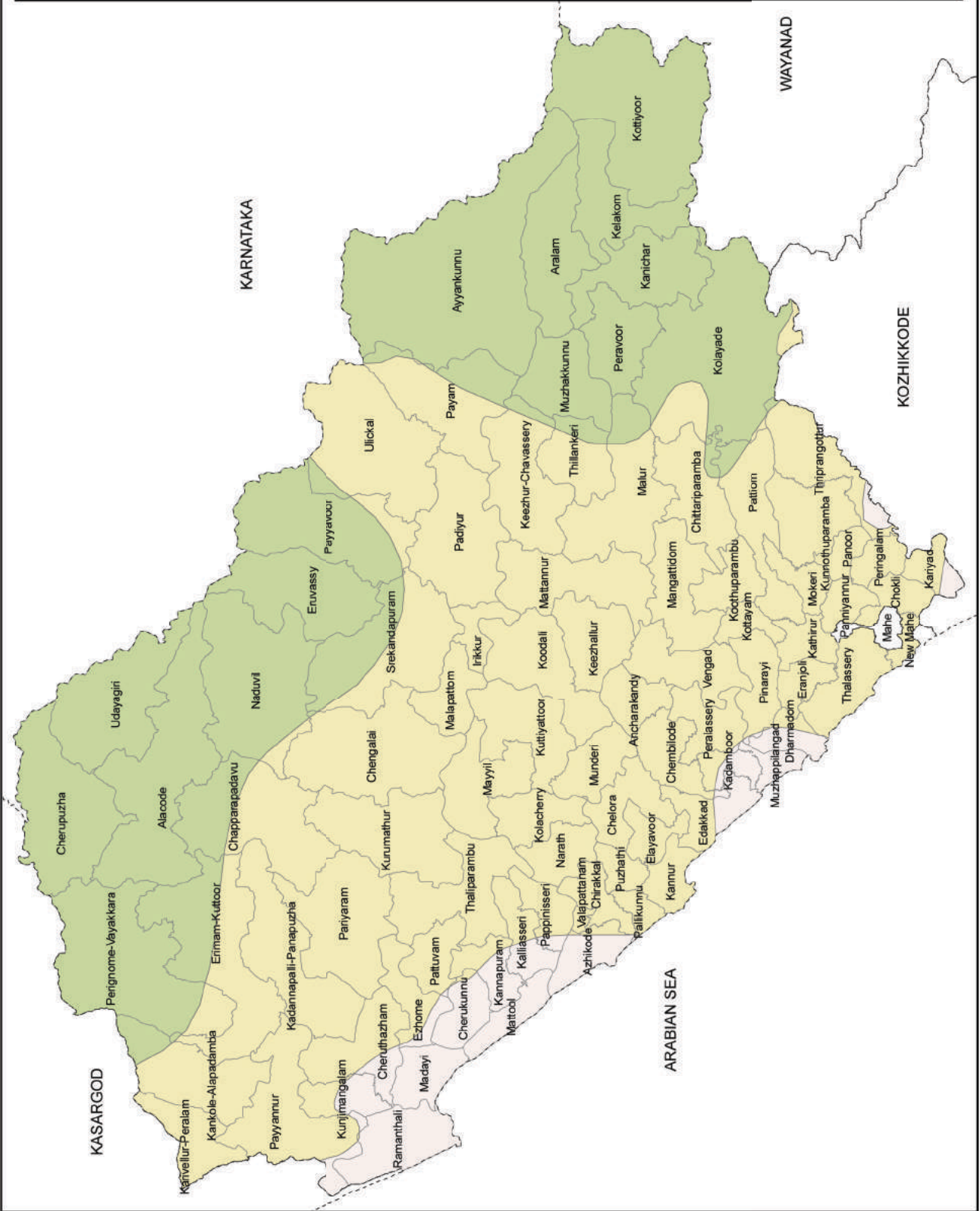
- Lowland
- Midland
- Highland

KERALA

KANNUR



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



KARNATAKA

WAYANAD

KOZHIKKODE

ARABIAN SEA

KASARGOD

SOILS

Soil is the basic natural resources that support all life on earth's surface. Its thickness varies from a few centimeters to a few meters on earth's surface, but it takes millions of years for its formation. Knowledge of soils is fundamental to well being of the present generation and the prosperity to come. Soil is one of the major resources of land which determines the use potential. Soil information furnished is from the National Bureau of soil survey and Land use planning (NBSS &LUP) under Indian council of Agricultural Research (ICAR), Regional Centre, Bengaluru and State Soil Survey Organisation. The National Bureau of soil survey and land use planning has classified the soils of Kerala into 38 soil units in association of two soils and numbered them serially from K01 to K38 based on characteristics like soil texture, surface gravelliness, soil reaction, slope, soil erosion, depth of water table, drainage etc.

The lowland soils are very deep moderately well drained alluvial soils developed from coastal sediments and are sand to loamy sand in texture. The midland soils include well drained alluvial soils and excessively drained laterite soils. Laterite boulders are seen in subsoil. Small intrusions of imperfectly drained riverine alluvial soils are also noticed. The soils in the midupland are well drained laterite soils developed from gneissic material having clay loam to clay texture. The upland soils are well drained foothill soils of the Western Ghats developed from the gneissic material. The high land soils are forest soils having clay loam to clay texture.

Table:- 8.1

SOILS IN KANNUR

Soils Mapping Unit No.	Description Major soils	Classification	
		Major Soils	Inclusions
K 08	Very deep, moderately well drained, clayey soils with moderately shallow water table in nearly level narrow valleys, with slight erosion; associated with very deep, imperfectly drained, clayey soils with moderately shallow water table on nearly level lands	Fine, Mixed, Typic Dystropepts Fine, Mixed, Typic Trophaquepts	Clayey, Kaolinitic, Typic Kanhaplustults Fine, Mixed, Typic Ustropepts
K 09	Very deep, well drained, gravelly clay soils with moderate surface gravelliness on moderately steeply sloping laterite mounds, with moderate erosion; associated with deep, well drained, gravelly clay soils on gentle slopes	Clayey-skeletal, Kaolinitic, Oxic Humitropepts, Clayey-skeletal, Kaolinitic, Ustic Haplohumults	Clayey-skeletal, Kaolinitic, Ustic Kandihumults Fine-loamy, mixed, Typic Kandiuults
K 11	Very deep, well drained, gravelly clay soils on gently sloping mid land laterite with valleys of central Kerala, with moderate erosion; associated with deep, well drained, clayey soils with coherent material at 100 to 150 cm on gentle slopes	Clayey, Kaolinitic, Ustic Kandihumults Clayey, kaolinitic, Typic Kanhaplustults	Fine, Mixed, Typic Dystropepts Clayey-skeletal, Kaolinitic, Oxic Humitropepts

K31	Very deep, well drained, gravelly loam soils on steeply sloping medium hills with thick vegetation, with moderate erosion; associated with very deep, well drained, clayey soils on moderate slopes	Fine-loamy, mixed, Ustic Humitropepts Clayey, Mixed, ustic Palehumults	Rock land Clayey, Mixed, Ustic Haplohumults
K32	Deep, Well drained, loamy soils on gently sloping low hills with isolated hillocks, with moderate erosion; associated with deep, well drained, loamy soils with coherent material at 100 to 150cm on moderate slopes, severely eroded.	Fine-loamy, mixed Ustic Humitropepts Fine-loamy, mixed Ustic Haplohumults	Fine, Mixed, Ustic Humitropepts Clayey-skeletal, Mixed, Ustic Humitropepts
K 33	Deep, Well drained, gravelly clay soils on moderately sloping medium hills with thin vegetation, with severe erosion; associated with rock outcrop	Fine, Kaolinitic Oxic Humitropepts Rock land	Fine-loamy, mixed, Ustic Palehumults
K34	Very deep, imperfectly drained, loamy soils with moderately deep water table in nearly level valleys, with slight erosion; associated with very deep, well drained, clayey soils on very gentle slopes	Fine-loamy, mixed, Typic Ustropepts Clayey, mixed, Ustic Palehumults	Fine-loamy, mixed Tropic Fluvaquents Fine-loamy, mixed Typic Ustifluents

K 35	Deep, Welldrained, gravelly clay soils with coherent material at 100 to 150 cm on moderately sloping isolated hillocks, with severe erosion; associated with moderately shallow, welldrained, gravelly loam soil with coherent material at 50 to 75 cm on very gentle slopes, moderately eroded.	Clayey, Mixed, ustic Haplohumults Fine-loamy, mixed, Oxic Humitropepts	Clayey-skeletal, Mixed, Ustic Humitropepts clayey, mixed, Ustic Haplohumults
K 36	Very deep, welldrained, clayed soils on moderately steeply sloping high hills with thick vegetation, with moderate erosion; associated with deep, welldrained, gravelly loam soils on gentle slopes.	Clayey, mixed, Ustic Haplohumults Fine-loamy, mixed oxic Humitropepts	Fine mixed, Ustic Humitropepts Rock Land
K37	Very deep, welldrained, clayey soils on moderately sloping foothills with moderate erosion; associated with very deep, welldrained, gravelly clay soils on gentle slopes	Clayey, mixed, Ustic Palehumults Clayey, Mixed, Ustic Haplohumults	
K 38	Very deep, welldrained, clayey soils on moderately steeply sloping high hills with thin vegetation, with moderate erosion; associated with rock outcrops	Clayey, mixed, Ustic Palehumults Rock land	Fine, Mixed, Ustic Humitropepts Fine-loamy, Mixed, Ustic Humitropepts

Table:- 8.2

Legend for the Soil Maps of districts in Kerala

S1. No.	Map symbol	Depth	Texture	Slope	Drainage
1	K 01	vd	s	vg	mw
2	K02	vd	s	vg	e
3	K03	vd	c	vg	vp
4	K04	vd	c	vg	vp
5	K05	vd	c	vg	i
6	K06	vd	l	vg	mw
7	K07	vd	gc	g	w
8	K08	vd	c	vg	mw
9	K09	vd	gc	ms	w
10	K10	vd	gc	g	w
11	K11	vd	gc	g	w
12	K12	vd	gc	g	w
13	K13	d	gc	g	w
14	K14	ms	gl	g	w
15	K15	vd	l	vg	p
16	K16	vd	l	vg	i
17	K17	vd	l	vg	mw
18	K18	vd	c	g	w
19	K19	vd	c	m	w
20	K20	d	gc	s	e
21	K21	md	gc	m	e
22	K22	vd	c	g	w
23	K23	ms	gc	vg	w
24	K24	d	gl	ms	w
25	K25	vd	gc	m	w
26	K26	vd	c	ms	w
27	K27	vd	l	g	w
28	K28	md	gl	g	w
29	K29	vd	l	g	w
30	K30	vd	c	m	w
31	K31	vd	gl	s	w
32	K32	d	l	g	w
33	K33	d	gc	m	w
34	K34	vd	l	vg	i
35	K35	d	gc	m	w
36	K36	vd	c	ms	w
37	K37	vd	c	m	w
38	K38	vd	c	ms	w

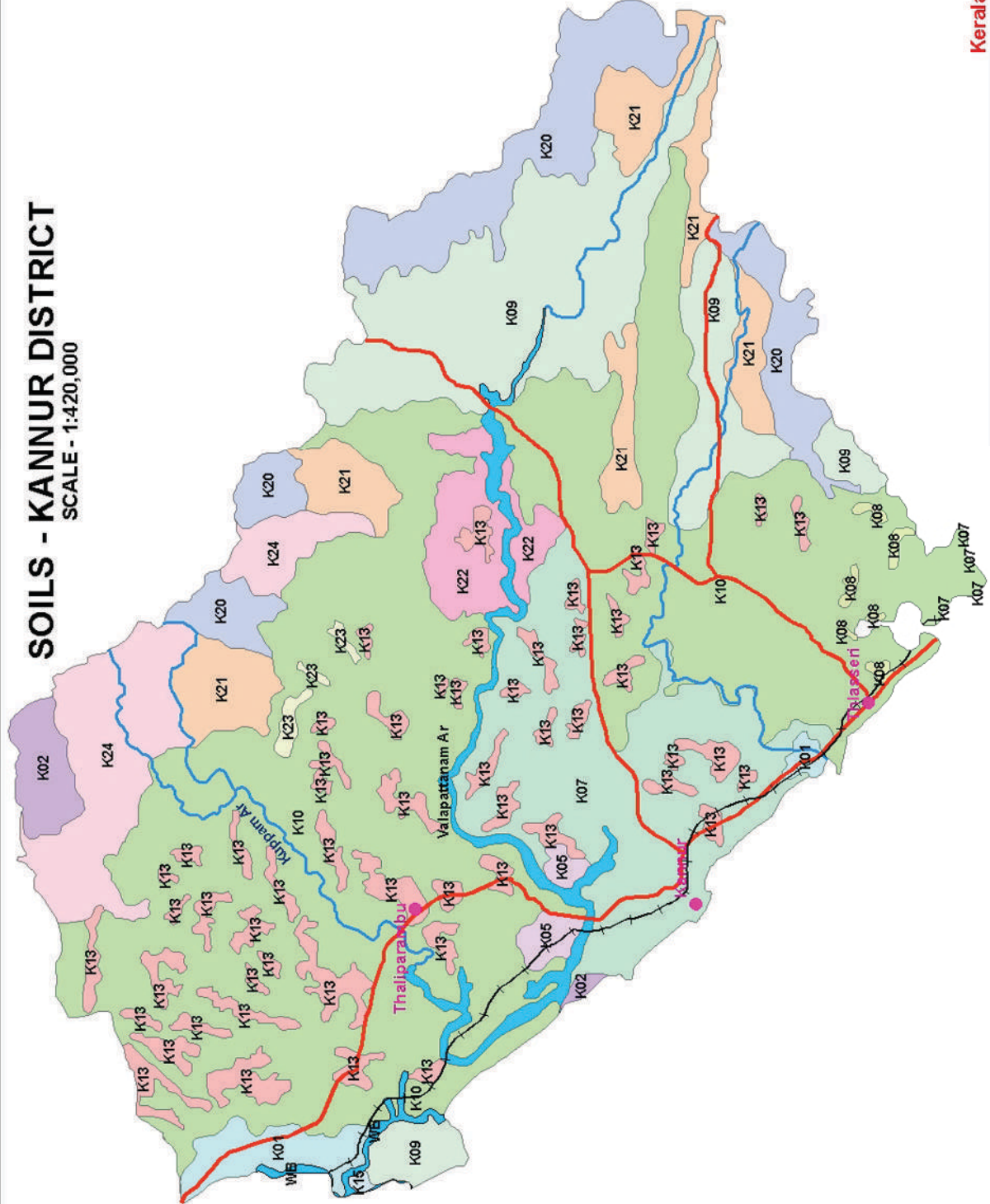
Depth	
d	deep
vd	very deep
md	moderately deep
ms	moderately shallow
Slope	
g	gentle
vg	very gentle
m	moderate
s	steep
ms	moderately Steep

Texture	
s	sandy
gc	gravelly clay
c	clay
l	loam
gl	gravelly loam
Drainage	
mw	moderately well
w	well
e	excessive
i	imperfectly
vp	very poor
p	poor



SOILS - KANNUR DISTRICT

SCALE - 1:420,000



Legend

- Major places
- Road
- Railway
- Waterbodies
- K08
- K09
- K11
- K31
- K32
- K33
- K34
- K35
- K36
- K37
- K38

WATER RESOURCES

In most developing countries, agriculture is the dominant user of water, accounting for more than 85% of all water use. Agriculture water use rises 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 the 1970's and 1980's investment typically involved large irrigation and drainage projects with considerable infrastructure development. In the 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 river basins are best managed and developed as an integrated whole. 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, 13 storages and 5 are barrages.

Live storage capacities of irrigation Reservoirs

The live storage position of the reservoirs during the beginning and end of the monsoon period during 2008 to 2010 are given in the following table.

Table:-9.1

Sl. No	Item	2008	2009	2010
1	Storage at the beginning of the Monsoon	452	392	531
2	Storage at the end of the Monsoon	1156	1180	1213
3	Increase due to Monsoon	704	788	682
4	Average for 10 years			
	(I) at the beginning of the monsoon	405	429	410
	(ii) at the end of the monsoon	1110	1096	1097
	(iii) increase in monsoon storage	705	667	688

Source: Economic Review, 2010

RIVERS IN KANNUR

1. THE PERUVAMBA RIVER

This river rises from the densely forested hill slopes of the Western Ghats near Pekkunnu in Vayakkara Village at an altitude of +325m above M.S.L. The river in its course flows through the villages of Peringoni, Kuttur, Mathamangalam and Kunnumangalam. The Macharuthode, the main tributary of the river also originates from Pekkunnu and joins the river at Mathamangalam. The other important streams are the Challachal, the Mukkutenkarachal and the Nitaringapuzha. The river has a drainage area of 300sq.km and a length of 51km.

2. THE RAMAPURAM RIVER

This is another river which drains into the Kavvayi backwaters. The river flows through the villages of Pariyaram, Kolapartvayal, Cherthazham and Madayi. The drainage area of the basin is 52sq.km while the length of the river is 19km.

3. THE KUPPAM RIVER

The Kuppam River otherwise called the Mattool river flows through the Thaliparamba and Cannanore Taluks. It originates from the Padinalkad Ghat Reserve Forests in Coorg district of Karnataka State at an elevation of 1630m. The length of the river is 82km. The river together with its tributaries and streams drains an area of 539sq.km. of which an area of 70sq.km lies in Karnataka State. Its tributaries are the Pakkattupoya, the Alakuttathode, the Kuttilolpuzha, the Mukkuttathodu and the Chiriya Thodu. The Minor Port of Azhikkal stands at the mouth of these rivers.

4. THE VALAPATTANAM RIVER

This river originates from the Brahmagiri Ghat Reserve Forest in Coorg District, Karnataka State. After flowing through the Reserve Forests in Karnataka State for about 19km. it passes through the villages of Iritty, Perunana, Irikkur Kalliasseri and Valapattanam the major tributaries are the Sreekandapuram River, the Valiapuzha or the Barapole, the Venipuzha and the Aralampuzha. The total drainage area of the basin is 1867sq.km of which 546sq.km lie in Karnataka State. The river has a length of 110km.

5. THE ANJARAKANDI RIVER

It originates from the Kannothe Reserve Forest at an altitude of +600m above M.S.L. Two small tributaries, the Kapputhodu and the Idumba thodu join the main river near Kunderipoyil. The basin has an area of 412sq.km lying entirely in this State. The length of the river is 48m.

6. THE THELLICHERRI RIVER

It is also known as the Ponnayam River has its source at an elevation of +550m above M.S.L. in the Kannothe Reserve Forest on the western slope of the Western Ghats. It has only one tributary. This is the one of the smallest rivers in Kerala having a length of 28km. and a drainage area of 132sq.km. The river flows through the villages of Cheruvancheri, Mudiyanaga, Pattanam, Mokeri and Pandakkal.

7. THE MAHE RIVER

The Mahe river also called the Mayyazhipuzha, originates from the forest on the western slopes of the Wayanad Hills at an elevation of +910m above M.S.L. It flows through the villages of Naripetta, Vanimel, Iyyancode, Bhekiyad, Iringannoor, Tripangathur, Perigalam, Edacherri, Kacheri, Eramala, Kaiyad, Olavilam, Kunnumakkara, Azhiyur and Mahe. The length of the river is about 54km. and it drains an area of 394sq.km.

Source: Rivers in Kerala, PWD

RIVERS OF KERALA



Legend

- STATE BOUNDARY
- RIVER/ WATERBODY

Table :- 9.2

GROUND WATER STATISTICS- KANNUR

SITE-NAME	SAMPLING-TIME	pH	EC	Na	K	Ca	Mg	ppm			CI	NITRATE
								HCO ₃	CO ₃			
Alancode	Apr/08	7.4	101			6.4	1.95			14	17	
Aralam	Apr/08	7.64	354			2.4	0.98			4.3	1	
Cannanore	Apr/08	7.83	376			30	6.11			45	28	
Chakkarakkale	Apr/08	6.88	212			4.8	3.9			44	24	
Cheleri	Apr/08	7.06	28			2.4	0.49			7.1	2.1	
Chepparapadam	Apr/08	6.99	51			2.4	1.95			7.1	3.3	
Cheruthazham	Apr/08	6.83	42			1.6	1.95			8.5	3.5	
Chural	Apr/08	7.18	80			8.8	0.5			11	5.7	
Dharmadam	Apr/08		116			9.6	1.96			17	1.1	
Edakkad	Apr/08	7.95	190			12	2.45			36	0.14	
Edayannur	Apr/08	7.65	40			2.4	1.95			5.7	0.02	
Irikkur	Apr/08	7.98	157			11	6.94			13	0.98	
Iritty	Apr/08	7.38	35			1.6	0.97			5.7	1.9	
Kannapuram	Apr/08	8.11	381			34	7.58			40	47	
Kannavam	Apr/08	7.66	68			4	1.95			8.5	7.1	
Kommeri	Apr/08	7.56	55			3.2	2.44			5.7	0.19	
Kottiyur	Apr/08	7.62	79			6.4	3.41			7.1	2.6	
Kozhichal	Apr/08	7.52	49			3.2	1.95			5.7	2.4	

SITE-NAME	SAMPLING-TIME	pH	EC	Na	K	Ca	Mg	HCO ₃	CO ₃	Cl	NITRATE
Mahe	Apr/08	8.58	931			40	11.72			117	16
Manattana	Apr/08		154			10	1.71			17	6.1
Mathamangalam 1	Apr/08	7.8	57			2.4	0.98			9.9	8.5
Mattanur	Apr/08	5.9	180			6.4	3.9			34	37
Mattara	Apr/08	7.8	60			4	2.44			5.7	2.9
Mayyil	Apr/08	7.87	175			10	4.63			33	14
Mulakunnu	Apr/08	7.45	78			4	2.92			8.5	1.2
Padiriyad	Apr/08	6.88	43			1.6	1.95			9.9	2
Pattiyam	Apr/08	7.06	59			2.4	0.98			11	0.67
Payangadi	Apr/08	7.96	130			17	3.3			7.1	0.94
Peringome	Apr/08	8.05	187			25	3.31			13	15
Pukkundu	Apr/08	7.53	74			4.8	0.98			8.5	11
Ramantalai	Apr/08	7.19	38			1.6	0.97			7.1	1
Sreekandapuram	Apr/08	7.53	156			9.6	5.36			20	27
Taliparamba	Apr/08	8.85	384			26	3.19			50	58
Ulikkal 1	Apr/08	7.07	136			4	0.98			34	11
Valapattanam	Apr/08		128			8	1.47			23	2.2
Vayyakara	Apr/08		94			7.2	2.44			4.3	1.4

Source:- Central Ground Water Department

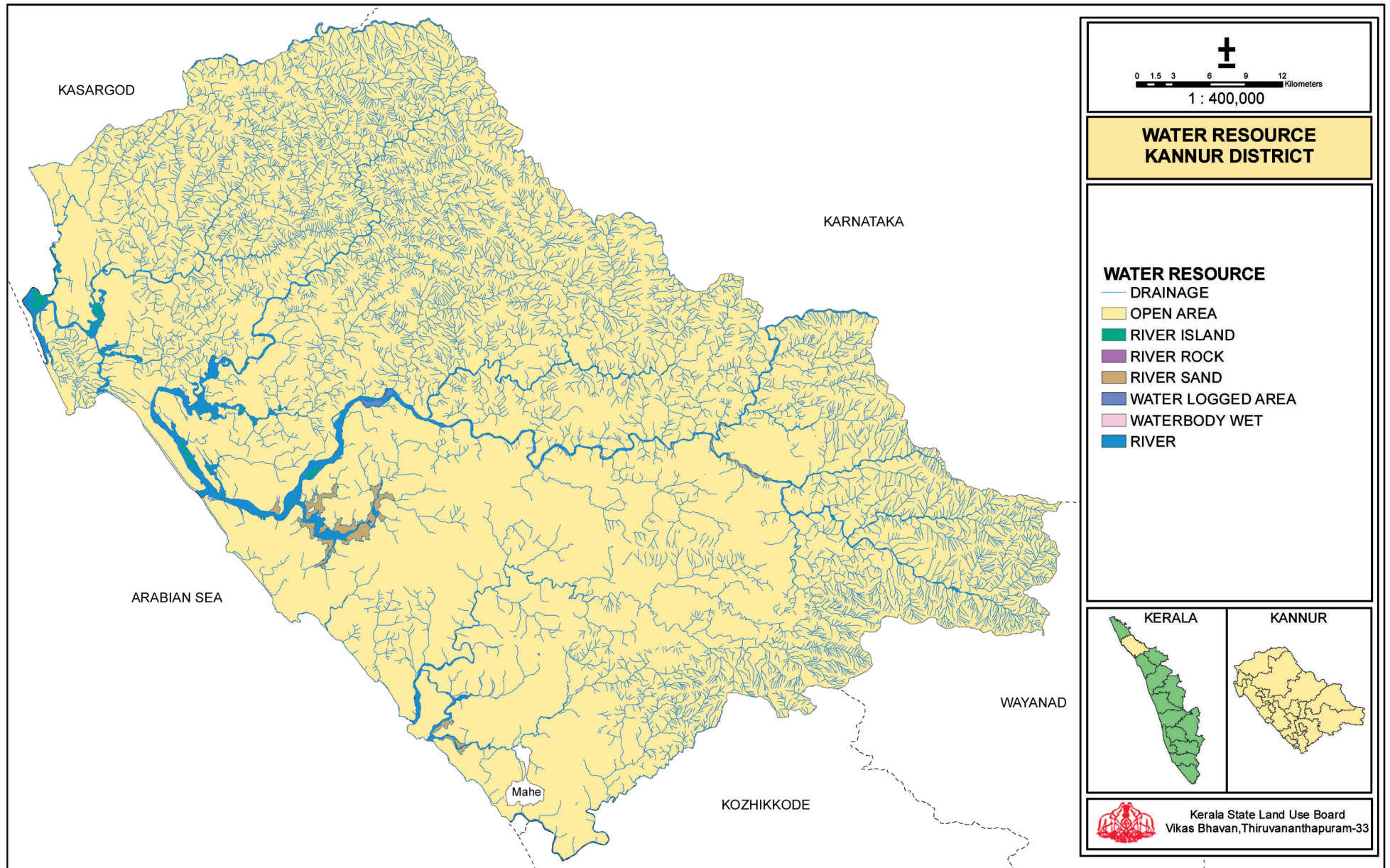
Table: 9.3

GROUND WATER DUG WELL STATISTICS- KANNUR

SI. No.	SITE-NAME	DATE-TIME	WATER-LEVEL(m bgl)
1	Aralam	Apr/10	1.43
2	Cannanore	Apr/10	10.38
3	Chepparapadam	Apr/10	3.62
4	Cheruthazham	Apr/10	10.3
5	Chural	Apr/10	6.4
6	Dharmadam	Apr/10	3.38
7	Edakkad	Apr/10	2.46
8	Iritty-R1	Apr/10	5.3
9	Kannapuram	Apr/10	2.99
10	Kannavam	Apr/10	5.01
11	Kommeri	Apr/10	4.26
12	Kottiyur	Apr/10	7.87
13	Kozhichal	Apr/10	3.47
14	Mahe-R1	Apr/10	1.63
15	Manattana	Apr/10	3.95
16	Mattanur	Apr/10	7.86
17	Mattara	Apr/10	3.51
18	Padiriyad	Apr/10	8.62
19	Pattiyam	Apr/10	2.36
20	Payangadi	Apr/10	2.31
21	Ulikkal 1	Apr/10	8.22
22	Vayyakara	Apr/10	19.2
23	Chepparapadam	Apr/11	3.74
24	Mattanur	Apr/11	7.88
25	Taliparamba	Apr/11	11.66
26	Irikkur	Apr/11	6.17
27	Mulakunnu	Apr/11	4.58
28	Edayannur	Apr/11	4.86
29	Kannavam	Apr/11	5.14

SI.No.	SITE-NAME	DATE-TIME	WATER-LEVEL (m bgl)
30	Pattiyam	Apr/11	2.16
31	Mahe-R1	Apr/11	1.77
32	Alacode	Apr/11	10.97
33	Ulikkal 1	Apr/11	7.87
34	Sreekandapuram	Apr/11	9.54
35	Cheleri	Apr/11	13.42
36	Manattana	Apr/11	3.02
37	Kommeri	Apr/11	4.71
38	Kottiyur	Apr/11	6.08
39	Chural	Apr/11	6.49
40	Kannapuram	Apr/11	2.89
41	Pukkundu	Apr/11	11.66
42	Payangadi	Apr/11	1.46
43	Valapattanam	Apr/11	10.22
44	Dharmadam	Apr/11	3.45
45	Mathamangalam 1	Apr/11	6.48
46	Cheruthazham	Apr/11	9.85
47	Ramantalai	Apr/11	8.9
48	Vayyakara	Apr/11	19.45
49	Kozhichal	Apr/11	7.06
50	Padiriyad	Apr/11	8.69
51	Perigome	Apr/11	7.98
52	Cannanore	Apr/11	10.39
53	Edakkad	Apr/11	2.1
54	Chakkarakkale	Apr/11	11.74
55	Aralam	Apr/11	1.92
56	Iritty-R1	Apr/11	5.46
57	Mayyil	Apr/11	12.77

Source:- Central Ground Water Department



MINERALS

Table:- 10.1

INVENTORY OF THE MINERAL RESOURCES OF THE STATE

Name of Mineral	Location	Est. reserves in Million Tonnes)	Remarks
Mineral Sand	Chavara-Kayamkulam Sector, Kollam Dist. North of Kayamkulam Pozhi-Thottappalli, Alappuzha Dist.	127.00* 17.00	Total Heavy mineral Estimated Reserve
Gold Primary Gold	Maruda, Nilambur, Malappuram Dist., Kappil, Nilambur, Malappuram Dist., Pattumala, Attapady, Kottathara, Palakkad Dist.	0.55 0.0613 0.08 0.0067	4 g/t 4.1 g/t 12.98 g/t 14.99 g/t
Placer Gold	Punnapuzha and Chaliyarpuzha, Nilambur, Malappuram Dist.	30 m cu.m. 2.5 m cu.m	0.07 g/m ³ 0.1 g/m ³
Iron ore	Kozhikode & Malappuram Dists.	84.00	Magnetite Oxidised: 39.0 MMT Unoxidised 45.0 MMT Fe 32.0 - 41.0%
Bauxite	Kannur & Kasargod Dists. Kollam & Thiruvananthapuram Dists.	10.16 2.65*	Metallurgical grade 5.2 MMT
Graphite	Thiruvananthapuram, Kollam, Kottayam & Ernakulam Dists.	2.81	5% to 25 % Fixed Carbon
China Clay	Thiruvananthapuram, Kollam, Kannur & Kasargod Dists.	172.00	Probable : 80 Possible : 92

Name of Mineral	Location	Est. reserves in Million Tonnes)	Remarks
Ball Clay	Thiruvananthapuram, Kollam, Kannur & Kasargod Dists.	5.67	Inferred Reserve
Fire Clay	Kollam, Alappuzha, Ernakulam, Thrissur & Kannur Dists.	11.50	Inferred Reserve
Silica Sand	Cherthala, Alappuzha Dists.	28.40	Mineable Resources Glass Sands - High SiO ₂ Recently assessed
Lignite	Madayi, Kannur Dist., Nileswaram, Kadamkottumala & Kayyur, Kasargod Dist.	5.60 2.50 1.00 0.55	
Limestone	Pandarathu, Walayar, Palakkad Dist.	24.00	15-20 % only available now
Lime Shell	Vembanad lake & adjacent areas Alappuzha & Kottayam Dists. Coastal tracts of Kannur, Kasaragod Dist.& Estuaries of Periyar and Kadalundi puzha Kozhikode Dist.	4.05*	Chemical grade
Magnesite	Salayoor, Mulli, Palakkad Dist.	0.037*	
Talc/Steatite	Kozhikode & Kannur Dists.	7.94	Inferred Reserve

Source:- State Mining & Geology Department

Table: 10.2

NUMBER OF MINING LEASES IN THE DISTRICTS OF KERALA AS ON 31.3.2004

Sl. No	Name of Mineral	TVM	Kollam	Pathanam-thitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasaragod	Total
1	Bauxite		3													3
2	China Clay	34	5											2	1	42
3	China Clay, Ball Clay, Fire Clay		1													1
4	Limeshell				6	2										8
5	Limestone								1							1
6	Graphite	1														1
7	Mineral Sands		3													3
8	Silica Sands				21											21
9	Quartz												4			4
10	Laterite													1		1
	Total	35	12		27	2				1			4	3	1	85

Source:- State Mining & Geology Department

Table: 10.3

Number of Quarrying Permits in force as on 31.3.2004

Sl. No.	District	Granite Building Stone	Laterite	Brick Clay	River Sand	Ordinary Sand	Lime Shell	Total
1	Thiruvananthapuram	81	2			2		85
2	Kollam	94		17		2		113
3	Alappuzha			8	13		4	25
4	Pathanamthitta	113	2	6		3		124
5	Kottayam	77	6	1		193		277
6	Idukki	93				7		100
7	Ernakulam	92	2	41	6			141
8	Thrissur	36	8		7			51
9	Palakkad	167	14	1		6		188
10	Malappuram	317						317
11	Kozhikode	88	25	3		1		117
12	Kannur	106	139		1			246
13	Wayanad	108		33		7		148
14	Kasargod	81	137		6	35		259
	Total	1453	335	110	33	256	4	2191

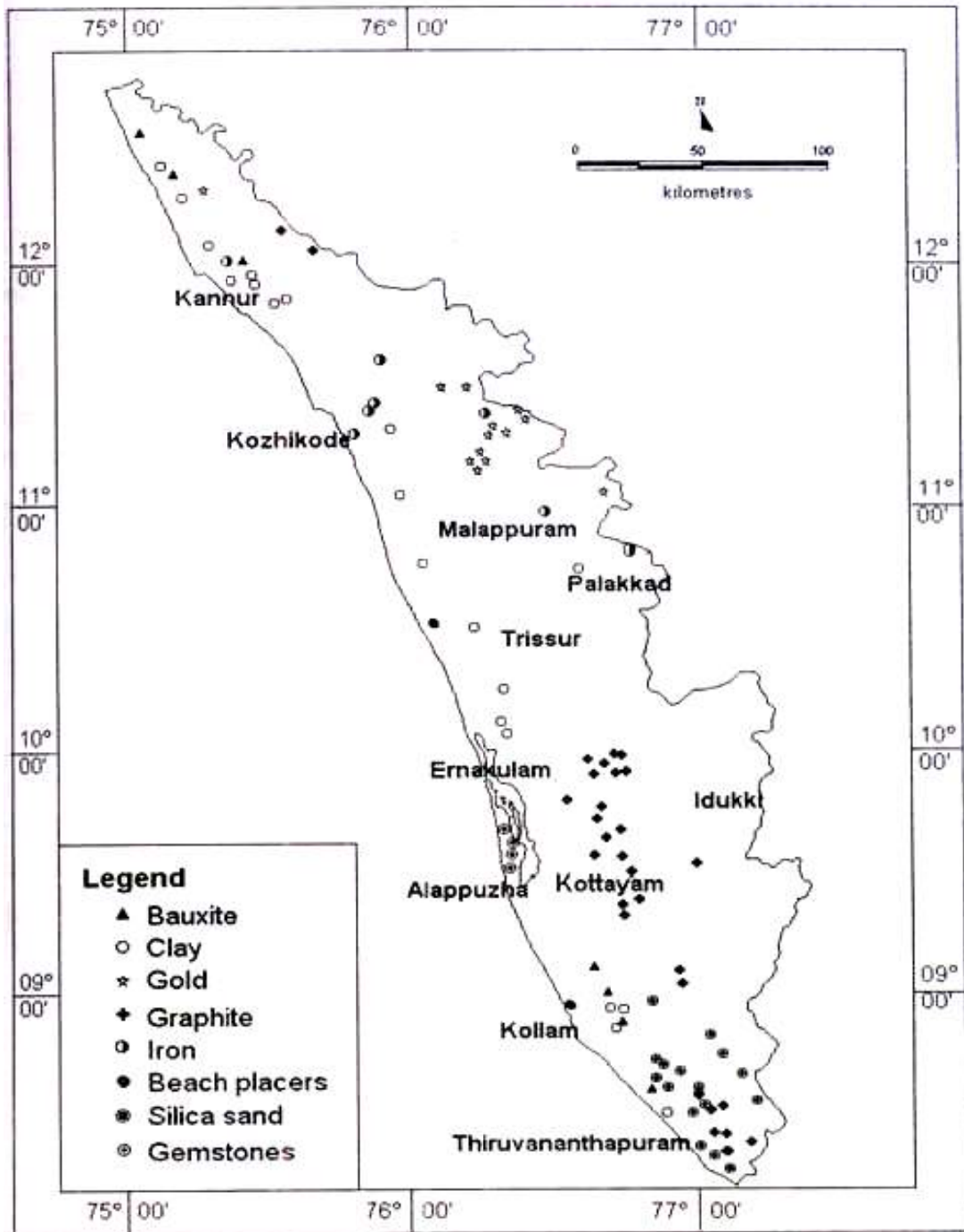
Table:- 10.4

Quarrying Leases for 2003-2004 as on 31.3.2004

Sl. No.	District	Granite Building Stone	Limeshell	Seashell	Granite Dimension	Brick Clay	Total
1	Thiruvananthapuram	55			35		90
2	Kollam	3					3
3	Alappuzha		1	1			2
4	Pathanamthitta	31					31
5	Kottayam	28	1				29
6	Idukki	13					13
7	Ernakulam	38					38
8	Thrissur	24					24
9	Palakkad	17			2		19
10	Malappuram	26					26
11	Kozhikode	35					35
12	Kannur	14					14
13	Wayanad	6					6
14	Kasargod	1					1
	Total	291	2	1	37		331

Source:- State Mining & Geology Department

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, an upto date information on the nature, distribution and extent of land use/land cover will be of great relevance. Space remote sensing with its wider scope, rapid and repetitive coverage capabilities, can provide highly reliable and accurate estimate on the various resources.

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

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

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

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

METHODOLOGY

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

use/ land cover. The interpreted details are to be verified on the ground in order to rectify the doubtful areas, and based on the ground verification, the wasteland boundaries (interpreted details) are to be finalized

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

Land Use/Land Cover Categories and their Spatial Distribution

Land use/land cover: 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 different districts of the State and their spatial distribution is given below:

i) Built up Land

It is defined as an area of human habitation developed due to non-agricultural use and that which has a cover of buildings, transport, communication, utilities in association with water, vegetation and vacant lands. A total area of 223.43 Sq.km. which represent 7.52 % of total Geographical Area falls under this category.

ii) Agricultural land

It is defined as the land primarily used for farming and for production of food, fibre, 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. A total area of 1968.64 Sq.km. which represent 66.24 % of total Geographical Area falls under this category.

iii) Forest

It is an area (within the notified forest boundary) bearing an association predominantly of trees and other vegetation types capable of producing timber and other forest produce. This category includes Evergreen/Semi-evergreen and Deciduous forests, degraded forests where the vegetative (crown) density is less than 20% of the canopy cover, forest blanks described as openings amidst forests without any tree cover and forest plantations of trees of forestry importance and raised on notified forest lands. A total area of 439.88 Sq.km. which represent 14.80 % of total Geographical Area falls under this category.

iv) Wetlands

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water table. For the purposes of this classification, wetlands must have one or more of the following three attributes 1) at least periodically, the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil;

and 3) the substrate is nonsoil and is saturated with water or covered by shallow water level at some time during the growing season of each year.

v) 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 two 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 and b) 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.

vi) Water bodies

It is an area of improduced 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 district wise area under land use/land cover categories in the State identified and mapped is furnished in Table separately.

Table showing land use/ land cover of Kannur district.

Table: 11.1

LAND USE / LAND COVER CATEGORIES

Sl. No.	Category	Area (Sq.Km)	Percentage
1	Built up land (urban) - commercial	0.68	0.02
2	Built up land (urban) - beaches	3.42	0.12
3	Built up land (rural) - residential	28.4	0.96
4	Built up land (rural) - mixed builtup	190.93	6.42
5	Paddy - viruppu + mundakan	43.14	1.45
6	Paddy reclaimed coconut	85.74	2.89
7	Paddy reclaimed rubber	11.31	0.38
8	Paddy reclaimed mixed crop	81.72	2.75
9	Paddy reclaimed banana	1.59	0.05
10	Paddy reclaimed residential	0.19	0.01
11	Paddy reclaimed mixed builtup	2.51	0.08
12	Paddy - fallow	18.62	0.63
13	Coffee	0.77	0.03
14	Rubber	122.33	4.12
15	Coconut	14.85	0.5

16	Cashew	17.88	0.6
17	Mixed crop	355.5	11.96
18	Coconut dominant mixed crop	632.07	21.27
19	Mixed trees	469.57	15.8
20	Banana	0.22	0.01
21	Pepper	110.63	3.72
22	Semi evergreen/Evergreen - Dense mixed forest	139.8	4.7
23	Semi evergreen/Evergreen - Dense mixed forest (Reserve Forest)	184.31	6.2
24	Semi evergreen/Evergreen - Dense mixed forest mainly bamboo	5.1	0.17
25	Deciduous - Dense mixed forest mainly teak	4.73	0.16
26	Deciduous - Dense mixed forest mainly teak (Reserve Forest)	8.97	0.3
27	Deciduous - Dense mixed forest mainly cashew	74.41	2.5
28	Deciduous - Dense mixed forest mainly rubber	2.23	0.08
29	Deciduous - Open mixed forest	0.25	0.01
30	Deciduous - Scrub forest	17.99	0.61
31	Grass land - degraded	2.09	0.07
32	Land with scrub	213.65	7.19
33	Land without scrub	21.3	0.72
34	Mining/Industrial wastelands	2.17	0.07
35	Barren rocky/sheet rock area	21.67	0.73
36	Degraded land under plantation crop (Rubber)	1.4	0.05
37	Degraded land under plantation crop (Pepper)	0.25	0.01
38	Sands - riverine	0.44	0.01
39	Water bodies	78.98	2.66
	Total	2966.00	100

Table:-11.2

EDAKKAD BLOCK

Sl. No.	Land Use	Chembilode	Kolachery	Edakkad	Chelora	Munderi	Peralasseri	Elayavur	Kadamboor
1	Built up Land	20.04	56.5					10.72	0.64
2	Paddy- Virippu	6.40	48					47.84	8.00
3	Paddy- Mundakan		19.5						
4	Paddy- Puncta		5.00						
5	Paddy- Virippu + Mundakan	15.68	80.50						
6	Paddy- Pokkali		54.75						3.04
7	Paddy- Virippu + Mundakan + Puncta		1.75						
8	Paddy- Virippu + Mundakan + Vegetables		3.00					2.24	2.08
9	Paddy- Virippu + Pokkali		5.25						
10	Paddy- Virippu + Vegetables								
11	Paddy- Mundakan + Vegetables		4.25						
12	Prawn culture								
13	Paddy- Banana							1.92	
14	Paddy- Tuber Crops							1.76	
15	Paddy + Vegetables							2.40	
16	Paddy land converted to built up land	1.12						3.84	4.00
17	Paddy land converted to Arecanut	2.24	5.25					4.96	
18	Paddy land converted to Coconut	9.44	47.00					20.96	12.72
19	Paddy land converted to Mixed Crops	182.16	21.25					43.68	33.52
20	Paddy land converted to Tuber Crops	4.00							0.32
21	Paddy land converted to Banana	1.60						1.12	6.40
22	Mixed Crop (Arecanut)							4.48	
23	Mixed Crop (Coconut)							8.48	
24	Paddy land converted to Vanilla	0.16							

Sl. No.	Land Use	Chembilode	Kolachery	Edakkad	Chelora	Munderi	Peralasseri	Elayavur	Kadamboor
25	Built up Land + Coconut		3.50						
26	Banana	0.64							
27	Coconut	26.80	125.25					19.20	31.60
28	Arecanut		5.50						0.88
29	Mixed Crops	1662.44	1003.25					893.03	551.94
30	Cashew	62.60	50.25					1.44	49.78
31	Pineapple	1.60							
32	Rubber	6.08	3.75						
33	Mixed Trees	14.00	42.75					40.64	46.00
34	Tuber Crops	0.80						0.00	0.00
35	Paddy- Waste Land	36.40	186.75					29.12	12.80
36	Cultivable Waste Land	43.20	120.75					8.56	26.88
37	Waste Land		10.25	Data not available	Data not available	Data not available	Data not available		0.64
38	Rock	1.60						0.80	
39	Sand Mines	0.00							1.92
40	Railway							6.40	1.60
41	Laterite Mines								0.24
42	Water Sources								
43	River		141.75						
44	Drain		20.25						
45	Crab								
46	Mangroves								
47	NF (CO)								
48	Drive in beach								
49	Marshy Land	0.00	6					3.41	0.00
	Total	2099.00	2072					1157.00	795.00

Table:-11.3

ERIKKUR BLOCK

Sl. No.	Land Use	Erikkur	Padiyur	Payyavur	Eruvessy	Malappattam	Kutyattoor	Mayyil	Ulikkal	Sreekandapuram
1	Built up Land	12.8		12	Data not available	Data not available	Data not available	Data not available	Data not available	53
2	Paddy- Virippu	8.48	24.48							
3	Paddy- Mundakan			2						
4	Paddy- Puncha									
5	Paddy- Pokkali									
6	Paddy- Virippu + Mundakan	1.76	131.16	5						
7	Paddy- Virippu + Mundakan + Puncha	2.08								
8	Paddy- Virippu + Pokkali									
9	Paddy- Mundakan + Vegetables									
10	Paddy- Virippu + Vegetables									15
11	Paddy- Virippu + Mundakan + Vegetables									90
12	Paddy land converted to built up land	2.56								
13	Paddy land converted to Coconut	3.84								
14	Paddy land converted to Mixed Crops	7.52	12	25						121.5
15	Paddy land converted to Arecanut	2.40	14.24							13
16	Paddy land converted to Banana	1.28	1.92							13.5
17	Paddy land converted to Rubber		0.96							
18	Paddy land converted to Tuber Crops	0.32								
19	Banana + Tuber Crops	0.48								
20	Banana	3.36	16.48							14
21	Coconut	87.90	20.96	49						44
22	Areca nut	4.16	4							9
23	Banana + Coconut		2.08							
24	Mixed Crops	476.26	844.84	2249						1795.5

Sl. No.	Land Use	Erikkur	Padiyur	Payyavur	Eruvessy	Malappattam	Kutyattoor	Mayyil	Ulikkal	Sreekandapuram
25	Built up Land + Coconut									
26	Mixed Trees	7.04	792.08							7
27	Rubber	154.60	2193.58	2051						4020
28	Rubber + Teak									261
29	Coca + Rubber									42
30	Vanila									4
31	Tuber Crops	0.80	74.08							
32	Cashew	312.09	895.9	1497						182
33	Paddy- Waste Land			1						
34	Cultivable Waste Land	2.08	196.8	13						6
35	Cultivable Waste Land (Laterite)	12.64	36.16							
36	Waste Land	20.61								11
37	Paddy Land converted to Cultivable Waste Land		0.96		Data not available	Data not available	Data not available	Data not available	Data not available	
38	Rock			18						44
39	Rock		20.16							
40	Quarry- Laterite									53
41	Forest			756						
42	River									
43	Lake		217.64							
44	Water Souces	12.94		56						25.5
45	Marshy Land									
46	QL		39.52							
47	Abandoned Mines									10
48	Water Logging									22
	Total	1138.00	5540	6734						6900

Table:-11.4

KALYASSERI BLOCK

Sl.No.	Land Use	Cherukunnu	Kannapuram	Ezhom	Cheruthazham	Madayi	Kalyasseri	Narathu	Mattool
1	Built up Land	6.4	5.28	5.04	15.36	54.48	Data not available	Data not available	12.72
2	Paddy- Virippu	82.44	96.2	0.8	97.12	10.96			45.68
3	Paddy- Puncha			8.08					
4	Paddy- Mundakan			3.36	22.72				
5	Paddy- Mundakan + Puncha								
6	Paddy- Virippu + Mundakan	6.72	135.86	195	151.68				
7	Paddy- Virippu + Pokkali			9.44					
8	Paddy- Virippu + Pulses								0.08
9	Paddy - Virippu +Yard Long Bean +Vegetables								
10	Paddy- Virippu + Prawn Culture			5.76					
11	Paddy- Pokkali		31.36	4.8					
12	Paddy- Pokkali (Kayppad)	146.4							
13	Kaippadu					41.92			
14	Prawn Culture	72.76	7.04	4		0			1.12
15	Kaippadu			120.8					
16	Paddy- Virippu + Puncha			4.16	130.88				
17	Paddy- Pokkali + Prawn Culture	5.92		70.36					
18	Paddy - Virippu + Mundakan +Vegetables		7.04	8.64		0.8			
19	Paddy - Virippu + Puncha + Vegetables				77.28				
20	Paddy - Virippu + Vegetables		14.24		1.76	7.92			17.76

Sl.No.	Land Use	Cherukunnu	Kannapuram	Ezhom	Cheruthazham	Madayi	Kalyasseri	Narathu	Mattool
21	Mixed Crops + Coconut			98.82					
22	Coconut + Areca nut		0.32	2.88					
23	Coconut + Tuber Crops								
24	Areca nut + Mixed Trees			7.2					
25	Paddy land converted to built up land	0.88	1.92	2.72		3.12			6.24
26	Paddy land converted to Areca nut			0.56	2.88				
27	Paddy land converted to Coconut	28.92	8.64	44.6	86.88	489.14			160.32
28	Paddy land converted to Rubber			30.08					
29	Paddy land converted to Pulses								0.32
30	Paddy land converted to Vegetables								5.28
31	Paddy land converted to Mixed Crops	1.76	8	1.76	65.28	23.76			4.16
32	Paddy land converted to Banana				0.8				
33	Paddy Land- Waste Land	153.42							
34	Banana	0.56	1						
35	Coconut	352.04	116.94	30.72	107.52	606.02			613.64
36	Areca nut			6.72					
37	Tuber Crops								
38	Pulses								1.68
39	Vegetables					4.16			
40	Mixed Trees	22.94	65.12	81.92	89.6	76.72			7.04
41	Mixed Crops	223.88	570.48	698.5	1625.65	90.32			1.84
42	Mixed Crops + Mixed Trees			1.6					

Sl.No.	Land Use	Cherukunnu	Kannapuram	Ezhom	Cheruthazham	Madayi	Kalyasseri	Narathu	Mattool
43	Mixed Crops (Coconut)								
44	Cashew	1.12	16.64	87.46	152.8	10.4			3.2
45	Teak			0.48					
46	Rubber		0.16		136.96				
47	Mixed Trees + Teak		3.36						
48	Casuarina								10.08
49	Mixed Crops + Areca nut								
50	Mixed Crops + Coconut		78.08						
51	Paddy Land- Waste Land		131.48		50.24	7.2			41.88
52	Cultivable Waste Land	20.36	26.88	49.72	70.91	18.64			2.16
53	Waste Paddy Land			0.8				Data not available	
54	Waste Land		6.24	38.98	71.84	30.4			
55	Mixed Crops + Rubber								
56	Forest								
57	Sand Mines	2.56							
58	River			187.32		78.88			
59	Channel					3.2			
60	Water Sources								287
61	Water Sources	313.8			58.88				
62	Rock Mines				65.28				
63	Rock	4		16					
64	Rock		2.56		26.56				

Sl.No.	Land Use	Cherukunnu	Kannapuram	Ezhom	Cheruthazham	Madayi	Kalyasseri	Narathu	Mattool
65	Rock Mines								
66	Rock Laterite				4.32				
67	Quarry Land			4.8					
68	Quarry Laterite					0.4			
69	WL (Laterite)					95.44			
70	Laterite Mines		13.76						
71	Chaina Clay Mines					15.2			
72	Sand Mines		3.2		0.96				
73	Clay Mines		3.68		1.12				
74	Abandoned Mines							Data not available	
75	Mangroves	35.96		5.92					37.96
76	Marshy Land	54.16	83.52	31.2		1.92			14.88
77	Sea eroded Land								5.12
78	Salt Water				102.72				
79	Cemetery								1.84
80	Colony			24					
81	CRPF								
	Total	1537	1439	1895	3218	1671			1282

Table:-11.5

KANNUR BLOCK

Sl. No.	Land Use	Azheekkode	Puzhathi	Chirakkal	Pallikkunnu	Valappattanam	Pappinissery
1	Built up Land	24.08			25.15	37.44	15.6
2	Built up Land / Railway			28.96			
3	Paddy- Virippu	11.52		12.80			16.48
4	Paddy- Mundakan			0.64			0.8
5	Paddy- Puncta						3.44
6	Paddy- Pokkali						8.48
7	Paddy- Mundakan + Puncta				8.64		
8	Paddy- Virippu + Mundakan	11.44			1.20		22.16
9	Paddy- Virippu + Puncta						8.64
10	Paddy- Virippu + Mundakan + Puncta	4.80		0.64			
11	Paddy- Virippu + Mundakan + Vegetables	4.16			1.60		
12	Paddy- Virippu + Vegetables	35.12	Data not available	12.96			
13	Paddy- Pokkali + Pulses						3.04
14	Paddy- Pokkali + Pulses + Coconut						5.28
15	Paddy- Virippu + Coconut						1.76
16	Prawn Culture						0.48
17	Coconut	59.68		65.28	10.88	0.48	211.84
18	Areca nut			2.72			6.68
19	Coconut + Banana						7.84
20	Paddy Land- Coconut						3.68
21	Paddy land converted to Waste Land			2.24			
22	Paddy land converted to built up land	20.48		38.24	19.36	5.92	8.32
23	Paddy land converted to Banana			0.96			0.64
24	Paddy land converted to Pineapple	0.24					

Sl. No.	Land Use	Azheekkode	Puzhathi	Chirakkal	Pallikkunnu	Valappattanam	Pappinissery
25	Paddy land converted to Coconut	63.20		12.72	13.12	0.48	39.04
26	Paddy land converted to Arecanut			1.68			0.4
27	Paddy land converted to Mixed Crops	203.40		13.60	110.63		25.12
28	Paddy land converted to Coconut + Banana						0.48
29	Banana	0.96		0.64			0.72
30	Vegetables			0.80			
31	Rubber						0.16
32	Teak				2.60		
33	Mixed Trees	17.36		48.64		3.76	11.8
34	Mixed Crops	1034.01		791.64	463.88	106.60	854.28
35	Mixed Crops (Coconut)						2.08
36	Mixed Crops + Coconut						3.36
37	Paddy Land- Waste Land			147.60	28.38		18.76
38	Cultivable Waste Land	5.28		16.32		0.72	32.2
39	Waste Land	10.88		4.64			20.32
40	Laterite Mines	1.24					
41	Laterite- Quarry			1.60			
42	Marshy Land	4.88		2.88	4.56		1.6
43	River			142.36			
44	Water Sources	63.68		5.44		46.28	136.76
45	Waste Paddy Land	20.47					
46	Mangroves	7.12				2.32	51.76
	Total	1604.00		1356.00	690.00	204.00	1524

Data not available

Table:-11.6

KOOTHUPARAMBU BLOCK

SI.No.	Land Use	Kottayam	Thryppangottur	Chittariparambu	KunnothParambu	Mangattidam	Pattyam	
1	Built up Land	Data not available	1.28	1.12	1.6	11.21		
2	Paddy- Virippu		18.72		17.76	2.32		
3	Paddy- Mundakan				3.36	10.08		
4	Paddy- Virippu + Mundakan			25.28	24.96	32.54	2.72	
5	Paddy- Virippu + Mundakan + Puncha			3.68	4.48			
6	Paddy- Virippu + Mundakan + Pulses					15.1		
7	Paddy - Vegetables				2.72			
8	Paddy - Virippu + Vegetables			0.88		3.76	12.8	
9	Paddy - Virippu + Mundakan + Vegetables			0.96		1.28		
10	Paddy - Virippu + Tuber Crops						6.08	
11	Paddy land converted to Coconut			24.00	2.88	28.42	16.64	32
12	Paddy land converted to built up land			8.80	2.48	22.76	4.56	
13	Paddy land converted to Mixed Crops			64.32	402.64	144.12	108.18	128.16

SI.No.	Land Use	Kottayam	Thryppangottur	Chittariparambu	KunnothParambu	Mangattidam	Pattayam
14	Paddy land converted to Tuber Crops	Data not available		0.48		0.64	
15	Paddy land converted to Areca nut			7.44	6.16	2.56	22.4
16	Paddy land converted to Banana		1.60	4	12.96	10.25	53.12
17	Paddy land converted to Vegetables				1.6		
18	Paddy land converted to Areca nut + Paddy land converted to Banana			4.8			
19	Paddy land converted to Tuber Crops				2.64		6.4
20	Paddy land converted to Mixed Crops (Areca nut)				19.68		
21	Paddy land converted to Waste Land		3.20				
22	Paddy Land - Vegetables						2.56
23	Banana + Pineapple					3.52	
24	Coconut + Areca nut				22.72		97.12
25	Coconut + Banana				4.88		
26	Coconut		933.60	54	11.36	44.88	200.64
27	Areca nut				5.76		1

SI.No.	Land Use	Kottayam	Thryppangottur	Chittariparambu	KunnothParambu	Mangattidam	Pattayam
28	Banana	Data not available		9.68	3.2	0.92	28
29	Coconut + Tuber Crops				1.12		
30	Mixed Crops (Coconut)				26.4		
31	Mixed Crops + Coconut				465.8		
32	Mixed Crops		1331.80	1771.24	1756.01	2328.14	956.84
33	Vegetables		6.40	1.28			2.88
34	Tuber Crops			0.56			
35	Pulses		0.48				
36	Mixed Trees		0.64	98.4	12.16	183.68	56.64
37	Rubber		184.00	421.28	88.75	94.7	70.24
38	Cashew		190.24	389.92	283.17	366.48	798.96
39	Paddy Land - Coconut					15.2	
40	Paddy Land- Waste Land				18.05	4.48	
41	Paddy Land converted to Cultivable Waste Land						1.6

SI.No.	Land Use	Kottayam	Thryppangottur	Chittariparambu	KunnothParambu	Mangattidam	Pattayam
42	Cultivable Waste Paddy Land	Data not available		1.68			
43	Cultivable Waste Land			5.6	13.36	7.76	8
44	Cultivable Waste Land (Laterite)						39.04
45	Waste Land			125.12	2.4	1.14	
46	Rock				0.72		4.8
47	Rock Mines				1.28		
48	Quarry Land			10.88			
49	Granite Quarry					2.96	
50	Laterite Quarry					11.5	
51	Abandoned Quarry					0.64	
52	River			4.00			
53	Water Sources			6.40		44.88	
54	Forest			459.52	1.36		257
	Total			3239.00	3381	2977	3331

Table:-11.7

PANOOR BLOCK

Sl. No.	Land Use	Chokli	Kathirur	Peringalam	Kariyadu	Mokeri	Panoor	Panyannur
1	Built up Land	3.04	2.24	6.88	8.48	4.8	14.14	
2	Paddy- Virippu + Mundakan	12	6.08	1.92	17.76		4.8	2.88
3	Paddy- Virippu	4.48		16.92	5.44		9.28	
4	Paddy- Mundakan	3.6	9.66	20.16	2.4	1.12		6.24
5	Paddy- Puncha					2.08		
6	Paddy- Virippu + Vegetables		32.48		0.32	4.96		
7	Paddy- Virippu + Vegetables + Maize					1.92		
8	Paddy- Mundakan + Vegetables		9.88					
9	Paddy- Virippu + Mundakan + Vegetables			5.44				
10	Paddy- Virippu + Mundakan + Pulses				8.32			
11	Virippu + Vegetables + Pulses				0.96			
12	Prawn culture							
13	Paddy land converted to built up land			1.6	1.44		3.52	3.52
14	Paddy land converted to Vegetables	1.92						
15	Paddy land converted to Coconut	40	9.44	72.48	12.96	5.28	9.76	7.68
16	Paddy land converted to Areca nut		0.8	3.36				0.48

Sl. No.	Land Use	Chokli	Kathirur	Peringalam	Kariyadu	Mokeri	Panoor	Panyannur
17	Paddy land converted to Rubber						6.08	
18	Paddy land converted to Banana + Coconut		35.2			13.6		
19	Paddy land converted to Banana + Areca nut		4.64					
20	Paddy land converted to Coconut + Arecanut					10.08		
21	Paddy land converted to Mixed Crop	100.8	116.64	103.84	11.2	51.52	100.64	114.72
22	Paddy land converted to Banana	0.8	3.84	3.2		1.92	1.76	5.28
23	Paddy land converted to Mixed Crop (Areca nut)					1.12		
24	Paddy land converted to Tuber Crops			0.96			0.48	
25	Paddy land converted to Pulses					0.32		
26	Paddy land converted to Vegetables							
27	Coconut	186.54	0.56	121.92	75.84		4.68	0.32
28	Coconut+ Areca nut							0.8
29	Cococnut + Banana	2.72			0.64	0.96		
30	Coconut + Tapioca							
31	Banana + Tuber Crops					0.8		
32	Cashew + Coconut							
33	Arecanut	1.92						1.6

Sl. No.	Land Use	Chokli	Kathirur	Peringalam	Kariyadu	Mokeri	Panoor	Panyannur
34	Banana	1.12	0.88	0.8		4.96		3.52
35	Vegetables			0.32				
36	Mixed Crops	796.46	935.82	663.84	638.92	828.04	679.82	824.08
37	Mixed Trees	4.32	7.04	4.8		4.8		
38	Pineapple	0.32						0.16
39	Tapioca		2.64					
40	Teak	1.6						
41	Cashew		27.76	26.16	1.12	10.88	15.84	
42	Rubber		0.48			84		
43	Mixed Crops (Coconut)				129.44			
44	Mixed Trees							
45	Cultivable Waste Paddy Land				5.44			20.96
46	Cultivable Waste Land	7.52	4.96	2.72	4.16	1.12		1.28
47	Waste Land		7.52	1.28	0.8	1.6	0.48	1.12
48	Paddy- Waste Land	2.88	2.8			6.4		
49	Rock							
50	Rock				1.44			

Sl. No.	Land Use	Chokli	Kathirur	Peringalam	Kariyadu	Mokeri	Panoor	Panyannur
51	Laterite Mines			0.32				
52	Water Sources	0.32		6.08	43.04			
53	River						1.92	7.36
54	Water Sources		5.6			4.96		
55	Salt Water							
56	Marshy Land	12.8	3.04		10.24			
57	Asci culture							
58	Crab							
59	Mangroves	11.08						
60	Grass					0.64		
61	Safed Musli					0.32		
62	Laterite					0.64		
63	Laterite Quarry				0.64			
64	Quarry	1.76					0.8	
65	Water Logging area					4.16		
	Total	1198	1230	1065	981	1053	854	1002

Table:-11.8

PAYYANNUR BLOCK

Sl. No.	Land Use	Cherupuzha	Kunjimangalam	Ramanthali	Kankol-Alappadambu	Karivelloor Peralam	Eramam Kuttur	Peringom Vayakkara
1	Built up Land	12	14.72	4.88	22.64			54.5
2	Paddy- Virippu		17.74	49.76	13.88		1.92	3
3	Paddy- Puncta						38.65	
4	Paddy- Mundakan							
5	Paddy- Mundakan + Puncta							13.5
6	Paddy- Virippu + Mundakan		132.32	2.96	172.12			
7	Paddy- Virippu + Mundakan + Puncta			1.28				
8	Paddy- Virippu + Pokkali							
9	Paddy- Virippu + Yard Long Bean							
10	Paddy- Virippu + Vegetables			4.8				
11	Paddy- Virippu + Pulses							
12	Paddy - Virippu + Yard Long Bean +Vegetables		1.28					
13	Paddy- Virippu + Prawn Culture							
14	Paddy- Pokkali							
15	Prawn Culture		11.68					
17	Paddy- Virippu + Puncta							
18	Paddy- Pokkali + Prawn Culture						31.3	28
19	Paddy - Virippu + Mundakan + Vegetables			31.5	6.96			
20	Paddy - Virippu + Vegetables				0.48			

Sl. No.	Land Use	Cherupuzha	Kunjimangalam	Ramanthali	Kankol-Alappadambu	Karivelloor Peralam	Eramam Kuttur	Peringom Vayakkara
21	Paddy Land- Vegetables				2.08			
22	Vegetables			0.4				
23	Mixed Crops + Coconut	113.13		415.49				
24	Mixed Crops + Areca nut			0.96				
25	Coconut + Areca nut	9.62		122.4			33.84	
26	Rubber + Cashew						641.52	
27	Mixed Trees + Rubber						9.75	
28	Paddy land converted to Mixed Crops + Areca nut						14.56	
29	Coconut + Tuber Crops		1.92					
31	Paddy land converted to Areca nut						8	
32	Paddy land converted to built up land		23.5	1.28	2.68			
33	Paddy land converted to Areca nut				20.24		25.28	26.25
34	Paddy land converted to Coconut		140.48	236.92	25.8			
35	Paddy land converted to Rubber							
36	Paddy land converted to Pulses							
37	Paddy land converted to Vegetables							
38	Paddy land converted to Mixed Crops	3.12	17.6	77.82	8.2		52.57	22.25
40	Banana				0.48		2.4	
41	Coconut	282.25	301.66	229.39	88.76		5.6	120
42	Areca nut	253.25	0.8		74.8		52.48	424.75
43	Tuber Crops		0.48					
44	Pulses							

Sl. No.	Land Use	Cherupuzha	Kunjimangalam	Ramanthali	Kankol-Alappadambu	Karivelloor Peralam	Eramam Kuttur	Peringom Vayakkara
45	Vegetables		0.15					
46	Mixed Trees	107.37	52.72		164.48		51.28	310.5
47	Mixed Crops	4440.65	499.61	314.2	1235.86		2400.6	1269.25
48	Mixed Crops			1255.74				
49	Mixed Crops + Mixed Trees							
50	Mixed Crops (Coconut)		130.24					
51	Cashew	19.99	34.72	16.48	1344.66		1346.63	674.75
52	Teak				0.8			
53	Rubber	1937.19	0.64	79.5	278.56		1962.38	3295
54	Vanilla				0.24			
56	Mixed Crops + Areca nut	38.75						
57	Paddy Land- Waste Land		5.28		3.64		10	16.75
58	Cultivable Waste Land (Laterite)				719.48			
59	Cultivable Waste Land	6.86	10.72	32.92			108.64	1261.75
60	Waste Paddy Land						676.31	10.25
61	Waste Land	4.25	32.64	14.64				
62	Mixed Crops + Rubber	209.32						
63	Forest	97						
64	Paddy Land- Water Logging Area	12.64	12.64					
65	River		33.28	22.4				
66	Water Sources	23.25						
67	Water Sources		6.72		1.92			36.25

Sl. No.	Land Use	Cherupuzha	Kunjimangalam	Ramanthali	Kankol-Alappadambu	Karivelloor Peralam	Eramam Kuttur	Peringom Vayakkara
68	Island			32				
69	Rock			43.2				
70	Rock Mines							14.25
71	Rock			3.28				
72	Quarry- Granite						34.24	
73	Quarry- Laterite						6.05	
74	Laterite Quarry				9.92			
75	Quarry Land	6						
76	Sand Mines				1.28			
77	Laterite Mines		2.24					
78	Clay Mines							
79	Abandoned Mines		0.8					5.5
80	Abandoned Quarry				7.04			
81	Mangroves		22.7					
82	Marshy Land			4.8				
83	Sea eroded Land							
84	CRPF							111.5
85	Mundakan		9.44					
86	Virippu+Vegetables		20.64					
	Total	7576.64	1539.36	2999	4207		7514	7698

Table :- 11.9

PERAVUR BLOCK

Sl.No.	Land Use	Kanichar	Kelakam	Kolayad	Kottiyur	Malur	Muzhakkunnu	Peravur
1	Built up Land	12.5	118	2.56	34	11.52	2	8
2	Paddy- Virippu	4	5		2.5		3.12	9.12
3	Paddy- Mundakan			7.68			39.52	3.2
4	Paddy- Puncha			7.04			2.08	1.12
5	Paddy- Virippu + Mundakan	58		10.24		77.76	21.04	31.04
6	Paddy- Mundakan + Puncha					9.92		
7	Paddy- Virippu + Mundakan + Puncha	3					53.68	15.2
8	Paddy- Virippu + Vegetables	4	2					2.4
9	Paddy- Virippu + Mundakan + Vegetables	9				47.52		10.24
10	Paddy land converted to built up land				25	1.28	0.48	1.6
11	Paddy land converted to Coconut	43	97	33.28	5	70.72		16.16
12	Paddy land converted to Arecanut	66	47	28.8	7	15.04	0.32	38.24
13	Paddy land converted to Coconut + Arecanut				9			
14	Paddy land converted to Mixed Crops	51.5	116	148.48	43.5	73.28	55.68	113.44
15	Paddy land converted to Vegetables				26			
16	Paddy land converted to Tuber Crops				5			0.32
17	Paddy land converted to Tapioca	8					10.96	

SI.No.	Land Use	Kanichar	Kelakam	Kolayad	Kottiyur	Malur	Muzhakkunnu	Peravur
18	Paddy land converted to Rubber		41	5.12	5		0.96	1.12
19	Paddy land converted to Banana		4	21.12	41	19.52	9.12	11.76
20	Paddy land converted to Pineapple			12.8				
21	Paddy land converted to Rubber + Paddy land converted to Teak				19			
22	Paddy Land converted to Cultivable Waste Land						3.24	
23	Banana	2	15.5	17.28	3	109.2	1.52	0.48
24	Coconut	102.5	156	97.28	147	104.94	36.8	27.52
25	Areca nut	26.5	254	33.28	52	4.48	13.6	0.8
26	Coconut + Areca nut		101			9.6		
27	Coffee	31						0.8
28	Tea	8						
29	Rubber	2870.5	2519	1249.16	936	1244.76	845.9	1244.24
30	Cashew			156.8	599.7	1022.4	522.52	108.84
31	Teak				8	4.48		0.16
32	Rubber + Cashew							3.2
33	Rubber + Cocoa			9.6				
34	Vegetables		16				2.88	
35	Tuber Crops							1.12

Sl.No.	Land Use	Kanichar	Kelakam	Kolayad	Kottiyur	Malur	Muzhakkunnu	Peravur
36	Tapioca		16					
37	Mixed Trees	4	43	22.4	30	171.2	35.76	44.56
38	Mixed Crops	930.5	2553	1393.52	2312.7	901.62	1432.14	1632.16
39	Mixed Crops + Areca nut		15					
40	Mixed Crops + Coconut		86					
41	Cashew	244	551					
42	Pepper		33					
43	Cocoa	31						
44	Vanilla		1			1.6		0.64
45	Vetiver					1.92		
46	Cultivable Waste Land		9	8.32	23	24.8	2.44	10.24
47	Cultivable Waste Land (Laterite)							0.64
48	Waste Land				1			
49	Reserve Forest	592	558					
50	Forest					165		19.28
51	River			48.32	66			
52	Water Souces	80						16.32
53	Water Souces		354			29.6	7.2	

Sl.No.	Land Use	Kanichar	Kelakam	Kolayad	Kottiyur	Malur	Muzhakkunnu	Peravur
54	Laterite Mines Area	1.5						
55	Laterite Mines						1.04	
56	Rock				60	15.84		
57	Rock + Cashew							23.2
58	Quarry			1.92				
59	Quarry Land				6			
60	Quarry - Granete		2.5					0.8
61	Laterite Quarry		42					10.92
62	Abandoned Quarry		4					0.96
63	Marshy Land							0.16
64	Reserve Forest				11120.6			
65	Fodder grass	1.5	33					
66	Cinnamon	12						
	Total	5196	7792	3315	15587	4138	3104	3410

Table :-11.10

THALIPARAMBU BLOCK

Sl. No	Land Use	Naduviil	Pattuvam	Kurumat hoor	Pariyaram	Chappara padavu	Udhayagiri	Alakkode	Chengal ayi	Kadannappilly- Panappuzha
1	Built up Land	32	5.04					126	39	0.16
2	Paddy- Virippu		8.26						103.5	27.72
3	Paddy- Mundakan								58.5	
4	Paddy- Puncha									2.88
5	Paddy- Pokkali									
6	Paddy- Pokkali (Kaippade)		88.96							
7	Paddy- Virippu + Pokkali								18	
8	Paddy- Virippu + Mundakan		47.57						75.5	90.84
9	Paddy- Virippu + Puncha		9.44						7	75.12
10	Paddy- Virippu + Mundakan + Puncha	5								21.52
11	Paddy - Virippu + Puncha +Vegetables		11.7							
12	Paddy- Virippu + Mundakan + Vegetables								21.5	6.24
13	Paddy- Virippu + Vegetables		16.1						5	
14	Paddy- Mundakan + Vegetables		5.84						4	
15	Paddy- Virippu + Mundakan + Pulses		13.12							
16	Paddy- Pokkali + Pulses									
17	Paddy- Pokkali + Pulses+ Coconut									
18	Paddy - Virippu + Coconut									
19	Paddy - Virippu + Yard Long bean		84.4							
20	Pokkali + Prown Culture									
21	Prown Culture		7.52							
22	Paddy land converted to built up land		0.56						12	
23	Paddy land converted to Coconut	1.5	27.14							
24	Paddy land converted to Areca nut		7.25						32	16
25	Paddy land converted to Mixed Crops		32.69						56.5	68.72
26	Paddy land converted to Rubber								20.5	8
27	Paddy land converted to Banana									

Data not available

Sl. No	Land Use	Naduivil	Patatuvam	Kurumat hoor	Pariyaram	Chappara padavu	Udhayagiri	Alakkode	Chengal ayi	Kadannappilly-Panappuzha
28	Paddy land converted to Vegetables									1.6
29	Paddy land converted to Coconut + Banana									
30	Paddy land Converted to Cultivable Waste Land									0.16
31	Paddy Land- Coconut									
32	Paddy Land- Waste Land									
33	Banana							3	5	2.56
34	Coconut	278	1.98					380	76	15.56
35	Areca nut	124						16	109	176.56
36	Coconut + Areca nut	32							8	8.6
37	Areca nut + Banana								12	
38	Vegetables									1.6
39	Mixed Crops (Coconut)	40							8	
40	Mixed Crops (Areca nut)									
41	Mixed Crops	4412.6	659.9					2655	1401.5	1156.2
42	Mixed Trees	502	255.94					10	162	1073
43	Mixed Crops + Coconut	35								
44	Areca nut + Mixed Crops	7								
45	Mixed Crops (Coconut + Areca nut)									
46	Mixed Trees + Teak									
47	Rubber	2568.6	6.56					2804	2746.84	897.88
48	Cashew	373.8	115.52					57	1068.15	1014.8
49	Rubber + Cashew								25	
50	Teak									6.72
51	Vanila							34		0.48
52	Sand Mines									
53	Paddy Land- Waste Land		15.08						21.5	
54	Cultivable Paddy Land									3.2
55	Cultivable Waste Land		5.36					10	20.5	138.4

Data not available

Sl. No	Land Use	Naduviel	Patatuvam	Kurumat hour	Pariyaram	Chappara padavu	Udhayagiri	Alakkode	Chengal ayi	Kadannappilly-Panappuzha
56	Waste Land	18.5	28.06					26	257.01	
57	Clay Mines									
58	Sand Mines									
59	Laterite Mines									
60	Rock								17	
61	Rock Mines									
62	Quarry Land	28							247	
63	Laterite Mines								72.5	
64	Clay Mines									
65	Abandoned Mines	336								
66	Mangroves							256		
67	CWL (L)									549.6
68	Marshy Land		10.32							
69	Sea eroded Land	3								
70	River									
71	Water Sources		220.69						23	
72	Water Sources									10.88
73	Total	8797	1685					7077	6733	5375

Data not available

Table:-11.11

THALASSERY BLOCK

SI.No.	Land Use	Ancharakka ndi	Pinarayi	Vengad	Dharmadam	New Mahi	Erinjoli	Muzhuppila ngad
1	Built up Land			4.32	4.64	2.08	12.16	28.00
2	Paddy- Virippu + Mundakan			50.56	5.44			1.28
3	Paddy- Virippu			1.6	7.76		1.6	
4	Paddy- Mundakan			13.76	2.88			
5	Paddy- Virippu + Mundakan + Puncha			20.48				
6	Paddy- Virippu + Vegetables			2.72	26.4			11.04
7	Paddy- Mundakan + Vegetables			3.04				
8	Paddy- Virippu + Mundakan + Vegetables			46.08	10.56		0	
9	Paddy- Virippu + Mundakan + Pulses							
10	Pulses							
11	Prawn culture				70		17.28	1.44
12	Paddy land converted to built up land			0.64	6.6			5.60
13	Paddy land converted to Vegetables							
14	Paddy land converted to Coconut			26.96	13.92		17.92	2.96
15	Paddy land converted to Areca nut							
16	Paddy land converted to Pineapple			3.04				
17	Paddy land converted to Banana + Coconut						20	
18	Paddy land converted to Banana + Areca nut							
19	Paddy land converted to Banana + Tapioca			0.16				
20	Paddy land converted to Coconut + Areca nut						1.28	
21	Paddy land converted to Mixed Crop			70.76	77.28	64.77	99.2	29.72
22	Paddy land converted to Banana			18.72	0.64	0.96	1.76	
23	Paddy land converted to Tuber Crops							
24	Paddy land converted to Vegetables				4			

Data not available

Sl.No.	Land Use	Ancharakkandi	Pinarayi	Vengad	Dharmadam	New Mahi	Erinjoli	Muzhuppilangad
25	Coconut			61.6	7.36	9.76		57.92
26	Cococnut + Banana							
27	Coconut + Tapioca				0			401.68
28	Cashew + Coconut				5.6			
29	Arecanut							0.16
30	Banana			0.64				
31	Vegetables				3.52			
32	Mixed Crops			2101.36	624	392.99	649.01	
33	Mixed Trees			239.28	41.44	9.52	3.92	4.80
34	Pineapple							
35	Tapioca							
36	Teak							
37	Cashew			49.04	0.96		47.36	3.25
38	Rubber			4.16		0.24		
39	PLCN			13.44				
40	Mixed Crops (Coconut)							
41	Mixed Trees						27.12	
42	Cultivable Waste Paddy Land							
43	Cultivable Waste Land			8.48	0.48		0.96	8.32
44	Waste Land			22.88	4.96	2.08	4.32	4.08
45	Paddy- Waste Land				11.76	2.56	2.56	1.76
46	Rock						0.88	
47	Rock							
48	Laterite Mines							
49	Water Sources				98.76		18.4	
50	Water Sources			40.64		20.32		99.57

Data not available

Sl.No.	Land Use	Ancharakka ndi	Pinarayi	Vengad	Dharmadam	New Mahi	Erinjoli	Muzhuppila ngad
51	Salt Water						68.8	
52	Marshy Land				14.08		2.43	3.22
53	Asci culture				11.2		11.04	
54	Crab							0.36
55	Mangroves				11.36	2.72		10.86
56	Laterite Quarry							
57	Granite Quarry			2.32				
58	Laterite Quarry			0.72				
59	Abandoned Quarry							
60	Abandoned Mines			1.6				
61	Quarry				0.4			
62	NF (CO)							28.34
63	Drive in beach							14.64
	Total			2809	1066	508	1008	719.00

NB:








The Panchayat Resources Mapping in Irritty Block is done by other agencies, hence it is not available in State Land Use Board.



1 : 125,000

**LANDUSE
EDAKKAD BLOCK
KANNUR DISTRICT**

LANDUSE (Level 1)

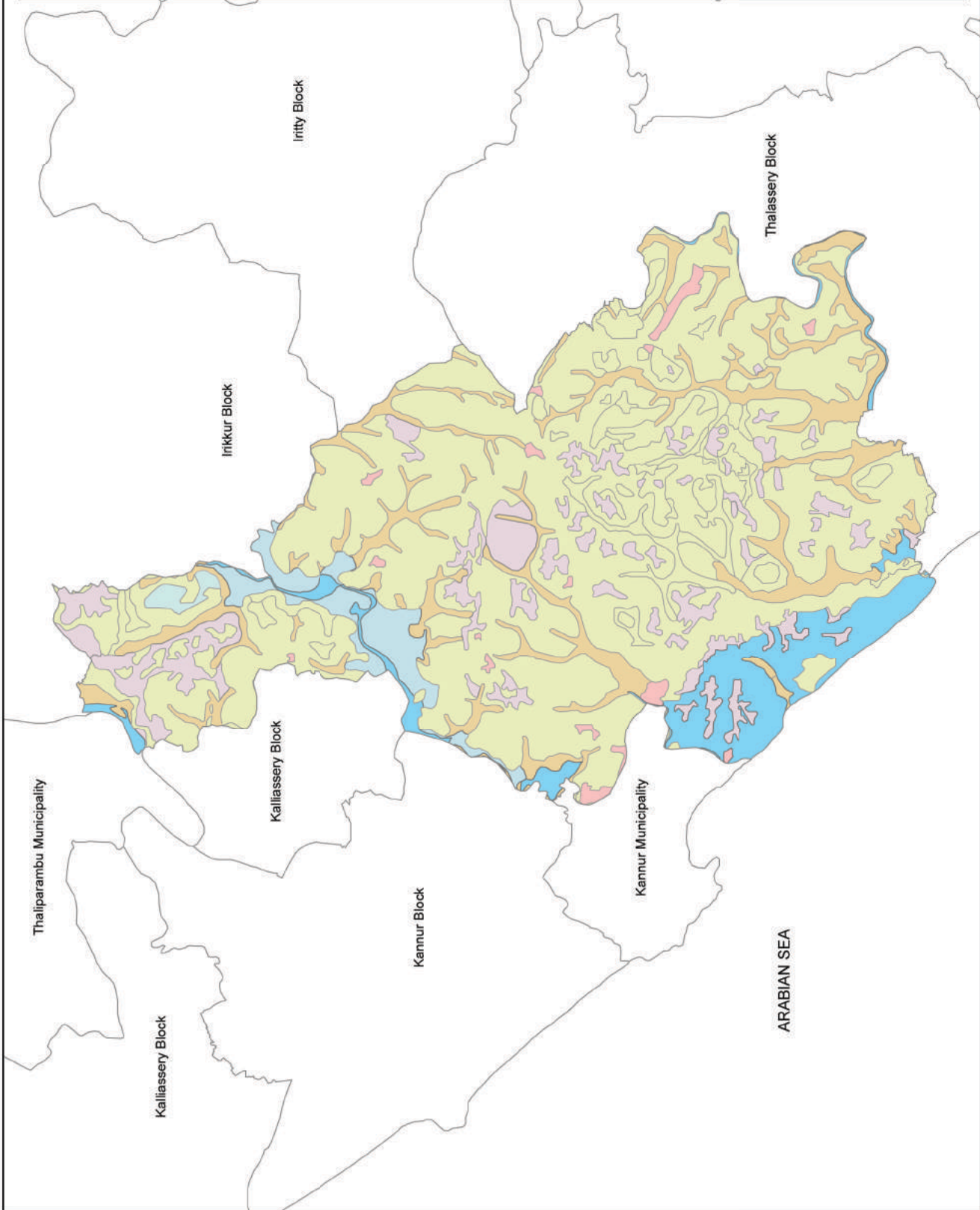
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-  Paddy
-  Agriculture land
-  Forest
-  Wetlands
-  Wastelands
-  Waterbodies

KERALA

KANNUR



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



Thaliparambu Municipality

Kalliassery Block

Inrikur Block

Iritty Block

Kalliassery Block

Kannur Block

Kannur Municipality

Thalassery Block

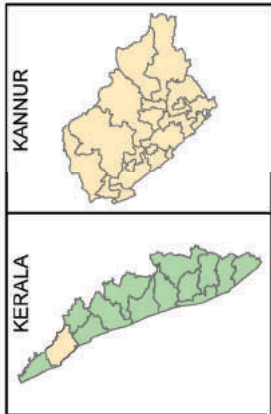
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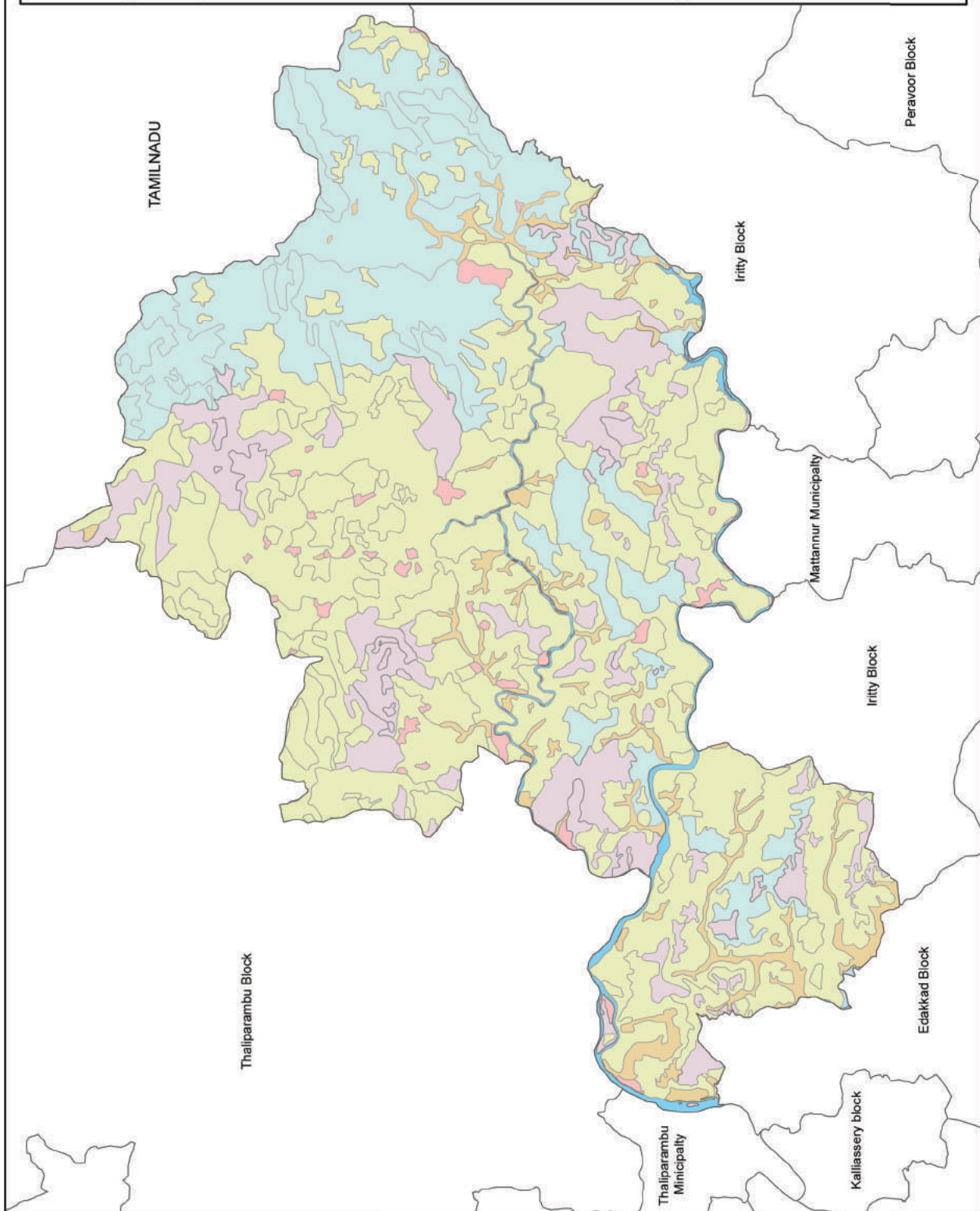
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IRRIKKUR BLOCK
KANNUR DISTRICT**

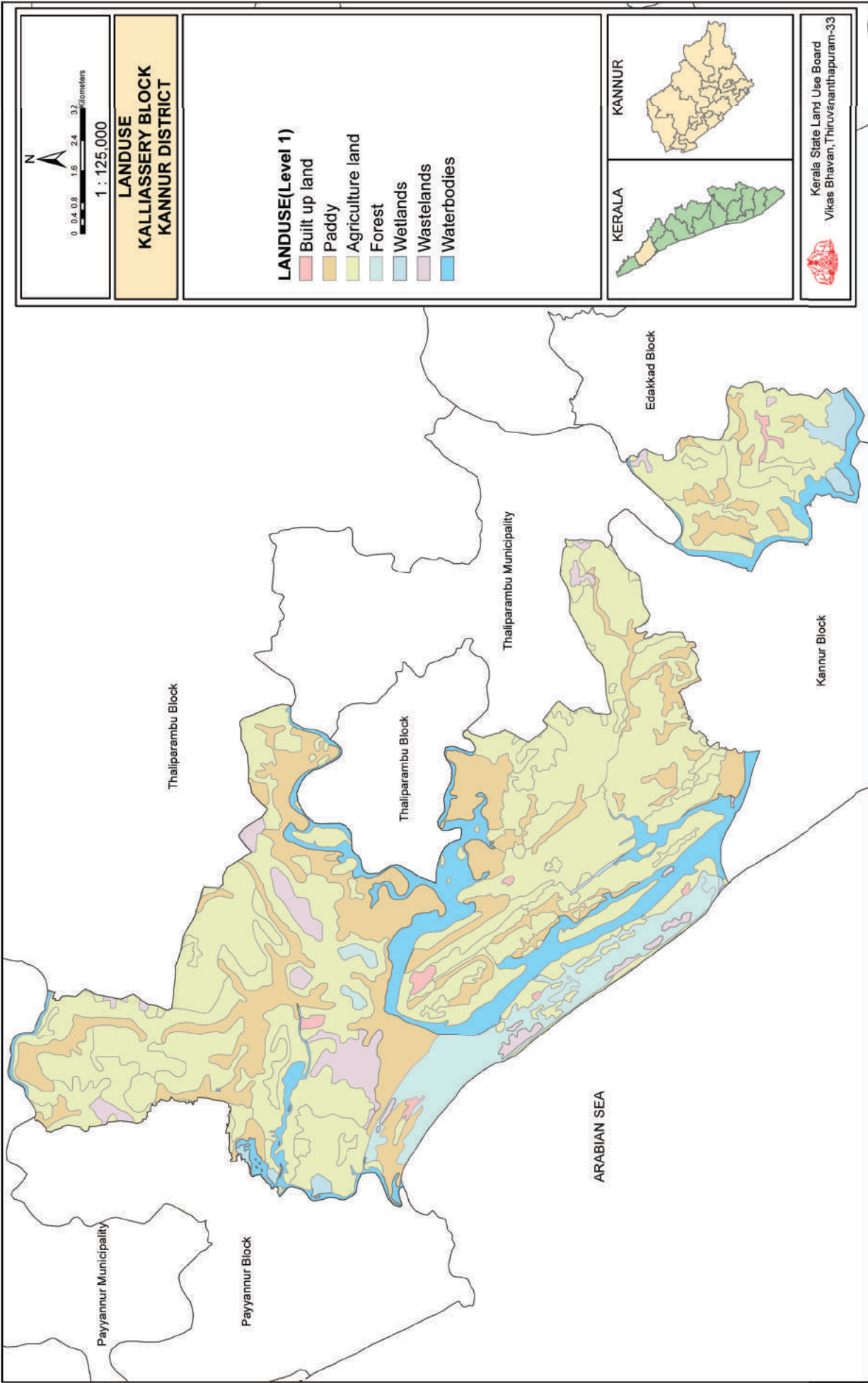
LANDUSE (Level 1)

- Built up land
- Paddy
- Agriculture land
- Forest
- Wetlands
- Wastelands
- Waterbodies



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Vikas Bhavan, Thiruvananthapuram-33



1 : 125,000

LANDUSE
KALLIASSERY BLOCK
KANNUR DISTRICT

LANDUSE (Level 1)

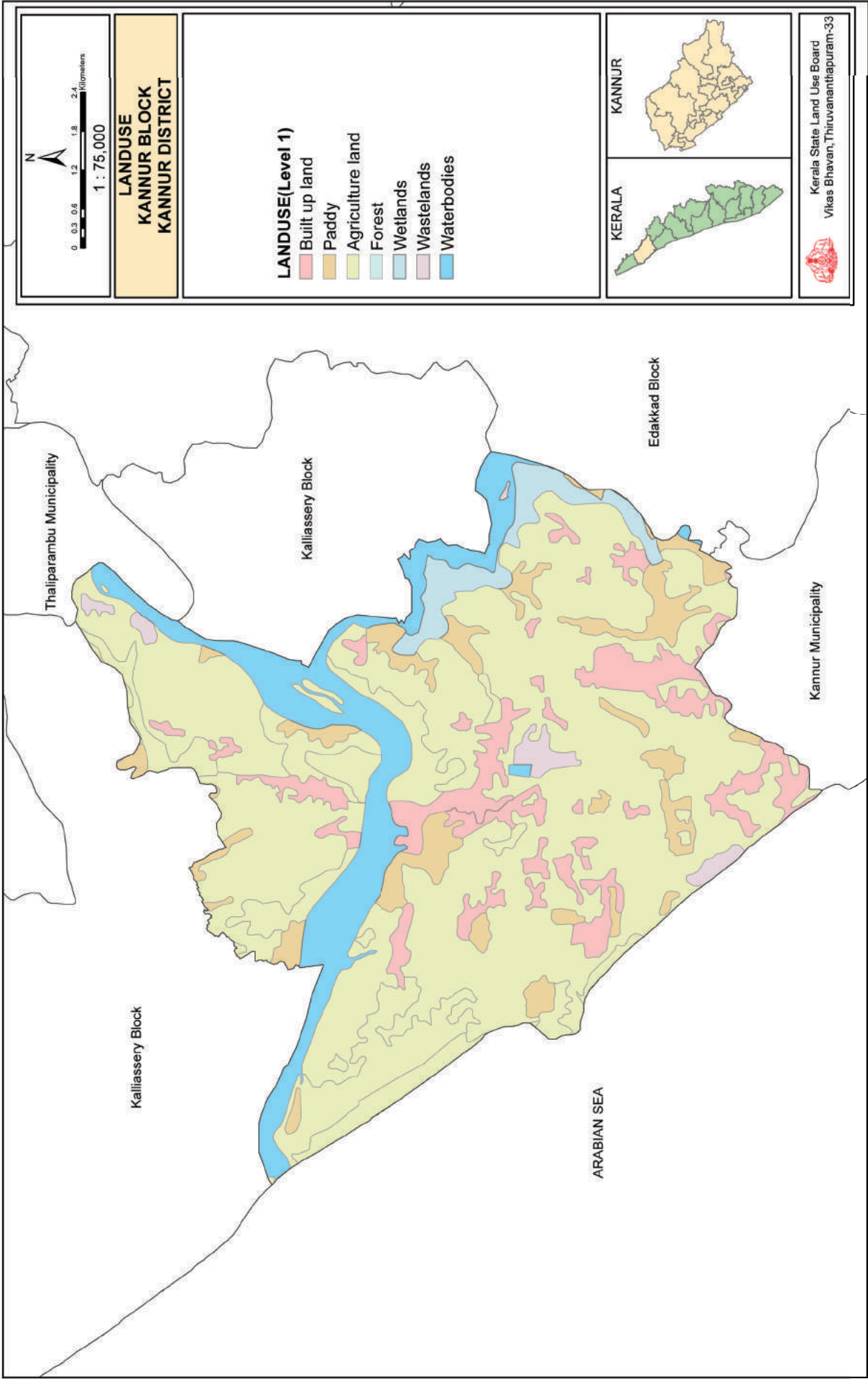
- Built up land
- Paddy
- Agriculture land
- Forest
- Wetlands
- Wastelands
- Waterbodies

KERALA

KANNUR



Kerala State Land Use Board
 Vikas Bhavan, Thiruvananthapuram-33





**LANDUSE
KOOHUPARAMBU BLOCK
KANNUR DISTRICT**

LANDUSE(Level 1)

- Built up land
- Paddy
- Agriculture land
- Forest
- Wetlands
- Wastelands
- Waterbodies

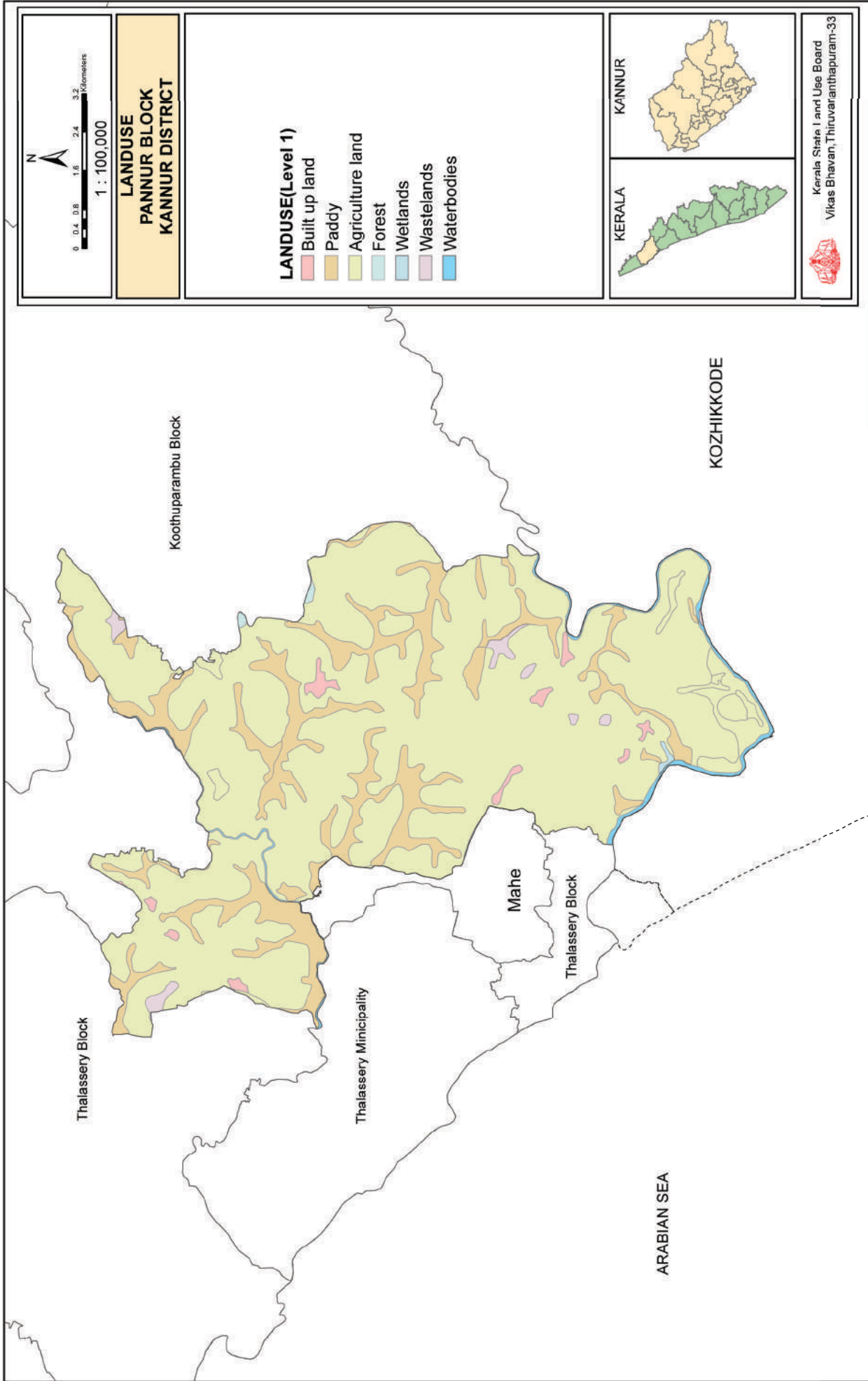


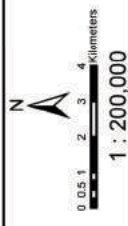
KANNUR

KERALA

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Vikas Bhavan, Thiruvananthapuram-33

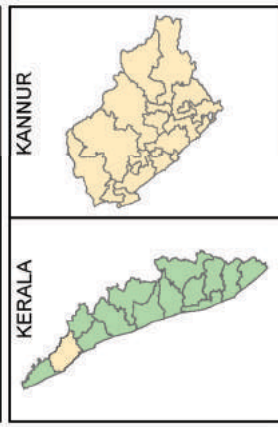




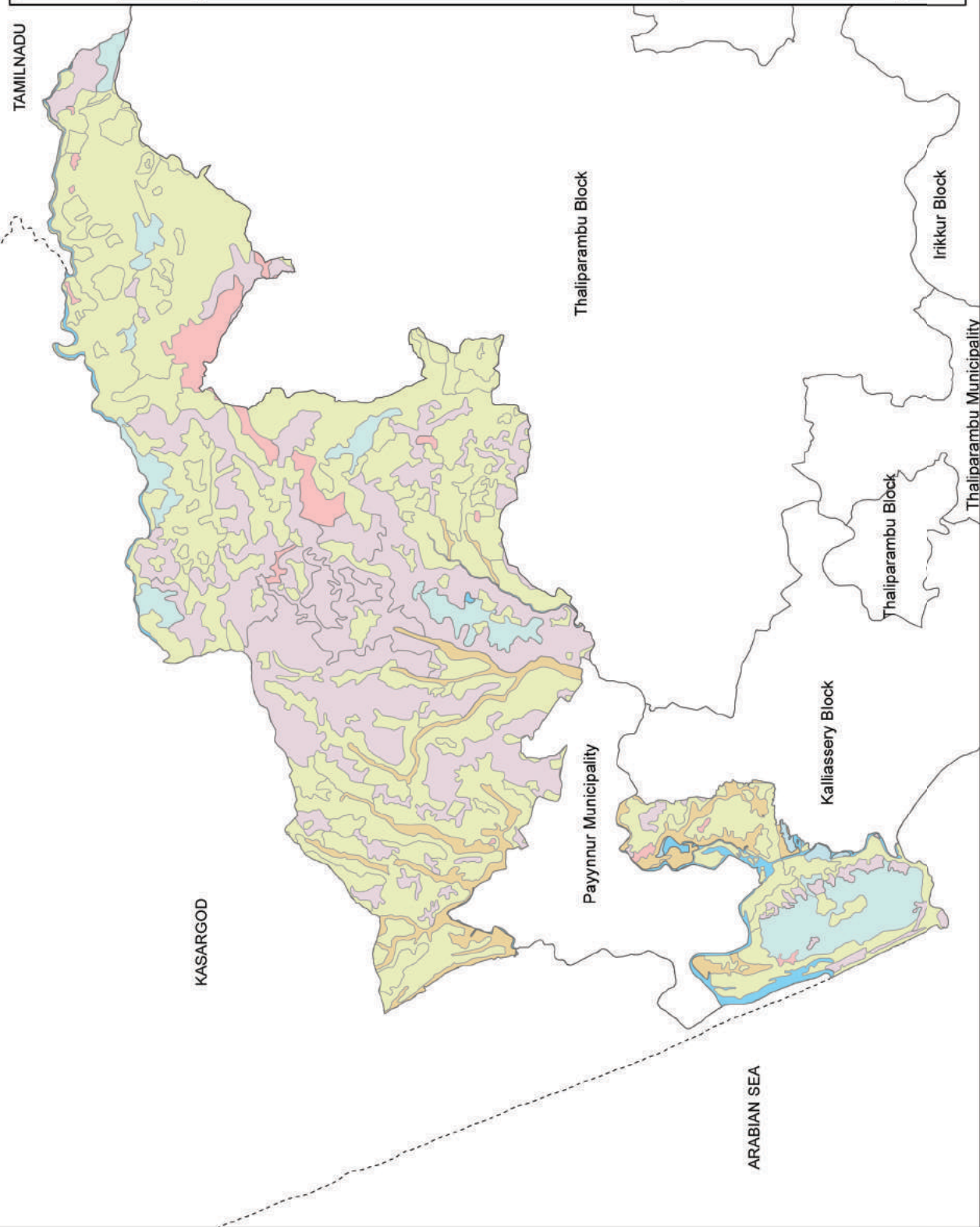


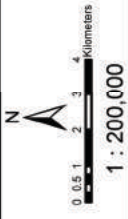
**LANDUSE
PAYYANNUR BLOCK
KANNUR DISTRICT**

- LANDUSE (Level 1)**
- Built up land
 - Paddy
 - Agriculture land
 - Forest
 - Wetlands
 - Wastelands
 - Waterbodies



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

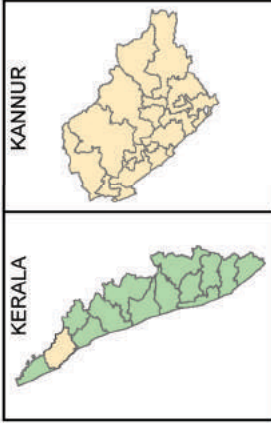




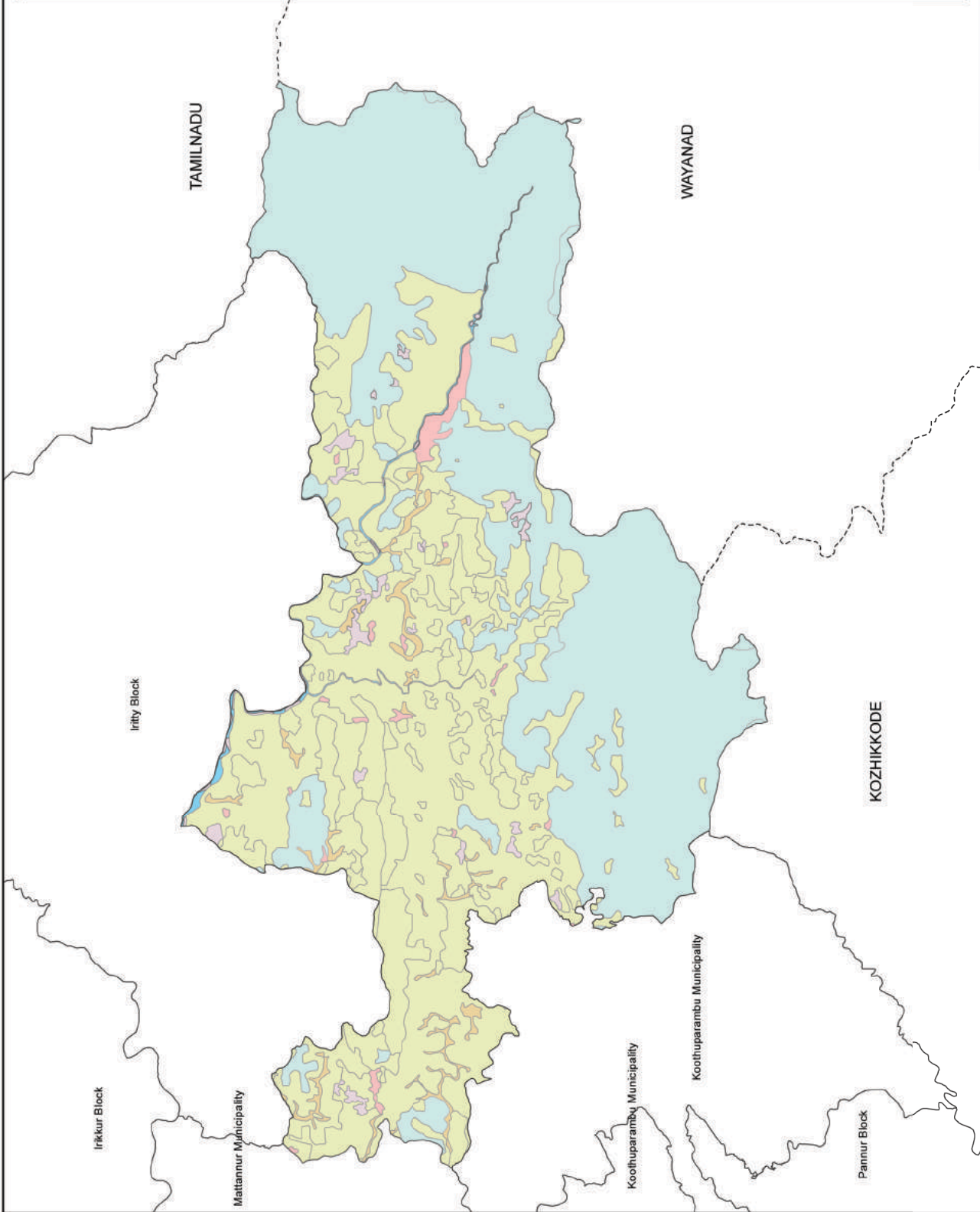
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PERAVOOR BLOCK
KANNUR DISTRICT**

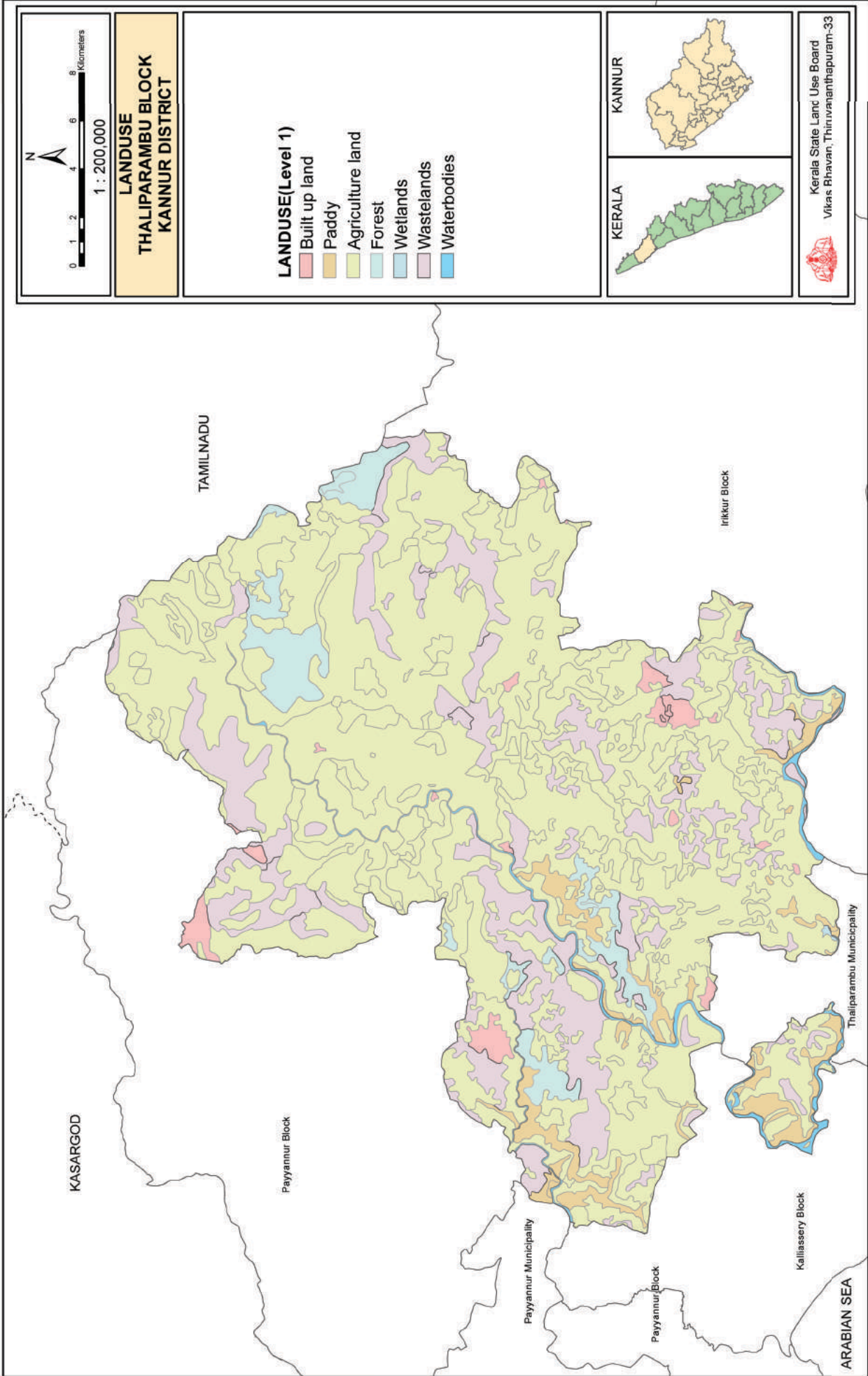
LANDUSE (Level 1)

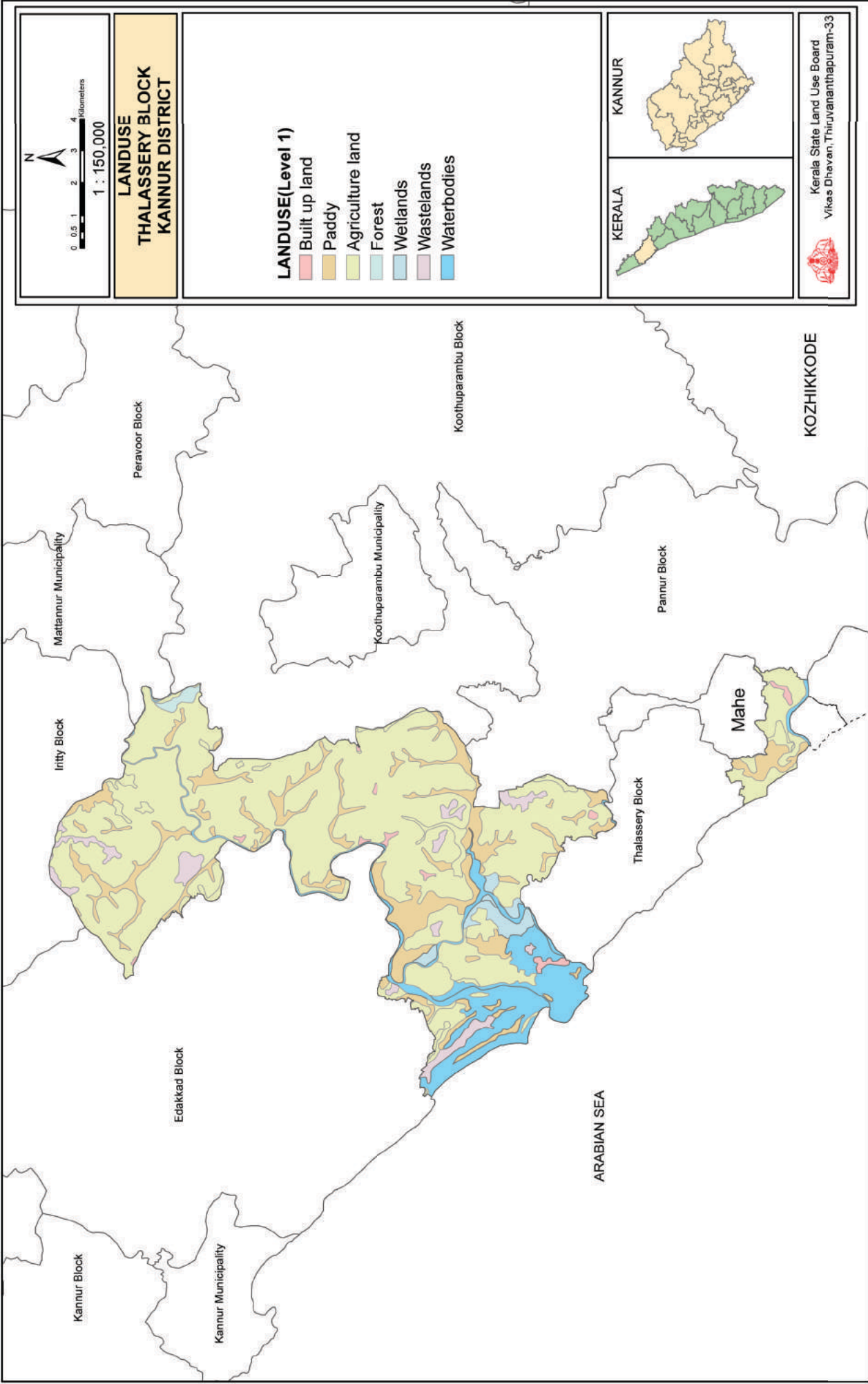
- Built up land
- Paddy
- Agriculture land
- Forest
- Wetlands
- Wastelands
- Waterbodies



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33







0 0.5 1 2 3 4 Kilometers
1 : 200,000

**LANDUSE
IRITTI BLOCK
KANNUR DISTRICT**

LANDUSE (Level 1)

-  Built up land
-  Paddy
-  Agriculture land
-  Forest
-  Wetlands
-  Wastelands
-  Waterbodies

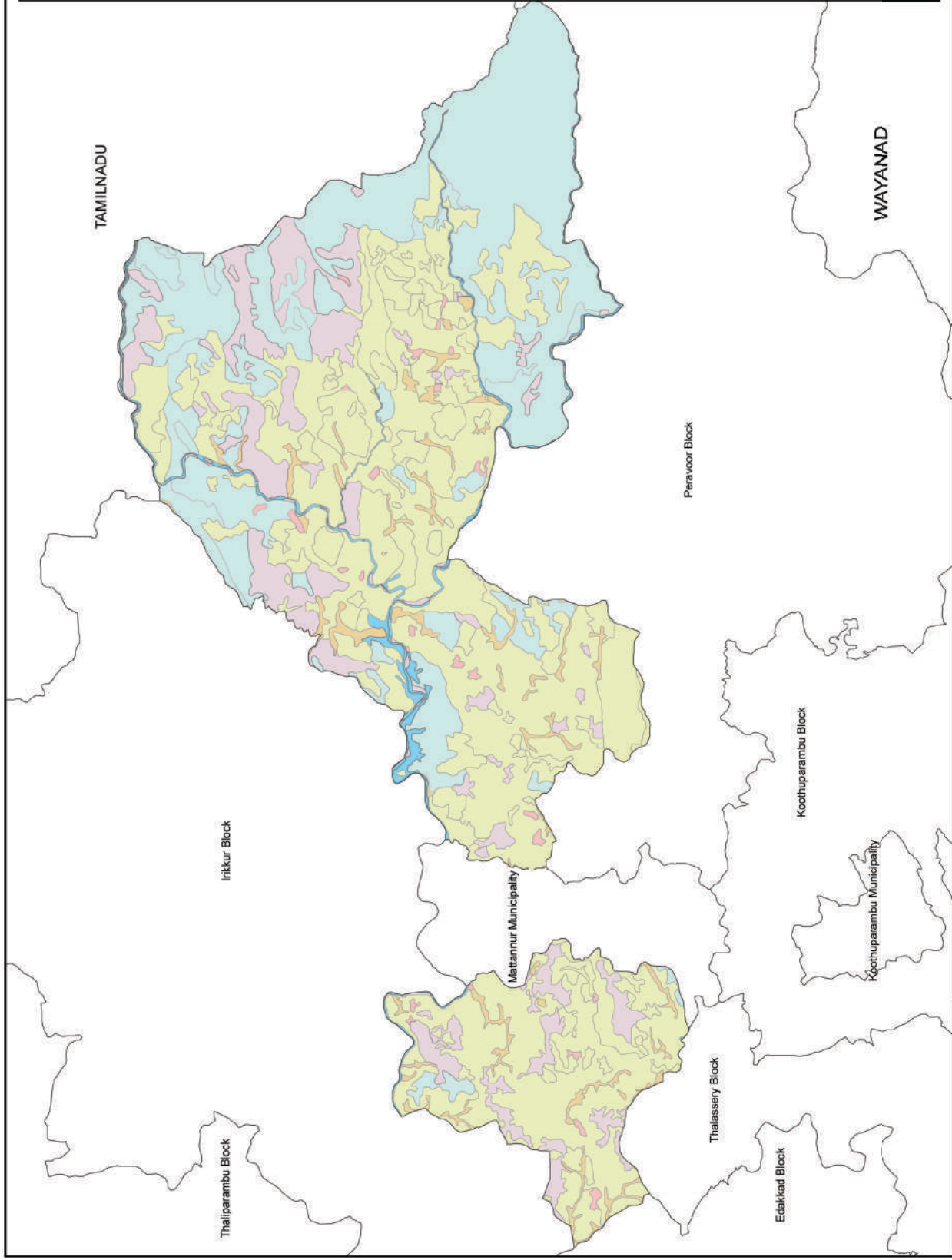
KERALA



KANNUR



Kerala State Land Use Board
Vilas Bhawan, Thiruvananthapuram-33





1 : 50,000

**LANDUSE
KANNUR MUNICIPALITY
KANNUR DISTRICT**

LANDUSE(Level 1)

- Built up land
- Paddy
- Agriculture land
- Forest
- Wetlands
- Wastelands
- Waterbodies

KERALA

KANNUR

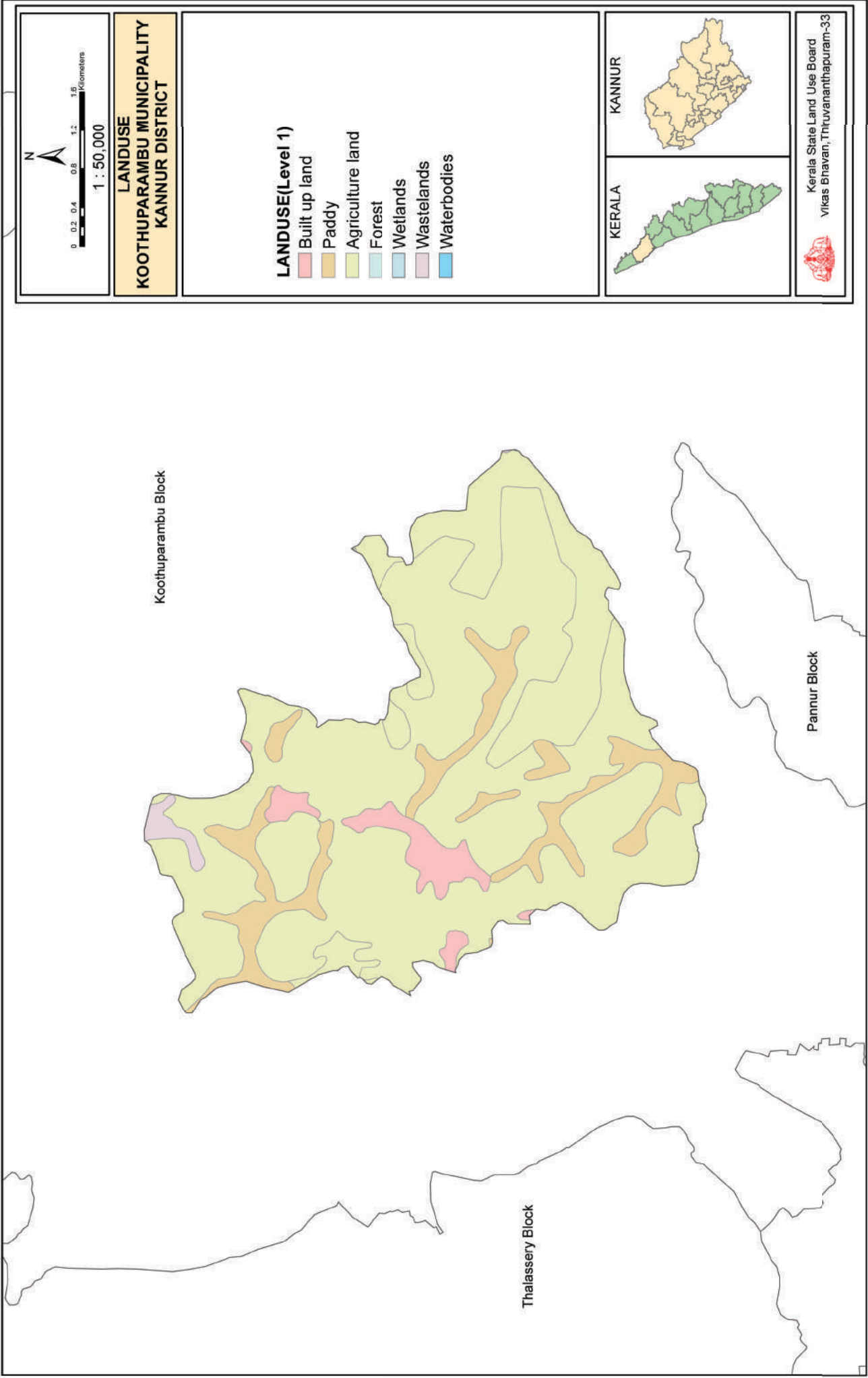


Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

Kannur Block

Edakkad Block

ARABIAN SEA



0 0.2 0.4 0.8 1.2 1.6 Kilometers

1 : 50,000

LANDUSE
KOOTHUPARAMBU MUNICIPALITY
KANNUR DISTRICT

LANDUSE(Level 1)

- Built up land
- Paddy
- Agriculture land
- Forest
- Wetlands
- Wastelands
- Waterbodies

KERALA



KANNUR



Kerala State Land Use Board
 Vikas Bhavan, Thiruvananthapuram-33



Koothuparambu Block

Thalassery Block

Pannur Block



**LANDUSE
PAYYANNUR MUNICIPALITY
KANNUR DISTRICT**

LANDUSE(Level 1)

- Built up land
- Paddy
- Agriculture land
- Forest
- Wetlands
- Wastelands
- Waterbodies

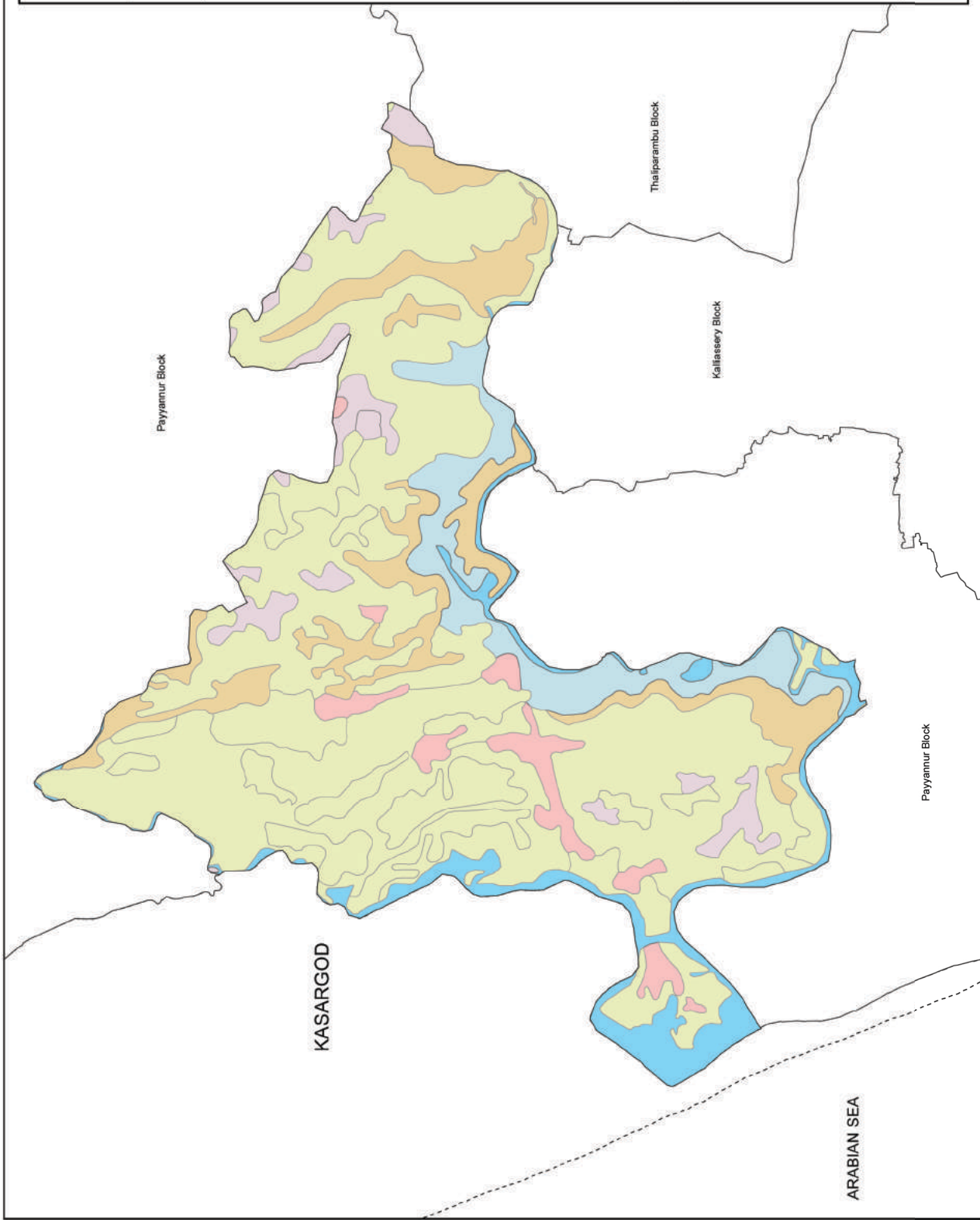


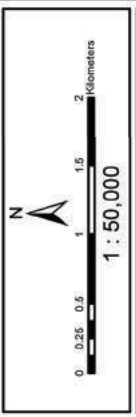
KANNUR

KERALA



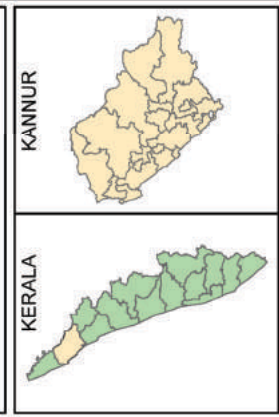
Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



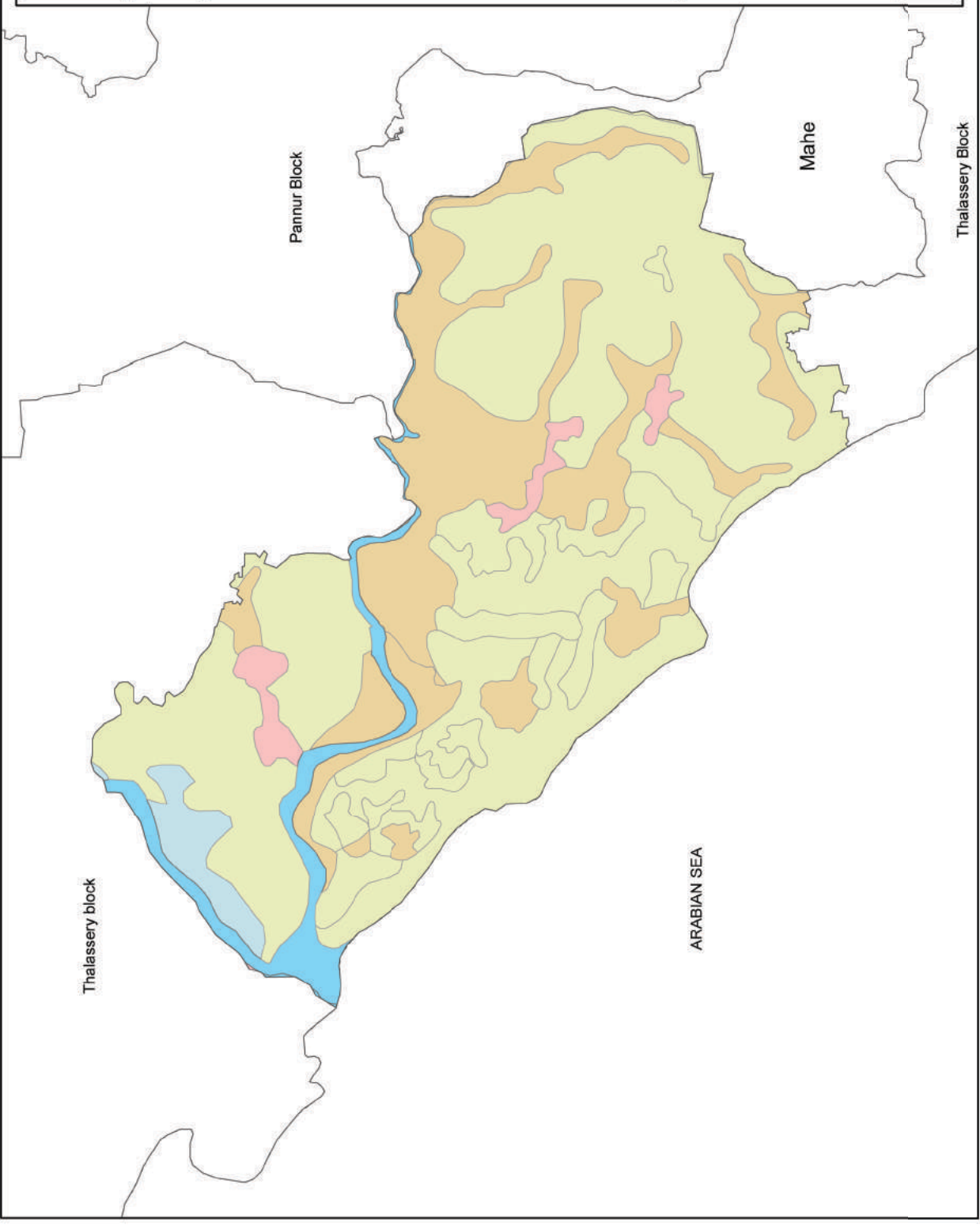


**LANDUSE
THALASSERY MUNICIPALITY
KANNUR DISTRICT**

- LANDUSE (Level 1)**
- Built up land
 - Paddy
 - Agriculture land
 - Forest
 - Wetlands
 - Wastelands
 - Waterbodies



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33





LANDUSE
THALIPARAMBU MUNICIPALITY
KANNUR DISTRICT

LANDUSE (Level 1)

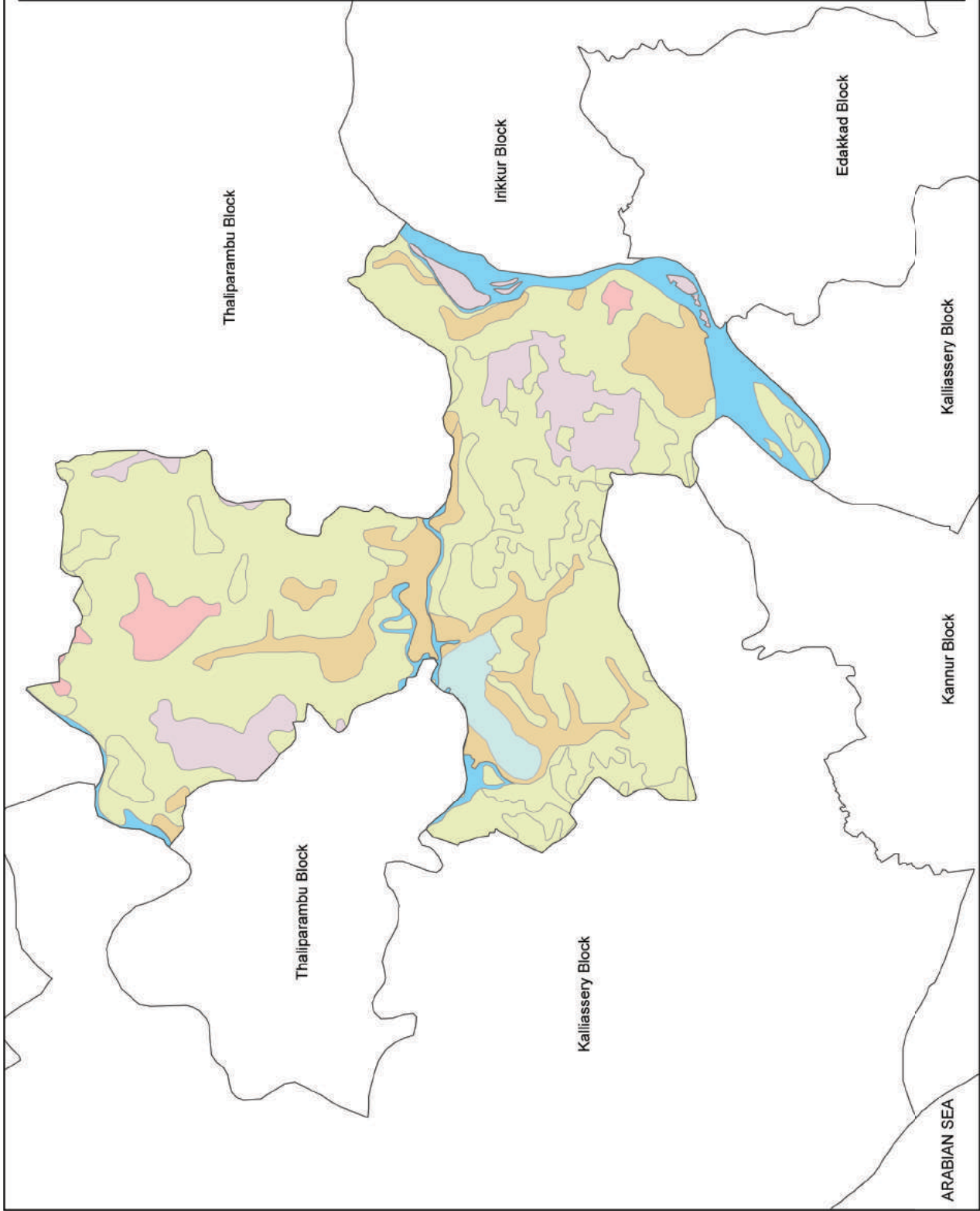
- Built up land
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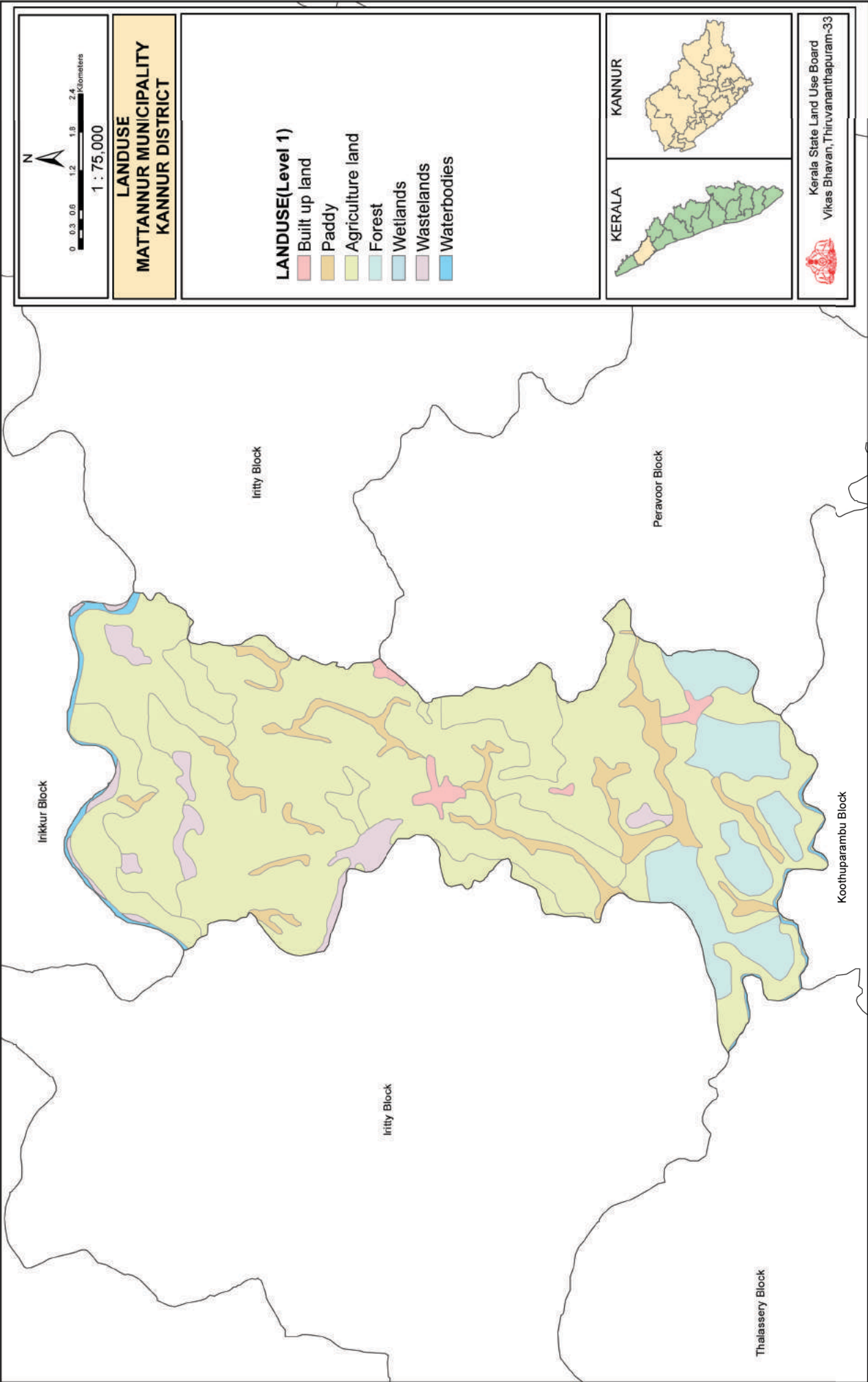
KERALA

KANNUR



Kerala State Land Use Board
 Vikas Bhavan, Thiruvananthapuram-33





BIODIVERSITY

The 2010 International Year of Biodiversity (IYB), is a special year declared by the United Nations to help raise awareness of the importance of Biodiversity all over the world. It is an opportunity to stress the importance of biodiversity for our well-being, reflects on our achievements to safeguard biodiversity and encourage a redoubling of our efforts to reduce the rate of biodiversity loss. The 2010 IYB is promoting some important messages. First, Humans are part of nature's rich diversity and have the power to protect or destroy. Second, biodiversity is essential for sustaining the living networks and systems that provide us all with health, wealth, food, fuel and vital services our lives depend on. Third, human activity is causing the diversity of life on earth to be lost at a greatly accelerated rate, but we can prevent this loss. Fourth, we have made some achievements to safeguard biodiversity but we need to do much more and we must act urgently. Throughout 2010 UNEP's IYB website will also feature interesting segments such as biodiversity theme of the week, examples of successful community action in biodiversity conservation and other intriguing biodiversity related components. In connection with the International year of biodiversity 2010, Kerala State Biodiversity Board has taken up several programmes.

Much of Kerala's notable biodiversity is concentrated and protected in Western Ghats. Almost a fourth of India's 10,000 plant species are found in the state. Among the almost 4,000 flowering plant species (1,272 of which are endemic to Kerala and 159 threatened) are 900 species 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), and montane subtropical and temperate (*shola*) forests (highest elevations-100 km²). Altogether, 24% of Kerala is forested. Two of the world's Ramsar convention listed wetland lake- sasthanmotta and the Vembanad-Kol wetlands-are in Kerala, as well as 1455.4 km² of the vast Nilgiri Biosphere Reserve. The following table depicted the biodiversity statistics in Kerala.

Table:- 12.1

PLANT DIVERSITY

Flowering Plants	4000
Grass species	350
Bamboo species	15
Reeds species	9
Orchid species	214
Gymnosperms	4
Ferns and Fern allies	200
Liverworts	200
Algae	231
Fungi	1044
Lichens	800

Table:- 12.2

ANIMAL DIVERSITY

Large and medium sized mammals	48
General Birds species	475
Water Birds	101
Reptiles General	60
Lizard (endemic)species	30
Snake (endemic)species	57
Amphibia(endemic)species	87
Fresh water fish(endemic)species	84
Butterflies	313

FORESTS

Kerala has a total recorded forest cover of 11309.42 sq. km which is 29.09% of the total land area of the State. This is greater than the national coverage of 19.50%. The 11309.42 sq. km of forest cover includes 9157.10 sq. km reserve forests; 214.31 sq. km proposed reserve and 1754.18 sq.km vested forest. Of the recorded forest area, the effective (actual) forest area in Kerala is only 9400 sq.km. Forests of Kerala are broadly classified into 5 major categories. They are:

Table:13.1

Sl.No.	Forest Type	Area (lakh ha.)
1	Tropical Wet Evergreen Forest	3.480
2	Tropical Moist Deciduous Forests	4.100
3	Tropical Dry Deciduous Forests	0.094
4	Mountain Sub Tropical Forests	0.188
5	Plantations	1.538
	Total	9.400

Much of the forest cover of Kerala is spread over the Western Ghats. The Western Ghats represents one of the world's 18 hot spots of bio-diversity and is considered to be a repository of endemic, rare and endangered flora and fauna. There are 28 vegetation types in the state, but the existence of most is doubtful. 51% of the total forest cover is in the southern districts and the remaining 49 percent is in the central and northern regions. Idukki and Pathanamthitta districts have the largest area under forest cover. Alappuzha is the only district without any area under forest cover.

Over the past years the state government had taken a number of steps towards the conservation of forest and wildlife. The state government banned clear felling of natural forest in 1983. With the aid of various organizations, including the World Bank, the government has implemented various programmes for the afforestation of degraded forests. These include Community afforestation, compensatory afforestation and general forestry programmes.

The most common forest in Kannur District are the tropical moist deciduous forests, the peculiarity of which is that the trees shed their leaves in summer. They are found at an elevation of less than 750 metres with an annual rainfall of 2000 mm. The trees grow up to a height of 36 metres. Bamboo, Teak, Rosewood, Maruthu, etc. are found here. Tropical Semi-Evergreen Forests are found in some parts of Kannothe and Kottiyoor. These forests are generally situated at an elevation of 750 metres above sea level. Tropical Wet Evergreen Forests are found in a small area in Kannothe and Kottiyoor. These forests are found exits at an elevation of 1200 metres above sea level where the annual rainfall is over 2000 mm.

According to Forest Department, the forest in the District comes under Kannur Forest Division. The total forest area coming under Kannur Forest Division is 295.52 sq.km. as on 31.03.2000 of which 206.52 sq. km. is reserved forests and 89.00 sq. km. is vested forest. The forest area in the District coming under Kannur Forest Division is about 184.80 sq. km. of which 120.49 sq. km. is reserved forest and the remaining 64.31 sq.km. is vested forest. Major forest trees are sandal Wood, Rose wood, Teak, Vallapine, Trul, Poovam, Chadachis, Maruthu, Anjily, Vayana, Mylellu, Neeli, Vellakil, Cheeralam, Kambakam, Vaka, Karakil, Varangu, Manimaruthu, Pali, Mullan, etc.

Table 13.2

RANGEWISE AREA OF FORESTS AS ON 31.03.2009 IN KANNUR

Division/Range	Area (Sq.km)
Kannavam	83.98
Kottiyoor	81.19
Thalipparamba	21.26
Kanjangad	59.37
Kasargod	60.47
TOTAL	306.30

Table 13.3

FOREST AREA BY LEGAL STATUS AS ON 31.03.2009 (SQ.KM)

Division	Reserve Forest/ Proposed Forest	Vested Forest	Total
Kannur	121.37	65.08	186.45
Aralam (WL)	22.35	32.64	55
Total	143.72	97.72	241.45

Table 13.4

FOREST COVER IN KANNUR

Geographic Area	Forest Cover			Total	Percent to GA
	Very Dense	Moderate Dense	Open Forest		
2966	21	351	269	641	21.61

Source: Forest Statistics 2009, Forest and Wild life Department

Table 13.5

DIVISION/SPECIES WISE DISTRIBUTION OF PLANTATION AREA (HA) AS ON 31.03.2009

Divisions	Teak	Teak and Softwood	Acacia Auriculiformis	Cane	Bamboo	Rosewood	Mahogany	Sandalwood	Other Hardwood	Cinnamon
1	2	3	4	5	6	7	8	9	10	11
NORTHERN CIRCLE										
Kannur	1256.18	2438.81	447.94	780.81	170.3	3.035	45.53	57.72	28.31	3.74
Pepper	Medical Plants	Anjili	Kambakom	Balsa	Matti	Cashew	Misc	Mangroves	Fruit Bearing	Grand Total
12	13	14	15	16	17	18	19	20	21	22
70	131.88	7.28	82.87	16.5	3.5	1004.47	1898.45	279.039	21.02	8747.40

Table 13.6

ECO-TOURISM LOCATIONS UNDER FOREST DEPARTMENT IN KANNUR

District	Eco-Tourism location
Kannur	Pythalamala Pookund Aralam

Source: Forest Statistics, Forests and Wild life Department

Table 13.7

PARTICIPATORY FOREST MANAGEMENT (PFM)

The State has adopted Participatory Forest Management (PFM) as a Strategy for conservation of bio-diversity and for the improvement of livelihood of forest dependent people by forming partnership institutions at grass root level since 1998. The institutions in territorial forest divisions are called Vana Samrakshana samithies (VSS) Those in sanctuaries and national parks are called Eco-Development Committees (EDC). During the year 2008-09 there were 388 number of VSS's and 189 number of EDC's. List of the names of Vss of Kerala Forest Department in Kannur district under the management of Forest Development Agencies (FDA) are depicted in the following table...

TABLE

SI.No.	Name of VSS	Type (Fringe/Tribal)	No. of family			Total	Mgnt. Area (ha)	Range
			SC	ST	Others			
1	2	3	4	5	6	7	8	9
NORTHERN CIRCLE								
Kannur FDA					Kannur Division			
1	Kattikaje	Fringe	5	46	32	83	173.00	Kasaragod
2	Payaswini	Fringe	1	0	41	42	160.00	
3	Vaninagar	Fringe	7	18	42	67	174.60	
4	Kanathur	Fringe	5	0	28	33	170.00	
5	Kulathilepara	Fringe	4	16	23	43	174.28	
6	Pandy	Fringe	9	16	17	42	163.00	
7	Ariyil	Fringe	2	1	26	29	185.00	
8	Chamakochi	Fringe	1	26	8	35	190.00	
9	Maruthome	Fringe	0	0	105	105	180.00	Kanhanged
10	Ranipuram	Fringe	0	0	44	44	139.00	
11	Ottamala	Fringe	0	0	102	102	211.44	

12	Mykkayam	Fringe	0	0	71	71	150.00	
13	Plachikkara	Fringe	7	5	42	54	135.00	
14	Kinannur	Fringe	0	0	42	42	162.53	
15	Paithalmala	Fringe	1	0	31	32	151.00	Taliparamba
16	Vaithalkundu	Fringe	3	5	92	100	150.00	
17	Anara	Fringe	7	40	143	190	208.81	
18	Kottathalachi	Fringe	1	0	101	102	66.67	
19	Mathilerithattu	Fringe	15	120	385	520	228.00	
20	Adampara	Fringe	12	116	592	720	309.00	
21	Elapeedika	Fringe	5	60	115	180	252.00	Kottiyoor
22	Ezhakadavu	Fringe	0	4	41	45	150.00	
23	Vietnam Colony	Fringe	16	66	418	500	125.00	
24	Adakkathode	Fringe	2	41	258	301	150.00	
25	Thudimaram	Fringe	3	15	202	220	150.00	
26	Chathiroor	Tribal	0	38	0	38	400.00	
27	Tholambra	Fringe	1	29	220	250	102.00	
28	Ambayathodu	Fringe	5	60	175	240	100.00	
29	Chikkeri	Tribal	0	160	0	160	350.00	Kannavam
30	Peruva	Tribal	0	97	0	97	372.00	
31	Chembukkavu	Tribal	0	164	0	164	342.00	
32	Panniyode	Tribal	0	109	0	109	450.00	
33	Kannvam Colony	Tribal	0	109	0	109	368.00	
34	Poiloor	Fringe	5	60	495	560	328.00	

Table 13.8

TRIBAL SETTLEMENTS

No. of Settlements		Area (ha)		No. of Tribal families possessing land		No. of landless tribal families		No. of non-tribal families possessing land in settlement	
Kannur	Kerala	Kannur	Kerala	Kannur	Kerala	Kannur	Kerala	Kannur	Kerala
78	723	614.33	21531.99	0	20713	0	2193	0	4486

Source: Forest Statistics, Forests and Wild life Department



AGRICULTURE

Agriculture plays a crucial role in the Kerala economy. When compared to other States, the per-capita availability of cultivable land is low in Kerala. Stabilization and augmentation of productivity assume critical importance, given the limited scope for increasing area under cultivation of various crops. Increase in production would be possible mainly from improvements in productivity through the use of location specific technology and modernization of agriculture. An integrated mixed cropping pattern is practiced in the State by majority of the farmers considering the land holding size. The trends in agricultural income in Kerala during the last six years is shown in Table 1. The provisional estimate for 2009-10 indicated an increase of 0.25 per cent in growth over 2008-09.

Table 14.1: Trends in Agricultural Income in Kerala

Trends in Agricultural Income in Kerala					
(Base 2004-05)					
Sl. No.	Year	Agricultural Income (` in crores)	Rate of change over previous year	Agriculture and Allied Sectors (` in crores)	Share of Agriculture and Allied Sectors in GSDP
1	2004-05	16980.51		20843.21	17.48
2	2005-06	18041.97	6.25	21882.16	16.67
3	2006-07	16567.85	-8.17	20507.67	14.48
4	2007-08	16196.60	-2.24	20255.14	13.15
5	2008-09**	16641.70	2.75	20779.74	12.58
6	2009-10*	16683.91	0.25	20927.91	11.54

* Provisional ** Quick
Source: Directorate of Economics and Statistics

Table:- 14.2

CLASSIFICATION OF DATA ON THE BASIS OF LAND UTILISATION

District	YEAR	Total geographic area	Forest	Land put to non agricultural use	Barren and uncultivable land	Permanent pastures and other grazing land	Land under miscellaneous tree crops	Cultivable waste
1	2	3	4	5	6	7	8	9
	2009-2010	297112	48734	28307	1948	0	272	6475
	2008-2009	297112	48734	26438	4295		306	7161
Kannur	2007-2008	297112	48734	26256	3513		185	6008

Fallow other than current fallow	Current fallow	Marshy Land	Still Water	Water logged Area	Social Forestry	Net Area Sown	Area sown more than once	Total Cropped Area
10	11	12	13	14	15	16	17	18
2662	4462	96	6149	391	73	197543	16149	213692
2332	3833	96	6149	390	74	197304	15366	212670
1993	4946	95	6127	389	73	198793	19804	218597

Source: Agricultural Statistics 2008, 2009, 2010, DES

Table:- 14.3

AREA UNDER CROPS

Area in Hectares

District	YEAR	Sugar Crops					
		Sugar cane	Palmyra	Total	Pepper	Ginger	
Kannur	2	3	4	5	6	7	
	2009-2010	1	105	106	9631	87	
	2008-2009	40	86	126	10211	108	
	2007-2008	2	81	83	12533	95	

Spices and condiments										
Turmeric	Cardamom	Arecanut	Tama-rind	Vanilla	Cloves	Nutmeg	Cinnamon	Garlic	Total	Grand Total
8	9	10	11	12	13	14	15	16	17	18
118	128	10674	724	83	32	252	37	0	21766	21872
141	128	11520	548	231	18	151	28		23084	23210
138	128	11262	616	171	20	149	49		25161	25244

Table:- 14.4

DISTRICT WISE AREA OF CROPS

YEAR	Paddy			Total	Pulses including Tur				Total cereals/ millets	Total food grains	Sugar Crops					
	Autumn	Winter	Summer		Jowar	Ragi	Other Cereals	Autumn			Total	Sugar Cane	Palmyrah	Total		
								Autumn							Winter	Summer
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2009-2010	4098	2924	108	7130				7130	0	53	168	221	7351	1	86	126
2008-2009	3723	3808	118	7649				7649		83	321	404	8053	40	105	106
2007-2008	3470	3641	121	7232				7232		106	331	437	7669	2	81	83

YEAR	Spices and Condiments												Grand Total	
	Pepper	Ginger	Turmeric	Cardamom	Arecanut	Tamarind	Vanilla	Cloves	Nutmeg	Cinnamon	Garlic	Total		Total
1	18	19	20	21	22	23	24	25	26	27	28	29	30	
2009-2010	10211	108	141	128	11520	548	231	18	151	28		23084	23210	
2008-2009	9631	87	118	128	10674	724	83	32	252	37	0	21766	21872	
2007-2008	12533	95	138	128	11262	616	171	20	149	49		25161	25244	

Table:- 14.4 Continued.....

YEAR	Fresh Fruits						Total	Dry Fruits			Total			
	Jack	Mango	Banana	Plantain	Pineapple	Pappaya		Other fresh fruits	Cashew	Total Fruits		Tapioca		
										Autumn	Winter	Summer		
1	31	32	33	34	35	36	37	38	39	40	41	42	43	44
2009-2010	7819	6884	2566	2592	220	1969	1091	23141	19377	42518	456	705	922	2083
2008-2009	7480	3976	10859	1723	54	410	440	24942	969	25911	305	393	1597	2295
2007-2008	8198	4337	12123	1805	55	408	470	27396	1133	28529	376	495	2197	3068

YEAR	Tubers						Total	Vegetables						
	Elephant Foot Yam	Colocasia	Yam (Kachil)	Sweet Potato	Other Tubers	Drumstick		Amara nthus	Bitter Gourd	Snake Gourd	Ladies Finger	Brinjal	Green Chillies	Little Gourd (koyal)
1	45	46	47	48	49	50	51	52	53	54	55	56	57	58
2009-2010	179	474	40	28	47	768	1697	124	91	15	47	44	91	58
2008-2009	2994	617	67	12	5	3695	615	101	210	6	9	29	64	12
2007-2008	3411	611	63	16	5	4106	622	62	201	3	13	19	60	8

Table:- 14.4 Continued....

YEAR	Vegetables					Total Food Crops	Non Food Crops				
	Ash Gourd (Kumbalam)	Pumpkin	Cucumber	Other Vegetables	Total		Oil Seeds				
							Groundnut	Sesamum	Coconut	Others	Total
1	59	60	61	62	63	64	65	66	67	68	69
2009-2010	67	37	191	252	2714	77306	0	0	78024	82	78106
2008-2009	88	195	44	661	2034	88686			11016	13	11029
2007-2008	84	186	40	563	1861	97695		1	12292	13	12306

YEAR	Non Food Crops										
	Fibre Drugs and Narcotics					Plantation Crops					Grand Total
	Cotton	Betel Leaves	Tobacco	Lemon Grass	Total	Tea	Coffee	Rubber	Cocoa	Total	
1	70	71	72	73	74	75	76	77	78	79	80
2009-2010	0	9	0	16	25		43819	415	44234	122365	93979
2008-2009		2	97	99	6309	67366	9315	143	83133	94261	94261
2007-2008		1		112	113	6213	67345	8890	147	82595	95014

YEAR	Non Food Crops						Total Cropped Area
	Fodder Grass	Green Manure Crops	Other Crops and trees	Medicinal Plants	Total	Total non food crops	
1	81	82	83	84	85	86	87
2009-2010	326	1557	1217	21	14021	136386	213692
2008-2009	681	706	5934	15	7336	101597	190283
2007-2008	636	787	5925	11	7359	102373	200068

Table:- 14.5

BLOCK WISE AREA UNDER CROPS 2008-2009

Sl. No.	Block	Paddy			Sugar cane	Pepper	Ginger	Turmeric
		Autumn	Winter	Summer				
1	2	3	4	5	6	7	8	9
1	Koothuparambu	117.63	115.44	25.55		960.74	3.35	13.58
2	Peravoor	141.02	126.41	51	0.07	1183.3	41.39	27.44
3	Iritty	358.52	413	30.88	0.04	1978.78	34.31	40.51
4	Thalassery	53.39	23.89			5521.21	0.25	4.64
5	Kannur	15.75	10.61		0.04	129.45		0.4
6	Edakkadu	230.62	303.71	4.88		425	0.26	4.15
7	Thaliparamba	1036.1	569.41		31.14	1411.7	14.16	19.32
8	Payyannur	687.42	1163.55	0.3		1439.94	6.94	8.71
9	Irikkur	569.57	691.64	1.81		1069.08	6.07	10.67
	Municipalities	513.36	390.25	3.36	8.9	1091.4	0.84	11.17
	District Total	3723.4	3807.91	117.78	40.19	10210.6	107.54	140.57

Sl. No.	Block	Arecanut	Nutmeg	Jack	Banana	Plantain	Pineapple	Pappaya
1	2	10	11	12	13	14	15	16
1	Koothuparambu	1054.82	7.16	1041.3	526.42	360.61	15.57	126.31
2	Peravoor	815.73	36.72	480.13	541.99	255.35	22.32	74.3
3	Iritty	880.83	10.59	919.51	449.54	258.88	14.56	149.6
4	Thalassery	345.62	4.24	611.13	89.75	175.54	6.73	138.41
5	Kannur	60.42	1.98	225.62	1.63	49.96	1.03	75.2
6	Edakkadu	380.74	1.61	508.38	97.64	104.57	7.65	200.09
7	Thaliparamba	2783.87	46.77	1099.5	159.04	292.07	40.01	196.89
8	Payyannur	2845.2	16.45	951.43	46.19	345.39	20.32	225.48
9	Irikkur	1713.34	19.71	796.02	138.36	337.87	26.69	142.36
	Municipalities	639.41	5.38	665.56	289.59	220.84	11.46	169.44
	District Total	11520.04	150.61	7298.6	2340.15	2401.08	166.34	1498.08

Table:- 14.5 Continued

Sl. No.	Block	Cashew	Tapioca	Drumstick	Sesamum	Coconut	Betel Leaves	Cocoa
1	2	17	18	19	20	21	22	23
1	Koothuparambu	2313.53	372.43	137.05		11839.6	0.06	4.82
2	Peravoor	228.28	355.74	63.71		4530.78	1.3	38.58
3	Iritty	3834.33	287.09	175.96		6832.33	1.14	73.8
4	Thalassery	329.03	66.34	81.8		6690.08		1.75
5	Kannur	96.18	0.85	78.14		1507	0.02	1.1
6	Edakkadu	658.22	145.25	87.39		7458.61		1.55
7	Thaliparamba	2797.77	267.46	185.83		11235	1.49	61.5
8	Payyannur	2542.02	119.65	194.91		10681.1	0.14	44.94
9	Irikkur	3354.98	277.14	147.89		7937.24	0.19	66.17
	Municipalities	1215.44	218.85	143.1		8992.75		1.96
	District Total	19371.8	2110.8	1295.78		77704.6	4.16	296.17

Table:- 14.6

BLOCK WISE AREA UNDER CROPS 2009-2010

Sl. No.	Block	Paddy			Sugar cane	Pepper	Ginger	Turmeric
		Autumn	Winter	Summer				
1	2	3	4	5	6	7	8	9
1	Koothuparambu	112.54	76.02	1.39		942.21	1.34	14.35
2	Peravoor	8991	135.12	56.96		1002.96	35.96	22.72
3	Iritty	272.55	268.28	19.3		1052.09	35.47	34.99
4	Thalassery	36.39	21.84		0.03	394.69	0.11	4.19
5	Kannur	20.63	98.69			113.53	0.07	0.14
6	Edakkadu	103.86	96.03	2.34		374.92	0.19	8.84
7	Thaliparamba	1081.59	367.35		0.29	1345.2	5.41	7.13
8	Payyannur	1298.26	753.23	0.25	0.21	1416.88	1.77	2.95
9	Irikkur	540.43	704.72	8.13	0.75	2076.72	6.01	14.98
	Municipalities	540.84	402.84	19.82	0.18	911.84	0.76	7.12
	District Total	4097	2924.12	108.19	1.46	9631.04	87.09	117.41

Table:- 14.6 Continued

Sl. No.	Block	Arecanut	Nutmeg	Jack	Banana	Plantain	Pineapple	Pappaya
1	2	10	11	12	13	14	15	16
1	Koothuparambu	1029.74	5.77	1096.78	730.59	323.98	15.01	122.91
2	Peravoor	766.31	36.01	476.43	520.16	228.71	19.84	96.17
3	Iritty	713.93	7.44	708.83	364.93	274.99	24.29	150.81
4	Thalassery	304.73	3.44	548.31	154.01	221.99	8.8	114.95
5	Kannur	68.16	0.18	198.71	0.07	42.73	0.27	90.84
6	Edakkadu	343.7	1.49	450.67	99.74	82.54	6.21	183.62
7	Thaliparamba	3260.4	88.79	1086.72	92.79	389.52	46.58	258.63
8	Payyannur	2684.84	62.36	1422.03	58.16	404.92	17.05	417.76
9	Irikkur	917.75	36.84	1178.98	324.18	368.13	62.52	298.99
	Municipalities	584.07	9.64	651.23	221.18	254.2	18.98	234.01
	District Total	10673.63	251.96	7818.69	2565.81	2591.71	219.55	1968.69

Sl. No.	Block	Cashew	Tapioca	Drumstick	Sesamum	Coconut	Betel Leaves	Cocoa
1	2	17	18	19	20	21	22	23
1	Koothuparambu	1895.69	385.14	125.35		12641.51	0.05	3.89
2	Peravoor	2210.22	312.23	63.32		4694.93	0.9	45.62
3	Iritty	3428.03	266.15	115.33		6904.22	1.36	73.82
4	Thalassery	285.07	47.84	63.52		6571.35	0	0.41
5	Kannur	55.66	0.75	89.19		1926.83	0	0.11
6	Edakkadu	729.58	264.76	146.07		7616.67	0.02	1.05
7	Thaliparamba	3075.83	291.79	189.44		10574.29	2.71	111.55
8	Payyannur	3103.72	113.37	389.56		11637.39	0.78	79.96
9	Irikkur	3404.88	295.77	273.93		7086.08	3.23	93.63
	Municipalities	1188.4	104.98	244.43		8370.38	0.26	5.44
	District Total	19377.08	2082.78	1697.14		78023.65	9.31	415.48

Table:- 14.7

PRODUCTION OF IMPORTANT CROPS(in Tonnes)

YEAR	Rice				Jower	Ragi	Other Cereals	Sugar cane	Black Pepper	Green Chillies	Pulses including Tur	Cured Turmeric	Cured Ginger	Ground nut
	Autumn	Winter	Summer	Total										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2009-2010	7843	5843	157	13843				15	2505	91	179			
2008-2009	6541	6904	192	13637				722	2046	101	327	461	532	

YEAR	Arecanut	Tamarind	Mango	Jack (Nos in million nuts)	Banana	Other Plantain	Pineapple	Tapioca	Sweet Potato	Pappaya	Drum stick	Sesamum	Coconut (million nuts)
1	16	17	18	19	20	21	22	23	24	25	26	27	28
2009-2010	13516	1382	50803	29	18640	10043	1107	77740	318	17917	1366	0	479
2008-2009	14655	1056	49778	26	18192	10468	971	69013	330	5242	964		500

YEAR	Cotton (No.of bales of 170kg each)	Nutmeg	Tobacco	Tea	Coffee	Rubber	Cocoa	Processed Cardamom	Raw cashew nuts	Betel leaves	Clove (dry)	Garlic
1	29	30	31	32	33	34	35	36	37	38	39	40
2009-2010		183				58125	201	0	21595	476	2	
2008-2009		24				60795	131		20757	351	1	

Table:- 14.8

BLOCK WISE PRODUCTION OF IMPORTANT CROPS 2008-2009

Sl. No.	Block	Rice				Sugar Cane	Black pepper	Cured Ginger	Cured Turmeric	Arecanut
		Autumn	Winter	Summer	Total					
1	2	3	4	5	6	7	8	9	10	11
1	Koothuparambu	224.46	151.19	30.22	405.87		164.33	7.90	34.12	893.61
2	Peravoor	277.84	286.61	89.37	653.82		207.82	243.58	104.13	721.75
3	Iritty	655.42	853.05	58.11	1566.58		399.53	149.36	158.34	906.96
4	Thalassery	72.51	28.79		101.3		75.40	0.64	11.22	279.65
5	Kannur	23.99	12.00		35.99		24.30		1.20	36.30
6	Edakkadu	380.46	494.39	5.51	880.36		87.34	0.93	7.71	314.65
7	Thaliparamba	1756.94	910.44		2667.38	572.66	258.22	62.50	64.70	4381.76
8	Payyannur	1155.79	1818.62	0.36	2974.77		421.69	35.21	24.20	3969.84
9	Irikkur	1089.8	1719.96	4.74	2814.5		238.24	26.80	32.86	2662.15
	Municipalities	903.47	629.39	3.26	1536.12	149.52	142.10	4.82	22.82	493.89
	District Total	6540.71	6904.48	191.59	13636.69	722.18	2046.03	531.77	461.35	14654.59

Table:- 14.8 Continued.....

Sl. No.	Block	Jack (Million Nos.)	Banana	Other Plantain	Pineapple	Tapioca	Pappaya
1	2	12	13	14	15	16	17
1	Koothuparambu	2.16	3997.38	1531.87	82.02	9003.49	405.70
2	Peravoor	1.25	3911.47	1337.26	104.21	11917.29	311.09
3	Iritty	3.53	3396.06	1048.98	90.89	7557.64	442.21
4	Thalassery	1.32	1106.81	1066.92	25.91	1626.98	220.76
5	Kannur	1.33	9.49	50.36	4.79	10.90	296.21
6	Edakkadu	2.69	679.92	461.78	31.26	3994.37	804.56
7	Thaliparamba	4.5	1365.44	1196.02	257.26	11026.03	798.19
8	Payyannur	4.16	354.87	1580.85	120.80	4184.75	671.25
9	Irikkur	2.97	902.77	1608.93	203.59	14522.13	476.19
	Municipalities	1.70	2467.29	585.11	50.40	5169.54	816.18
	District Total	25.66	18191.54	10468.11	971.16	69013.17	5242.37

Table:- 14.8 Continued.....

Sl. No.	Block	Drumstick	Sesamum	Coconut (Million nuts)	Nutmeg	Cocoa	Raw cashew	Betel Leaves
1	2	18	19	20	21	22	23	24
1	Koothuparambu	75.10		73.14	0.96		2098.68	
2	Peravoor	118.43		22.09	8.15	17.16	2421.75	109.85
3	Iritty	120.00		39.09	2.15	29.27	4723.61	117.78
4	Thalassery	67.81		34.89	1.38		131.73	
5	Kannur	19.69		7.66			25.22	
6	Edakkadu	51.82		41.91		0.30	224.71	
7	Thaliparamba	198.09		93.94	5.94	24.62	3027.05	99.06
8	Payyannur	138.81		62.32	1.67	18.64	3320.39	6.92
9	Irikkur	90.65		63.89	3.39	41.32	4246.25	17.45
	Municipalities	83.37		60.81	0.63	0.091	537.83	
	District Total	963.80		499.79	24.30	131.41	20757.27	351.07

Table:- 14.9

BLOCK WISE PRODUCTION OF IMPORTANT CROPS 2009-2010

Sl. No.	Block	Rice				Canegur	Black pepper	Cured Ginger	Cured Turmeric	Arecanut
		Autumn	Winter	Summer	Total					
1	2	3	4	5	6	7	8	9	10	11
1	Koothuparambu	202.82	104.33	1.71	308.88		291.57	4.75	51.73	796.73
2	Peravoor	155.62	241.24	88.68	485.55		179.11	134.41	56.34	915.79
3	Iritty	448.28	574.24	30.69	1053.22		160.92	149.68	122.25	623.71
4	Thalassery	48.06	22.57	0	70.63		56.39	0.26	11.21	211.39
5	Kannur	28.50	110.52	0	139.02		10.93	0.11	0.17	45.02
6	Edakkadu	173.08	157.63	2.21	332.93		50.85	0.45	16.80	213.92
7	Thaliparamba	2102.72	589.99	0	2692.71	5.47	458.25	24.25	21.02	4831.74
8	Payyannur	2599.18	1542.45	0.04	4141.68		397.34	9.11	6.76	4108.62
9	Irikkur	1140.42	1728.98	18.41	2887.82	9.87	622.36	26.01	37.04	1171.38
	Municipalities	944.41	770.92	14.85	1730.19		276.93	2.67	25.19	498.33
	District Total	7843.14	5845.91	156.61	13842.67	15.34	2504.69	351.74	348.55	13515.68

Table:- 14.9 Continued.....

Sl. No.	Block	Jack(Million Nos.)	Banana	Other Plantain	Pineapple	Tapioca	Pappaya
1	2	12	13	14	15	16	17
1	Koothuparambu	2.95	6296.29	1506.83	107.38	12356.44	460.17
2	Peravoor	1.21	2943.2	530.83	99.06	14122.78	589.61
3	Iritty	2.77	2862.44	1377.7	184.87	8557.52	829.30
4	Thalassery	1.08	1336.5	739.22	33.79	1404.53	517.27
5	Kannur	1.42	0	177.20	2.36	35.62	452.02
6	Edakkadu	1.90	628.32	343.28	19.29	9630.64	839.69
7	Thaliparamba	3.80	788.96	1867.74	179.00	10365.25	3197.18
8	Payyannur	7.53	423.2	1358.10	74.13	3752.43	4507.63
9	Irikkur	4.27	2199.2	1393.74	264.64	12570.22	3822.88
	Municipalities	2.15	1162.28	748.59	142.21	4944.53	2700.8
	District Total	29.12	18640.39	10043.25	1106.77	77740.01	17916.58

Table:- 14.9 Continued.....

Sl. No.	Block	Drumstick	Sesamum	Coconut (Million nuts)	Nutmeg	Cocoa	Raw cashew	Betel Leaves
1	2	18	19	20	21	22	23	24
1	Koothuparambu	52.89		74.11	1.66	0	3912.5	0
2	Peravoor	52.11		24.83	9.93	9.03	2987.16	34.2
3	Iritty	75.54		37.59	1.52	30.09	2903.76	38.08
4	Thalassery	34.49		34.95	2.12	0	197.55	0
5	Kannur	43.16		14.27	0	0	40.46	0
6	Edakkadu	70.67		39.73	0	0	203.63	0.06
7	Thaliparamba	179.58		79.28	98.46	76.66	3403.16	143.63
8	Payyannur	457.34		92.70	58.80	44.49	2819.90	42.12
9	Irikkur	219.14		42.03	10.75	39.87	3629.36	213.18
	Municipalities	180.53		39.68	0.02	0.48	1497.42	4.29
	District Total	1365.50		479.20	183.30	200.64	21594.95	475.56

Table:- 14.10

ESTIMATED AREA AND PRODUCTION OF RICE (AUTUMN) (Ha & Tonnes)

YEAR	HIGH YIELDING						LOCAL VARIETIES						Total	
	IRRIGATED		UNIRRIGATED		TOTAL		IRRIGATED		UNIRRIGATED		TOTAL		Area	Production
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production		
2009-10	6.5	12.25	3244.57	6379.36	3251.07	6391.61			845.93	1451.52	845.93	1451.52	4097	7843.14
2008-09	91	156	2898	5445	2989	5601	6	11	728	929	734	940	3723	6541

Table:- 14.11

ESTIMATED AREA AND PRODUCTION OF RICE (SUMMER)

YEAR	HIGH YIELDING						LOCAL VARIETIES						Total	
	IRRIGATED		UNIRRIGATED		TOTAL		IRRIGATED		UNIRRIGATED		TOTAL		Area	Production
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production		
2009-10	82.64	140.89			82.64	140.89	25.55	15.72			25.55	15.72	108.19	156.61
2008-09	67	129			67	129	50	62	1	1	51	63	118	192

Table:- 14.12

ESTIMATED AREA AND PRODUCTION OF RICE (WINTER)

YEAR	HIGH YIELDING						LOCAL VARIETIES						Total	
	IRRIGATED		UNIRRIGATED		TOTAL		IRRIGATED		UNIRRIGATED		TOTAL		Area	Production
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production		
2009-10	2333	4992.81			2333.27	4992.81	590.85	850.09			590.85	850.09	2924.12	5842.91
2008-09	2467	5180			2467	5180	1177	1603	164	121	1341	1724	3808	6904

Table:- 14.13

THE FINAL ESTIMATION OF YIELD AND PRODUCTION OF RICE (YEAR WISE)

Season: Winter

YEAR	No of Experiments		Estimated yield in Tonnes/Ha (Rice)	Area in 1000 Ha	Average Yield(kg/ Ha)Rice	Estimated Production of Rice in 1000 tons	Bund Correction Factor(if any)applied	Sampling error for Av.Yield)	% of sampling Error
	Planned	Analysed							
2009-10	470	470	1.99	2.92	1998	5.84		50.66	2.53
2008-09	455	455	10757	3.72	1757	6.54		11.89	0.67

Table:- 14.14

FINAL RESULT OF CROP ESTIMATION SURVEY ON DRIAGE RESULTS

YEAR	No of Driage Experiments		Total of Plot Yield Before Driage (gms)	Total of Plot Yield After Driage (gms)	Driage rate applied for estimating Yield
	Planned	Analysed			
2009-10	33	33	8250	7505	0.91
2008-09	36	36	8250	7222	0.87

Source: Agricultural Statistics 2008, 2009, 2010, DES

Table:- 14.15

AREA, MEAN YIELD AND PRODUCTION OF RICE FOR HIGH YIELDING VARIETIES OF PADDY

YEAR	IRRIGATED				UN IRRIGATED					
	No of Experiments	Mean Yield (kg/Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes	No of Experiments	Mean Yield(kg/ Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
2009-10	4	1885	6.5	283.70	12.25	394	1966	3244.57	62.68	6379.36
TOTAL										
No of Experiments	398	1966	3251.07	62.56	6391.61					

Table:- 14.16

AREA, MEAN YIELD AND PRODUCTION OF RICE FOR LOCAL VARIETIES OF PADDY

YEAR	IRRIGATED				UN IRRIGATED				
	No of Experiments	Mean Yield (kg/Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes	No of Experiments	Mean Yield(kg/ Ha) Rice	Area (Ha)	Production of Rice in Tonnes
2009-10	136	1439	590.85	61.40	850.09	0			0

TOTAL			
No of Experiments	Mean yield (kg/ Ha) Rice	Area (Ha)	Production of Rice in Tonnes
136	1439	590.85	850.09

Table:- 14.17

AREA, MEAN YIELD AND PRODUCTION OF RICE FOR ALL VARIETIES OF PADDY

YEAR	IRRIGATED				UN IRRIGATED				
	No of Experiments	Mean Yield (kg/Ha)Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes	No of Experiments	Mean Yield(kg/ Ha) Rice	Area (Ha)	Production of Rice in Tonnes
2009-10	470	1998	2924.12	50.66	5842.91	0		0	0
2008-09	477	1861	3644.31	52.65	6783.01	7	742	163.6	121.47

TOTAL			
No of Experiments	Mean yield (kg/ Ha) Rice	Area (Ha)	Production of Rice in Tonnes
470	1998	2924.12	5842.91
484	1813	3807.91	6904.48

Table:- 14.18

AREA, MEAN YIELD AND PRODUCTION OF RICE FOR ALL VARIETIES OF PADDY
Season-Winter

YEAR	HIGH YIELDING VARIETY					LOCAL VARIETY				
	No of Experiments	Mean Yield (kg/Ha)Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes	No of Experiments	Mean Yield(kg/ Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
2009-10	334	2140	2333.27	61.56	4992.81	136	1439	590.85	61.40	850.09
2008-09	316	2100	2466.81	77.64	5179.96	168	1286	1341.1	62.68	1724.52
TOTAL										
470	1998	2924.12	50.66	5842.91						
484	1813	3807.91	54.93	6904.48						

Table:- 14.19

AREA, MEAN YIELD AND PRODUCTION OF RICE FOR ALL VARIETIES OF PADDY
Season-Summer

YEAR	IRRIGATED					UN IRRIGATED				
	No of Experiments	Mean Yield (kg/Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes	No of Experiments	Mean Yield(kg/ Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
2009-10	131	1448	108.19	119.28	156.61	0		0		
2008-09	145	1629	117.27	68.73	191.04	3	1076	0.51	144.37	0.54

TOTAL				
No of Experiments	Mean yield (kg/ Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
131	1448	108.19	119.28	156.61
148	1627	117.78	68.44	191.59

Table:- 14.20

CROP ESTIMATION SURVEYS-AUXILIARY INFORMATION
PERCENTAGE OF AREA UNDER DIFFERENT AGRICULTURAL PRACTICES- A STATEMENT
Season-Summer

YEAR	Seeds Used(No of Exp)		Chemically Mannured (%)	Other Mannured (%)	Both Chemical and other Manure	Not Manured	Treated with pesticides	Pesticides not used
	Total	Local						
2009-10	131	56	90.84	89.31	80.15	0	49.62	50.38
2008-09	148	81	93.92	88.51	82.43	0	39.19	60.81

Source: Agricultural Statistics 2008, 2009, 2010, DES

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 (Kachi)		-	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. Sesame		-	4-5kg/ha
20. Mango ginger		-	1500kg/ha
21. Ginger		-	1500kg/ha
22. Turmeric		-	2000-2500kg/ha
23. Betel vine		-	20000to25000cuttings/ha
24. Okra		-	7-8.5kg/ha
25. Bitter gourd		-	5-6kg/ha
26. Coleus		-	75-100kg/tubers/ha
27. Snake gourd		-	3-4kg/ha

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

CONVERSION RATES BETWEEN RAW MATERIALS AND PROCESSED PRODUCTS

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

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

CONVERSION FACTORS FOR COCONUT

- A. Number of Coconuts to a tonne of Copra:
- | | |
|--------------|---------------------------------------------------------------------|
| Kerala | 6,250 to 6,850 (at present it is 7250-7500 nuts due to mite attack) |
| Andrapradesh | 8,820 |
| Tamilnadu | 7,000 |
| Laccadives | 12,000 |
- B. Copra yield from coconut in different months in Kerala at 6% moisture level/1000 nuts
- | | |
|-----------|-------|
| January | 163kg |
| February | 181kg |
| March | 178kg |
| April | 176kg |
| May | 179kg |
| June | 165kg |
| July | 152kg |
| August | 139kg |
| September | 147kg |
| October | 148kg |
| November | 155kg |
| December | 158kg |
- C. Nuts to shell, Coconut water etc.
- | | |
|-----------|-----------------------------|
| 1000 nuts | 114kg shell |
| 1000 nuts | 100 litres of coconut water |
| 1000 nuts | 35kg of charcoal |
- D. Coconut Oil from Copra
- | | |
|-----------|--------|
| Chekkus | 58-60% |
| Rotories | 62-63% |
| Expellers | 63-65% |
- E. Ball copra from coconut (per 1000 nuts)
- | | |
|--|--------------------|
| | 1.5tonne (grade 1) |
| | 1.3tonne (average) |
- F. Dessicated coconut (per 1000 nuts)
- | | |
|--|---------------|
| | 1 tonne of DC |
|--|---------------|

PLANTATION CROPS

Plantation crops in general are either export oriented or import substituting and therefore assume special significance from the national point of view. It is estimated that nearly 14 lakh families are dependent on the plantation sector for livelihood. Each of the four plantation crops of South India has its distinct characteristics and economic problems. Consequent to the removal of quantitative restrictions on import, plantation crops in general are facing the threat of low quality imports.

Kerala has a substantial share in the four plantation crops of rubber, tea, coffee and cardamom. These four crops together occupy 6.89 lakh ha, accounting for 31.58 percent of the net cropped area in the state and 43 percent of the area under these crops in the country. Kerala's share in the national production of rubber is 91 percent, cardamom 75 percents, coffee 22 percent during the year 2008-09.

RUBBER

India is the fourth largest producer of natural rubber with a share of eight percent in the world after Thailand, Indonesia and Malaysia. The production of natural rubber in the country was 8.31 lakh MT in 2009-10, registering a 3.8 percent decline compared to the previous year. India is at the same time the second largest consumer of natural rubber after China. A 34 percent decline in the consumption of USA was recorded in 2009 over 2008 while consumption in China and India increased by 17.70 percent and 2.70 percent respectively.

Kerala accounts for 78 percent of the area under rubber in the country. The coverage under the crops in 2009-10 was 5.25 lakh ha, higher by 7933 ha. Over the previous year. The production of natural rubber in Kerala during the year was 7.45 lakh tones indicating a 4.85 percent decline over the previous year. The increasing trend in productivity continued during 2008-09. It was 1190 kg. per ha in 1998-99, which rose to 1514 kg. during 2008-09. However it declined slightly to 1419 Kg/ha in 2009-10. In terms of tapping area, productivity recorded was 1867 kg. per ha during the year 2008-09 which declined to 1784 Kg/ha in 2009-10.

Even though the domestic prices of natural rubber were more or less comparable to international prices during 2007-08, (Appendix 4.17) the industrial

sector still resorts to imports in bulk quantities. The total quality imported was 86394 MT which slightly declined to 77616 MT in 2008-09. The import increased to 176756 MT in 2009-10.

The higher price in the international market is reflected in the domestic market also. The average of RSS 4 in the domestic market at Kottayam was Rs. 144.98 per kg. in 2009-10. The international price of RSS3, equivalent of RSS 4 of India, was Rs. 111.13 in the corresponding period. The price of RSS 4 in Kottayam reached Rs. 137.82 during August 2008 and then declined to Rs. 64.88 in October 2008 and further increased to Rs. 108.98 in October 2009 and Rs. 149.48 in March 2010. The share of Rubber in Kannur district is 4.22%.

COFFEE

The area under coffee in Kerala was 0.85 lakh ha out of 3.99 lakh ha. In the country during 2009-10, which works out to 21 percent. The share of Kerala in production is 20.5 percent during 2009-10. Major variety grown in Kerala is Robusta with a share of 95 percent in planted area. Production of coffee during the year was only 0.59 lakh MT against 2.90 lakh MT for the country. Productivity of the crop in terms of bearing area in Kerala (705 kg/ha) is lower than the national level of 826 kg/ha. Area under coffee registered substantial increase during the last two decades with an annual growth rate of over 2 per cent. The increase in production recorded during the period was much higher and registered an annual average growth rate of nearly nine percent. Coffee provides opportunities for live hood to nearly one lakh families including agricultural labourers. In Kerala, coffee is also one of the small holder plantation crops with nearly 76,000 holding coming under the category with an average size of 1.1 ha. Consumption of coffee has remained more or less static at around 55,000 tonnes for the past one and half decades till 1999 and then slightly improved to 70,000 tonnes in 2003 and further to 1 lakhs tones in 2009.

Coffee is a highly export dependent crop and more than 80 percent of domestic production is exported. The unit value realization has declined drastically from Rs. 95.37 per kg. in 1997-98 to Rs. 106.08 per kg. in 2009-10. The quantity of coffee exported from India declined in 2009-10 to 2.04 lakh tones from 2.18 lakh tones in 2007-2008 and slightly improved in 2008-09.

To mitigate the problems of coffee growers arising from the low prices of coffee, a series of steps have been taken including the restructuring of loans and interest relief to coffee growers (a subsidy of 5 percent for small growers and 3 percent for large growers is available for working capital). Rainfall insurance as a risk management support for coffee growers in collaboration with AIC is also implemented. Government of India has approved in June 2010 the coffee debt relief package 2010 for the debt ridden small coffee growers with a total financial implication of Rs. 241.33 crores. It is in the early stage of implementation. The share of Coffee in Kannur district is 0.03%

TEA

Against the total area 5.11 lakh ha under tea in the country Kerala accounts for only 0.37 lakh ha. In respect of production the share of Kerala is 6.6 percent in 2007. Tea plantations owned by big companies employ a labour force of over 84,000 in the organized sector. There is fluctuation in production and it ranged from 64.8 M. kgs. In 1995 – 96, reaching to 69.1 M kgs. In 2000-01 which declined to 56 M kgs. In 2007 and improved to 57.81 M Kg in 2009.

Imports increased from 13.4 M. Kg. in 2000 to 20.28 M kg. in 2009. However during 2003 the import declined substantially to 9.8 M. kgs. The maximum quantity of tea was imported from Nepal (31 percent). Followed by Vietnam (25 percent) and Indonesia (11 Percent). The unit value of imported tea was the lowest from Vietnam (Rs. 53/kg) while the average being Rs. 62/kg. The disturbing fact is that most of the countries to India at low prices.

The average price of tea in 2007-08 was 67.3 per Kg which increased to Rs. 110.30 in 2008-09 and declined slightly to Rs. 107.81 in 2009-10.

Productivity of Tea in India is much lower than that in Vietnam. The organic tea production is a major shift in this sector. (eg. Darjeeling tea). In Kerala coverage under organic tea could be increased.

Government of India has setup a special purpose Tea Fund for funding replantation and rejuvenation aimed at improving the age profile of tea plantation with an estimated outlay of Rs. 567.10 Crores during Eleventh Five Year Plan.

The estimated area to be taken up for replantation/rejuvenation during the period would be 85044 ha in the country. The share of Tea in Kannur district is 0

CARDAMOM

Productivity which was more or less stagnant around 50 kg./ha. In the 1980s has improved to the level of around 203 kg. per ha by 2001 and increased slightly to 206 kg./ha. In 2008-09 and declined to 188 Kg./ha in 2009-10. The share of Kerala in production at the all India level increased from 28 percent in 1992-93 to 56 percent in 2008-2009. While area under Cardamom in the country has declined from 0.97 lakh ha to 0.73 lakh ha. In the period, in Kerala it has come down from 65,000 ha to 41593 ha. On the export front cardamom has been facing competition from Guatemala although the quality of Guatemala cardamom is inferior. The country could tide over the challenge by expanding domestic market through market promotion. The average price during 2000-01 was Rs. 570 per kg. which is declined to Rs. 463.14 in 2007-08 and improved to Rs. 506.44 in 2008-09 and Rs. 800.08 in 2009-10. The Indian export of cardamom has increased by 27.8 percent in 2009-10 to reach 1975 MT. The unit price of exported Cardamom increased steadily to Rs. 838 per kg. in 2009-10 from Rs. 630 per kg. in 2008-09. However the market for cardamom is largely domestic as could be seen from the declining share of exports and the share of exports is only 5 percent of the production.

Source: Economic Review

Table: 15.1

RUBBER STATISTICS

Type- wise Production & Consumption of NR & SR	August 2011	August 2010	April 2011 to August 2011	April 2010 to August 2010	April 2010 to March 2011	Percentage increase (+) / decrease (-) of (3) & (4)
	(1)	(2)	(3)	(4)	(5)	(6)
PRODUCTION						
Natural Rubber (NR)						
Ribbed Smoked Sheet (RSS)	51365	53035	222330	213515	618960	
Solid Block Rubber	9740	9535	42840	40795	117830	
Latex Concentrates (drc)	6115	5690	28130	26210	76065	
Others	3980	4240	17900	17230	49095	
Total	71200	72500	311200	297750	861950	4.5
Synthetic Rubber (SR)						
Styrene Butadiene (SBR)	1515	1524	7848	7062	19994	
Poly Butadiene (BR)	6670	6325	32700	32345	75905	
Others	1206	918	5781	4504	14441	
Total	9391	8767	46329	43911	110340	5.5
Total NR & SR	80591	81267	357529	341661	972290	4.6
CONSUMPTION						
Natural Rubber (NR)						
Ribbed Smoked Sheet (RSS)	44965	45190	254165	247165	607455	
Solid Block Rubber	22720	25580	103485	97360	235130	
Latex Concentrates (drc)	6210	6310	31290	32305	77380	
Others	2295	2420	11675	11720	27750	
Total	76190	79500	400615	388550	947715	3.1
Synthetic Rubber (SR)						
Styrene Butadiene (SBR)	14605	14535	76760	69435	174855	
Poly Butadiene (BR)	9830	10330	55205	48585	125305	
Others	9200	9355	47600	49125	111670	
Total	33635	34220	179565	167145	411830	7.4
Out of which Auto Tyre Manufactures	23530	25092	130877	118803	298414	10.2
Total NR & SR	109825	113720	580180	555695	1359545	4.4
Out of which Auto Tyre Manufactures	70776	74450	394225	363033	896037	8.6

Table: 15.2

(Metric Tonnes)					
Production Consumption and stock of RR	August 2011	August 2010	April 2011 to August 2011	April 2010 to August 2010	April 2010 to March 2011
Reclaimed Rubber (RR)					
Production	8590	8540	41620	39670	99960
Consumption	8385	8480	41300	40160	100290
Out of which Auto Tyre Manufactures	3676	3406	17235	16032	40511
Stock with Manufactures (end of month/ year)	5270	4790			

Source:- Rubber Board

ANIMAL HUSBANDRY

The Animal Husbandry Sector plays an important role in strengthening the economy of the State, especially rural economy. It provides self employment opportunities to unemployed and underemployed rural poor. The majority of the live stock Population in the state is concentrated in rural areas. The progress in livestock will directly reflect a more balanced development in rural economy and upliftment of weaker sections of the society. A large manpower is also involved in livestock eating and related activities. About 57% of world cattle population is in India.

The main objective of the sector is to strengthening the livestock population of the state in terms of both quantity and quality and convert the state into a disease controlled zone by controlling/eradicating animal diseases. Prevention of disease includes control of contagious diseases by systematic vaccination.

In Kannur, a cattle Wealth is of considerable importance to the people of the district whose main occupation is agriculture. Animal Husbandry assumes greater importance because it is a venture helping to create more man days in the production through the least use of land. In Kannur District, as in other parts of the State, bullocks and male buffaloes are used for agricultural work on the field and cow and female buffaloes are reared for breeding and milk production. In rural parts of the District, more importance is attached to the draught animals and in the towns to the mulch animals.

Table:- 16.1

PANCHAYAT/ BLOCK WISE DETAILS OF LIVE STOCK POPULATION

Sl. No.	Name of Panchayat/Block	Cattle		Buffaloes	Sheep	Goats	Pigs	Dogs	Fowls			Milk co-op societies	Slaughter houses	Veterinary Institution
		Cross Breed	Non Descript						Desi	Imp-roved	Ducks			
1	Karivellur peralam	2227	555	121		134	2	537	2662	7005	24	2		4
2	Kankole Alappadamba	2730	95	34		542	11	537	4584	2762	23	1		3
3	Ramanthali	933	139	9		293	6	166	2169	2429	122	1		3
4	Eramam Kuttoor	1475	1833	13		1057	69	1239	1089	1924	51	3		3
5	Peringome Vayakkara	2312	276	19		892	681	4320	9437	5323	26	7		6
6	Mattool	446	49	5		398		42	1729	12858	169			2
7	Madayi	713	70	9		404		119	6787	1967	203	1		2
8	Kadannappally Panappuzha	1867	566	10		800	35	537	5094	544	22	3		4
9	Ezhome	741	328	4		110		142	3504	11096	574	1		2
10	Cheruthazham	1458	845	47	593	263	840	792	3861	3553	68	1		2
11	Kunhimangalam	1441	204	7		63		127	2202	1708	17			2
	PAYYANNUR Block	16343	4960	278	593	4956	1644	8558	43118	51169	1299	20	0	33
1	Pariyaram	1768	380	6	71	560	23	307	14662	51167	47	2		3
2	Alakode	3887	1139	9		2696	1048	4827	4667	102774	39	5		3
3	Kurumathur	1348	1264	15		345	15	291	3316	2732	12	1		3
4	Cherukunnu	354	113	7		325	27	54	3608	1677	69			2
5	Udayagiri	2338	876	9		2021	595	2412	14177	279	41	6		2
6	Chengalai	2204	1024	17		1099	43	561	8032	1309	36	4		3
7	Pappinisseri	828	56	4		184	3	309	2031	3388	63	1		2
8	Naduvil	3406	436	8		3157	1317	3070	25042	143156	68	8		4

Sl. No.	Name of Panchayat/Block	Cattle		Buffaloes	Sheep	Goats	Pigs	Dogs	Fowls			Milk co-op societies	Slaughter houses	Veterinary institution
		Cross Breed	Non Descript						Desi	Imp-roved	Ducks			
9	Pattuvam	588	348	15		123	74	162	1435	663	28	1		2
10	Kallisseri	1011	174	16		61	1	230	1058	2358	34	4		2
11	Narath	723	197	7		293	2	65	1062	458	13	1		3
12	Kannapuram	984	163	3		11	10	98	756	512	33	1		1
13	Chapparapadavu	2484	761	18		1724	23	307	13556	51167	82	4		5
	TALIPARAMBA Block	21923	6931	134	71	12599	3181	12693	93402	361640	565	38	0	35
1	Ayyankunnu	2878	843	16		2939	323	2391	16409	61449	64	4		5
2	Aralam	3204	1241	20		2609	200	1576	17224	1869	76	3		3
3	Keezhallur	1241	556	6		390	8	169	3063	3891	10	3		2
4	Payam	2582	798	7		1313	134	1554	8475	160833	148	6		4
5	Thillankeri	943	560	0		617	4	293	3082	175	8			2
6	Keezhur-Chavassery	2362	10	53		609	5	964	5194	3021	14	31		6
7	Koodali	1085	490	8		216	1	349	1130	4795	6	2		3
	IRITTY Block	14295	4498	110	0	8693	675	7296	54577	236033	326	49	0	25
1	Trippangattoor	2690	1622	6		632	16	168	4910	549	21			3
2	Panoor	639	291	1		203	0	698	2961	347	5			1
3	Mangattidam	1620	142	0		635	16	534	6985	3473	2			2
4	Panniyannur	738	172	0		236	1	852	2029	5051	0	1		2
5	Vengad	1807	76	0		643	6	398	7338	1655	3	1		2
6	Mokeri	887	185	0		320	0	79	1956	4256	7	2		3
7	Chitteriparamba	494	1244	1		591	14	637	4134	598	4	1		1
8	Kunnothu-paramba	1429	1293	1		452	0	74	5173	4871	26	2		2

Sl. No.	Name of Panchayat/Block	Cattle		Buffaloes	Sheep	Goats	Pigs	Dogs	Fowls			Milk co-op societies	Slaughter houses	Veterinary institution
		Cross Breed	Non Descript						Desi	Imp-roved	Ducks			
9	Pattiam	1022	856	44		560	12	536	3001	110952	251	1		2
KOOTHUPARAMBA Block		11326	5881	53	0	4272	65	3976	38487	128752	319	8	0	18
1	Muzhappilangad	415	0	0		129		115	493	2917	4	1		2
2	Chelora	849	148	0		230	2	394	1820	2254	10	2		3
3	Elayavoor	624	0	174		71	68	335	6469	3531	14	1		5
4	Anjarakkandy	914	148	0		633	3	315	1429	1722	49	1		2
5	Edakkad	718	0	0		305	9	583	1200	2254	10	1		1
6	Kadambur	335	0	0		95	11	101	1075	491	3	1		1
7	Peralassery	884	3	0		314	1	228	4555	2042	13	2		3
8	Munderi	1056	524	0		223		108	4029	2095	14	4		3
9	Chemilode	1076	91	3		246	5	285	1248	1207	6	3		2
EDAKKAD Block		6871	914	177	0	2246	99	2464	22318	18513	123	16	0	22
1	Dharmadom	898	44			183	3	364	1327	1125	5			2
2	Pinari	1056	79			266	2	325	4634	30635	26	1		3
3	Kottayam	462	104	2		211	0	248	937	1749	6	2		2
4	New Mahe	201	41			83	1	194	651	96	4			2
5	Peringalam	990	202			296	0	133	3161	183	5			2
6	Kariyad	853	310			284	0	47	2127	457	24			2
7	Chokli	1006	519			563	7	288	2890	2505	7	1		2
8	Eranholi	513	22			221	4	705	1306	996	26			2
9	Kadirur	805	65			214	0	514	1206	1091	10			3
THALASSERY Block		6784	1386	2	0	2321	17	2818	18239	38837	113	4	0	20
1	Azhikode	684	48	11		130	6	398	1103	1038	20	1		1
2	Chirakkal	284	124	5		89		339	2731	538	23	1		2

Sl. No.	Name of Panchayat/Block	Cattle		Buffaloes	Sheep	Goats	Pigs	Dogs	Fowls			Milk co-op societies	Slau-gher houses	Veterinary institution
		Cross Breed	Non Descript						Desi	Imp-roved	Ducks			
3	Valapattanam	50	14	0		73	2	23	659	24	63			
4	Puzhathi	398	34	1		147	3	547	992	2139	15			1
5	Pallikkunnu	375	52	16		51	4	784	193	1066	6		1	2
	KANNUR Block	1791	272	33	0	490	15	2091	5678	4805	127	2	1	6
1	Kolayad	1574	147	0		1314	6610		17	1		4		
2	Malur	922	1110	1		792	4322		4	4		3		
3	Peravoor	1796	306	0		824	8443		49	2		3		
4	Kelakam	2923	215	51		1916	13343		55	3		3		
5	Kottiyoor	2391	238	12		2177	8045		91	4		3		
6	Muzhakkunnu	1556	580	0		954	6266		28	3		2		
7	Kanichar	2569	286	14		1441	12925		39	5		3		
	PERAVOOR Block	13731	2882	78	0	9418	59954	0	283	22	0	21	0	0
1	Eruvessy	2218	274	5		1678	969	2087	11182	71634	13	2		3
2	Padiyoor Kalliad	791	1459	44		742	541	3873	6162	61280	24	8	1	7
3	Sreekandapuram	2222	1838	34		2142	332	1377	12343	1624	144	3		3
4	Irikkur	193	358	4		113	5	79	1155	778	29	0		1
5	Mayyil	556	605	0		157	6	320	1760	3070	2	1		2
6	Kolachery	1088	340	0		357	0	154	1891	1030	8	1		1
7	Payyavoor	3107	297	18		2528	731	2111	16793	2525	34	4		3
8	Malapattam	556	605	0		157	9	138	1760	556	2	0		3
9	Kuttiattoor	953	854	6		181	47	231	2130	3395	10	1		3
	IRIKKUR Block	11684	6630	111	0	8055	2640	10370	55176	145892	266	20	1	26
1	Edakkad	6871	914	177		2246	99	2464	22318	18513	123	16		22
2	Iritty	14295	4498	110		8693	675	7296	54563	236037	310	49		25

Sl. No.	Name of Panchayat/Block	Cattle		Buffaloes	Sheep	Goats	Pigs	Dogs	Fowls			Milk co-op societies	Slaughter houses	Veterinary institution
		Cross Breed	Non Descript						Desi	Imp-roved	Ducks			
3	Irikkur	11684	6630	111		8055	2640	10370	1155	145892	29	20	1	24
4	Kannur	1791	272	33		490	15	2091	5678	4805	127	2	1	6
5	Koothuparamba	11326	5881	53		4272	65	3976	38487	128752	319	8		18
6	Payyannur	16343	4960	278	593	4956	1644	8558	43118	51169	1299	20		33
7	Peravoor	13731	2882	78		9418	972	9427	59954	15980	283	22		21
8	Taliparamba	21923	7111	134	71	12599	3181	12694	93416	361640	581	38		35
9	Thalassery	6784	1386	2		2321	17	3230	18239	109695	113	4		22
	Total (Rural)	104748	34354	976	664	53050	68290	50266	331278	985663	3138	178	2	185
	Municipality													
1	Kannur	537	142	22		434		65	1260	79	74	1	1	6
2	Koothuparamba	578	568	6		348	14	808	1675	3860	13	1	1	3
3	Mattanur	2820	101	0		533	37	850	5202	2630	40	2		4
4	Payyanur	5955	140	93		362	8	628	4857	8984	133	3	3	7
5	Taliparamba	989	1305	22		280	26	252	3322	95819	95	2	1	4
6	Thalassery	881	347	26		369	5	2338	2188	2108	25	1		3
7	Contornment							10				1	2	
	Total (Urban)	11760	2603	169		2326	90	4951	18504	113480	380	11	8	27
	Total (Rural)	104748	34354	976		53050	68290	50266	331278	985663	3138	178	2	185
	District	116508	36957	1145		55376	68380	55217	349782	1099143	3518	189	10	212

Source:Animal husbandry Statistics, AHD

FISHERIES

Fisheries form one of the most important sectors of Kerala's economy. Kerala is a coastal state and is bordered on the west by the marine flora and fauna rich Arabian Sea. The coastline of the state runs to a length of about 590km. The territorial limits of the state is about 22 KMs from the sea shore and the total area covered by the sea that falls within this territory comes up to around 13,000 square kilometres. This is the area in which the marine fishermen of the state are allowed to venture. The shallow seabed surrounding the state of Kerala comes to around 3919 square kilometres. This is the most fertile region of the Arabian Sea as far as fisheries are concerned. The potential of the state in terms of marine fisheries is believed to be about 5.17 lakh tones. Not only do the fisheries contribute to about 3 percent of the economy of Kerala they also earn the state a great deal of foreign exchange and goodwill. The fisheries of the state are famous all over the world and are exported to Europe and America among other parts of the globe. At present the state of Kerala produces about 6 lakhs tones of marine fishes every year.

Geographically, inland fisheries have great scope in the state. An inimitable feature of the state is the occurrence of 49 interconnected backwaters which have an area of 46129 ha. Besides there are estuaries, backwaters, brackish water area, pokkali and prawn filtration fields and private shrimp farms. All these bodies of water provide rich sources of inland fish production.

Kannur District has a very important place in the fisheries map of Kerala. It has an 82 km. coastline from Kavvayil in the north to Kurichiyil in the south. It is only 14 percent of the total coast line of the state. The area of continental shelf in the District is 5912 sq. km. This area is very suitable for fishing using nets. In District an average of 5.67 fishermen are engaged in fishing in an area of one sq. km. of area available for sea fishing. The annual procurement of fish per head for fishermen is 4945 kilograms. During 1992-1998, the average annual production of fish in the District was 26727 metric tonnes. It was only 4.76 per cent of the total fish production of the State. Excluding 1994 and 1998, it is seen that the fish production of the District was between 22000 and 29000 metric tonnes. The increased production of fish during 1994-1998 was possible due to increase in production of commercially unimportant varieties. Several rivers like the Valapatanam and the Ancharakandy and their tributaries, swamps, irrigation tanks, paddy fields and household tanks offer vast potential for fisheries development in the Inland Sector. The inshore waters of the District have immense potential for fishing especially for the commercially important varieties such as Oil Sardines (Mathichala), Mackerel (Ayila), Prawns (Chemmeen) and Silver Bellies (Mullan).

Formerly indigenous methods which were in vogue, employed only big, medium and small size country crafts, nets and lines for fishing. Since the last few decades, mechanised fishing has become increasingly popular. However, the impact of mechanisation is yet to be felt.

The fishing Harbours at Valapattanam and Mappila Bay provide facilities to fishing crafts for launching landing, mooring, repairing, processing and marketing. Kavvayil, Palakkode, Puthiyangadi, Mattool, Azhikode, Azheekkal, Kannur City, Thayyil, Edakkad, Ezharakkadappuram, Palisseri, Chalil, Gopalapetta and Thalassery are some of the important Fishing Centres. The five Inland Sector Fishing villages are Kunhimangalam, Ezhome, Kattampally, Andallur and Eranholi.

Table 17.1

FRESH WATER RESOURCES IN KANNUR DISTRICT

Year	Panchayath 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	292	19.86	312	35.77	9	97.13	35	90.01
2008	292	19.86	312	35.77	9	97.13	35	90.01

Table 17.2

DISTRIBUTION OF FISHERMEN POPULATION IN KANNUR

2005-2006				2006-2007			
Male	Female	Children	Total	Male	Female	Children	Total
2659	2812	1511	6982	2660	2813	1512	6985

2007-2008				2008-2009 (Estimated)			
Male	Female	Children	Total	Male	Female	Children	Total
2654	2807	1508	6969	2678	2833	1522	7033

Source: Fisheries Statistics, Dept of Fisheries

Table 17.3

CHECK DAMS IN KANNUR DISTRICT

Year	Name of the Check Dam	Area in Hect	Location		Type of construction	Ownership
			Block	Panchayath		
2009	Kacheripally	15.00	Payyannur	Ayyankunnu	Concrete	Public
	Randomkadavu	10.00	Irity	Thillengeri	Concrete	Public
	Elamthuval Anakattu	5.00	Irity	Thillengeri	Concrete	Panchayath
	Uruppukkad	5.00	Irity	Payyam	Concrete	Panchayath
	Vaniampayil	10.00	Irity	Payyam	Concrete	Panchayath
	Peringeri	8.00	Irity	Payyam	Concrete	Panchayath
	Kunnathumala Pottu	5.00	Irity	Payyam	Concrete	Panchayath
	Kutichathan Kunnunducharal	6.00	Irity	Payyam	Concrete	Panchayath
	Kalpam	5.00	Irity	Payyam	Concrete	Panchayath
	Mulurpadukanileri	5.00	Peravoor	Maloor	Concrete	Panchayath
	TOTAL	74.00				
2008	Kacheripally	15.00	Payyannur	Ayyankunnu	Concrete	Public
	Randomkadavu	10.00	Irity	Thillengeri	Concrete	Public
	Elamthuval Anakattu	5.00	Irity	Thillengeri	Concrete	Panchayath
	Uruppukkad	5.00	Irity	Payyam	Concrete	Panchayath
	Vaniampayil	10.00	Irity	Payyam	Concrete	Panchayath
	Peringeri	8.00	Irity	Payyam	Concrete	Panchayath
	Kunnathumala Pottu	5.00	Irity	Payyam	Concrete	Panchayath
	Kutichathan Kunnunducharal	6.00	Irity	Payyam	Concrete	Panchayath
	Kalpam	5.00	Irity	Payyam	Concrete	Panchayath
	Mulurpadukanileri	5.00	Peravoor	Maloor	Concrete	Panchayath
	TOTAL	74.00				

Source: Fisheries Statistics, Dept of Fisheries

Table 17.4

PERCENTAGE OF ACTIVE FISHERMEN TO THE FISHERMEN POPULATION (INLAND) – KANNUR

2005-2006			2006-2007			2007-2008			2008-2009		
Total Number of Fishermen	Percentage of Active Fishermen	Total Number of Fishermen	Total Number of Active Fishermen	Percentage of Active Fishermen	Total Number of Fishermen	Total Number of Active Fishermen	Percentage of Active Fishermen	Total Number of Fishermen	Total Number of Active Fishermen	Percentage of Active Fishermen	
6982	24.13	6985	1685	24.12	6969	1687	24.21	7033	1758	25	

Table 17.5

LIST OF FISHING VILLAGES (INLAND) AND INLAND FISHERMEN POPULATION

Name of village	Fishermen Population					
	2005-2006	2006-2007	2007-2008	2008-2009	2005-2006	2008-2009
Kurinjimalam	1051	1051	1048	1058		
Ezham	1326	1327	1324	1336		
Kattampally	2250	2251	2246	2266		
Mandalloor	1268	1269	1266	1278		
Eranholi	1087	1087	1085	1095		
Total	6982	6985	6969	7033		

Source: Fisheries Statistics, Dept of Fisheries

Table 17.6

DISTRICT WISE SPECIES WISE INLAND FISH LANDINGS IN KANNUR

Sl.No.	Name of Fish	2007-2008	2006-2007
1	Prawn	16455	16114
2	Etroplus	4751	4644
3	Murrels	4370	4299
4	Mulletts	4691	4614
5	Cat Fish	5022	4940
6	Jew fish	2931	2883
7	Tilapia	8288	8157
8	Labeo fimbriatus	2189	2153
9	Barbus	544	535
10	Mrigal	5003	4951
11	Crabs	772	759
12	Common Carps	6992	6878
13	Catla	7445	7323
14	Gourami	0	0
15	Chamos	462	455
16	Eels	67	66
17	Labeo Rohitha	7092	6976
18	Shrimp	0	0
19	Mussel	7894	0
20	Edible Oyster	2150	0
21	Miscellaneous	3997	3930
	TOTAL	91115	79677

Table 17.7

DETAILS OF FISH/SHRIMP/PRAWN SEED FARMS AND HATCHERIES IN KANNUR

Number of Seed Farms/Hatcheries			Total	Seed Production Capacity (in lakhs)			Total
Fish	Shrimp	Scampi		Fish	Shrimp	Scampi	
1	1	0	2	0	0	0	0

Source: Fisheries Statistics, Dept of Fisheries

Table 17.8

DISTRICT WISE SPECIES WISE VALUES OF INLAND FISHES IN KANNUR (VALUE RS IN 000'S)

Sl. No.	2006-2007		Sl. No.	2007-2008	
	Name of Fish	Number		Name of Fish	Number
1	Prawn	21266	1	Prawn	22000
2	Etroplus	5976	2	Etroplus	6300
3	Murrels	15275	3	Murrels	16500
4	Mulletts	21375	4	Mulletts	21755
5	Cat Fish	15962	5	Cat Fish	16591
6	Jew fish	4716	6	Jew fish	4788
7	Tilapia	8466	7	Tilapia	8855
8	Labeo fimbriatus	0	8	Labeo fimbriatus	0
9	Barbus	1485	9	Barbus	1568
10	Mrigal	0	10	Mrigal	0
11	Crabs		11	Crabs	915
12	Common Carps	915	12	Common Carps	90
13	Catla	90	13	Catla	0
14	Gourami	0	14	Gourami	0
15	Chamos	0	15	Chamos	480
16	Eels	0	16	Eels	36
17	Labeo Rohitha	464	17	Labeo Rohitha	0
18	Mussel	36	18	Mussel	378
19	Edible Oyster	0	19	Edible Oyster	5880
20	Miscellaneous	8601	20	Miscellaneous	8928
	TOTAL	104627		TOTAL	115064

Table 17.9

WORKING OF FFDA IN KANNUR

Sl. No.	Name	2006-2007	2007-2008	2008-2009
1	No .of members during the year	120.00	190.00	175.00
2	Total Area Surveyed (Ha)	27.41	40.00	58.75
3	Area brought under fish culture (Ha)	7.13	13.20	5.00
4	No. of beneficiaries	104.00	175.00	71.00
5	Distribution of fish Seed (No)	41250.00	66100.00	27000.00
6	Harvested area (Ha)	53.00	12.00	5.00
7	Harvested Quantity (in tonne)	7.00	5.00	13.50
8	No .of farmers trained	45.00	106.00	58.00

Source Fisheries Statistics, Dept of Fisheries

Table 17.10

CONTRIBUTION OF FISHING TO NDP ESTIMATES AT CURRENT PRICES

2005-2006 (base year 2004-05)	Kannur	2005-2006 (base year 1999-2000)	Kannur
Net Domestic Product * (Rs. in lakhs)	888289	Net Domestic Product * (Rs. in lakhs)	804535
Fishing* (Rs. In lakhs)	8553	Fishing* (Rs. In lakhs)	9699
Percentage of fishing to Net Domestic Product	0.96	Percentage of fishing to Net Domestic Product	1.21
Population (In' 0000)*	2479	Population (In' 0000)*	2479
Per Capita income (In Rs.)*	35833	Per Capita income (In Rs.)*	32454
Contribution of Fishing to Percapita income	344	Contribution of Fishing to Percapita income	392.69

CONTRIBUTION OF FISHING TO NDP ESTIMATES AT CURRENT PRICES

2006-2007 (base year 2004-05)	Kannur	2006-2007 (base year 1999-2000)	Kannur
Net Domestic Product * (Rs. in lakhs)	978959	Net Domestic Product * (Rs .in lakhs)	928566
Fishing* (Rs. In lakhs)	9056	Fishing* (Rs. In lakhs)	8567
Percentage of fishing to Net Domestic Product	0.93	Percentage of fishing to Net Domestic Product	0.92
Population (In' 0000)*	2494	Population (In' 0000)*	2494
Per Capita income (In Rs.)*	39253	Per Capita income (In Rs.)*	37322
Contribution of Fishing to Percapita income	365.05	Contribution of Fishing to Percapita income	342.53

Source: Fisheries Statistics, Dept of Fisheries

WETLAND

The major water bodies and rivers in Kannur district are mentioned below:

1. MARSHY LANDS

A marsh, or morass, is a type of wetland which is subject to frequent or continuous inundation. Typically a marsh features grasses, rushes, reeds, typhas, sedges, and other herbaceous plants (possibly with low-growing woody plants) in a context of shallow water. A marsh is different from a swamp, which has a greater proportion of open water surface, and is generally deeper than a marsh. Marshes are critically important wildlife habitat, often serving as breeding grounds for a wide variety of animal life. Constructed wetlands featuring surface-flow design are usually in the form of a marsh.

2. MANGROVE SWAMP

Mangrove swamps are coastal wetlands characterized by salt –tolerant trees, shrubs, and other plants growing in brackish to saline tidal waters.

3. SWAMPY LANDS

A **swamp** is a wetland that features temporary or permanent inundation of large areas of land by shallow bodies of water, generally with a substantial number of hammocks, or dry-land protrusions, and covered by aquatic vegetation, or vegetation that tolerates periodical inundation. The water of a swamp may be fresh water or salt water. A swamp is also generally defined as having no substantial peat deposits.

4. RIVERS AND WATER BODIES

Kavvayi Kayal

The Kavvayi kayal is a long stretch of brackish water lagoon with nearly five medium-sized rivers draining into it. It lies parallel to the seacoast for a distance of 21 km. It is separated from sea by a relatively wide stretch of sand bar. It has a number of outlets to the sea at the mouth of Nileswaram, Kariangotte, Kavvayi, and Ramapuram rivers. There are a few islets in this backwater region such as Madakkal, Edelakkadu, Vadekkekadu etc. The characteristic shape of these islets is indicative of the past fluvial patterns. During the 18th century, Ali Koya of Arakkal constructed a waterway, now known as Sultanís Canal, connecting the Kavvayi kayal and the Pazhayangadi River. The canal has a total length of 38 km.

Valapattanam River

Valapattanam River is one of the important rivers in north Kerala. It has a total length of 110 km draining from an area of nearly 1867 sq. km. The main tributaries of the river originate in Brahmagiri reserve forests in Coorg in the State of Karnataka at an altitude of 1350 m. The river flows through Iritty, Irikkur, Kalliassery, and Valapattanam. The major tributaries are Sreekandapuram River, Valia puzha (stream let), Veni puzha, and Aralam puzha. At Valapattanam, the river forms extensive flood

plains and is joined by Pazhayangadi River, and ultimately drains into the sea at Azheekkal azhi (river mouth).

Sreekandapuram puzha joins the Valapattanam River a km down from Chuliyad, and later the entire course braids at a number of places (namely, Kandakkayi, Kolturuthi, and Pamburutti). The tidal influence is felt even at Parippayi, almost 30 km upstream. The Valapattanam River inundates extensive low-lying areas at Kattampalli. The floodwaters used to reach up to north of Kakkad, to the east up to Chekkikulam, and to the north up to Valavilcheleri, prior to construction of the Kattampalli weir.

Kuppam River

The Kuppam River (or Pazhayangadi River) is a major river in Kannur district. It has a length of 82 km and drains an area of nearly 539 sq. km. It takes its origin from the Padnelkadu reserve forests at an altitude of 1630 m. A part of its headwaters is in Karnataka – Cheriya thodu (rivulet) from Kottakkunnu (172 m) and Chittadi Rayarom puzha from Thondan kunnu (734 m). Pattappara puzha joins the Rayarom puzha at Karthikapuram and takes its origin five km east of Karthikapuram. Alakode thodu and Karuvanchal thodu join at Manatti and flow down to Kuppam River at Vimalasseri. Kuttikol puzha takes its origin from Padappengad thodu from the westward slopes of Kota malai from an altitude of 370 m and joins Pazhayangadi River at Cherukunnu. The Kuppam River flows almost parallel to Valapattanam puzha till it reaches Pazhayangadi where it takes an abrupt turn towards the south and, after creating a number of small islets and mud flats, joins the Valapattanam River estuary and finally opens to the sea through Azheekkal azhi.

Ramapuram River

The Ramapuram River takes its origin at Ingal hill at 57 m. It has a catchment area of 52 sq. km and is 19 km long. It flows through the Pariyaram, Kolaprath vayal (paddy-field), and Cheruthazham village to join the southward branch of Peruvamba River and finally the sea at Olakkal azhi south of Ezhimala.

Peruvamba River

This is a medium-sized river with a length of 51 km and a catchment area of 300 sq. km. It originates from Pekkunnu in the slopes of the Western Ghats at 325 m. It flows through Peringome, Kuttur, Mathamangalam, and Kunhimangalam. The river bifurcates when it reaches the east of the Ezhimala. One branch joins Kavvayi kayal and the other opens to sea.

Kavvayi River

This is a small river, 31-km long with a catchment area of 143 sq. km and originates from Cheemeni village at 385 m. Before draining into Kavvayi kayal at the Northeast of Ezhimala it flows through the Alappademba and Vadasseri villages.

The major wetland categories in the district is shown below:

Table:18.1

Land uses	Area (Ha)
Paddy	11919.00
Mangrove swamp	20.74
Marshy land	1127.69
Mud	368.08
Swampy lands	4.03
Wetland	50.47
Reservoir	276.46
River	9231.56
Water Body	103.56
Canal	14.17

PADDY SCENARIO IN KANNUR DISTRICT

Paddy was a prominent crop of Kannur District, until recently. Now the glory of the crop is lost due to several socio and economic reasons. The trend of converting the wet land to garden land is fast and crops like coconut, arecanut, banana and even rubber is cultivated in such converted lands. The real estate people are purchasing wetland at a very low cost and converting the same using JCBs and tipper lorries. The land is sold as wetland and within 3 or 4 days the whole land will be converted and resold with a bigger margin.

The present wetland area of the district is 23115 Ha; out of this 11919 Ha is paddy field. The total production of paddy in the district is estimated as 33450 Tons and productivity is 3000Kg/Ha. There are 467 numbers of padashekharas and the majority of the farmers are small and marginal.

THE EXTENT AND MAGNITUDE OF DEGRADATION OF PADDY FIELDS IN KANNUR DISTRICT

Wetland paddy cultivation

One important cultivar in the wetlands is rice cultivated in kaippadu lands in the brackish water area and in wetlands known as vayal in the freshwater areas. Kaippadu rice cultivation is characterised by no input of green manure, cow dung or ash in the field, but high levels of output. But the yield is unpredictable as floods might inflict heavy damage to the crop. Normal floods and high rising water do not affect the crop if the water drains out immediately and also if the rise of flood water level is gradual. In the latter case, the rice plant will keep on growing together with the rise in water level. In some cases the rice plant grows to a height of seven feet. In earlier days, the wages were given in kind in the form of grain whereas now they are paid in cash and kind. For men, daily wage is Rs 80 plus 14 sears of grain; payments to women are at slightly lower rates.

Paddy varieties

There are four varieties of salt-tolerant rice prevalent in kaippadu. These varieties used to be cultivated in non-saline soil also. The mode of cultivation varies from variety to variety. Nowadays only two varieties of rice exist, kuthir and orkayama. The two other varieties used in kaippadu were Orthadiyan and Chovvariyan. Though, Orthadiyan may be surviving, Chovvariyan or Chokiran is almost extinct. Though the chovvariyan grains are characterised by long awns, the rice tasted extremely good and is resistant to pest attack. In the late 1940s and the early 1950s when the Government began collection of grain directly from the farmer, levy, the rice with awn was not preferred and was given only low price. As a result, farmers stopped cultivating this rice except for own use. This practice was also discontinued in course of time. Now this rice variety is almost extinct from the locality. Palliyaral, Keerippala, and Malayudumban are names of some of the fresh water rice varieties, which are fast disappearing from the area. Some of them are still being sown in the rice enclaves of Pattuvam and Keezhara regions. Kuthir seeds are sown on the small earthen mounds and as the seedlings grow and reach a height of about one foot, the mound is scattered together with the rice seedlings. The kuthir takes nearly eight months to mature. The rice grows taller as the water level rises. This rice is said to have superior taste and high yields. Orkayama seeds are sown in the fresh water paddies and the seedlings are transplanted after a month's growth. Orkayama matures relatively early. The grain is black in colour and has long awn. Orkayama is preferred in fields that are not prone to flooding.

The kaippadu rice yields nearly thousand sears an acre in which nearly 300 sears go as the share of the worker towards his wages. The next yield is 700 sear per acre, which is in general far higher than of the freshwater rice varieties. Earlier the major paddy fields and the kaippadu localities were Pazhayangadi backwaters and areas in and around Pattuvam, Kovumal, Kavinmunambu, Keezhara, Ezhome, and Cherukunnu regions. Now land area under rice has decreased and mangroves have colonized in these localities. Some of the islands in the Pazhayangadi backwaters were excellent kaippadu lands, which have by now been colonised by mangroves and bandicoots. The shortage of manpower is the biggest problem in the kaippadu rice cultivation. Now there are chemmeenkettu (the prawn filtration fields) which by itself suffices for making a living. There exists now little co-operation among farmers, a necessary prerequisite for kaippadu cultivation. According to Ummer, farmers. Co-operation cannot be ensured by cooperatives.

The activities for kaippadu cultivation start in mid-April. The land is tilled with hoe and small mounds of soil are made in lines and rows. Each mound has a rough squarish base, each side measuring about 70-80 cm. Mounds are usually 30-40 cm in height. The mound is left as such till May end. This is done so as to allow all the salt accumulated in the soil to be washed away in the first rain. Together with the monsoon rain the seed is dipped in water.

This is done either by tying the seed in a gunny and dipping it in a pond or by putting seeds in a large vessel full of water. Later, after 24 hours in water the seeds

are taken out and tied in a gunny and a weight kept on it. Within the next 24 hours the seeds will have sprouted; they are then sown on the mounds if it is kuthir seed or on specially prepared soil bed if it is orkayama seed. If it is orkayama, the seedlings have to be transplanted, after a month's growth, in the ploughed field. Generally, the orkayama is selected for the fields, which do not suffer from flooding. Weeding is necessary between the months of May and June. By mid-June, the orkayama seedlings are transplanted. But in the case of Kuthir, the heap is dispersed, with a hoe, together with the seedlings and scattered around, using a hoe. The rice will be ready for harvest by November.

The kaippadu rice does not require the application of any fertilizer (both chemical and green manure) and pesticides. However, nowadays, some farmers use Benzene Hexa Chloride powder as a pesticide. Pest attack can be minimised if all do the sowing on the same day. If the rice plants produce ears at the same time, the pest attack would be nominal, if at all. The kaippadu lands in many cases are used for shrimp filtration after the October rain. This is a traditional system of aquaculture; water is let into the field during the high tide and blocked off by a sluice gate between November-March each year.

EXTENT OF PADDY DEGRADATION IN KANNUR DISTRICT

The paddy area of the district in 1970s was about 40421.39 ha, the study using the toposheets of 1:25000 scales shows that the paddy areas was come down to 23426.76 ha. Ground truth verification of paddy fields in this district and using satellite imageries we obtained the recent paddy area as 11919.01 ha.

Paddy status of all the blocks and municipalities in 1970s, 1980s and present are shown in the table.

Table 18.2

Name of Blocks	Paddy Areas in Ha		
	1970	1980	Present
Irikkur Block	4607.09	2639.51	2092.92
Payyannur Block	7449.64	4885.48	2881.18
Thaliparambu Block	10814.10	4363.32	2225.54
Kannur Block	1017.15	706.95	157.30
Iritty Block	2555.55	1624.62	930.50
Edakkad Block	2007.06	1492.83	997.16
Thalasserry Block	2103.84	1205.78	158.22
Peravoor Block	2755.07	1414.43	316.60
Koothuparambu Block	3031.26	1787.61	554.38
Municipalities	4080.63	3306.23	1605.21
Total Paddy Area	40421.39	23426.76	11919.01

Out of the total paddy area (11919 ha) present in Kannur district, virippu (123.25 ha), mundakan (15.05 ha), virippu + mundkan (9469.07 ha) and virippu + mundakan + punja (2311.63 ha) are cultivated in this district. The present paddy details in Kannur district is shown in figure 13.2

Out of the total paddy area in 1980s are now converted for various purposes. Most of the paddy fields in this district are converted to coconut (4242.37 ha) followed by mixed trees (2611.14 ha), built up land (1394.34 ha), rubber (645.44 ha), coconut+arecanut (539.18 ha), banana+tapioca (516.43 ha), plantation crops (288.18 ha), cashew (211.89 ha), arecanut (145.13 ha) and pepper (23.43 ha).

Large portion of the paddy fields are now converted to cultivable wasteland (597.90 ha) and about 294.65 ha area of the paddy fields are lying as fallow land for more than 5 years. The major conversion of paddy fields to other land uses are shown below:

Table :18.3

Land uses	Area (Ha)
Paddy	11919.00
Paddy converted to arecanut	145.13
Paddy converted to banana + tapioca	516.43
Paddy converted to built-up land	1394.34
Paddy converted to cashew	211.89
Paddy converted to coconut	4242.37
Paddy converted to coconut + arecanut	539.18
Paddy converted to cultivable wasteland	597.90
Paddy converted to fallow land	294.35
Paddy converted to mixed trees	2611.14
Paddy converted to pepper	23.43
Paddy converted to plantation crops	288.18
Paddy converted to rubber	645.44

It is clear that the wetlands of Kannur district do still retain many of their basic characteristics, though they are in the process of transformation. Understanding the inter-linkages between man and wetlands and creating supportive systems that will be sustainable should be the focus of development activity. For this, both a clear perspective and a management system are essential. In order to devise an appropriate political strategy for managing the wetland resources, an understanding of the existing social environment too is necessary. Only a complete understanding of the nature and origin of the larger social process can throw more light on the future development strategy for the locality. The major findings of our study are summarized in this section together with a few guidelines for policy formulation.

Most of the degradation is occurred to the paddy fields in the district. Paddy fields are mainly converting to other land uses especially because of the economical

loss. In municipalities the extensive paddy fields are replaced by built up land mainly in Thalasseri, Mattannur and Thalipparambu municipalities. Paddy fields in hilly areas are mainly converted to rubber, pepper, cashew and other plantation crops.

The wetlands of Kerala have been reduced in spatial extent due to various factors. Mud flats and islet formation are common phenomena in these wetlands. During the past two decades mud flats have doubled in the spatial extent. This may be attributed to siltation, as a part of the natural fluvial dynamics. The water-spread area of the wetlands has declined from about 34 sq.km to 31 sq. km over the past three decades. Land under wet paddy cultivation has been reduced to one-third since 1967. Similarly, the mangrove vegetation has also declined.

Apart from the spatial diminution, physico-chemical characteristics of the wetlands also have changed for the worse, thanks to the solid waste dumped from urban areas, effluents from factories, shrimp farms and coir retting and changes in the natural tidal flushing due to construction of embankments.

Rapid urbanizations and the consequent development of infrastructure have taken a heavy toll of the wetlands. Large-scale mangrove destruction and the spatial spread of aquaculture farms threaten the very livelihood of the local population. There has taken place a five-fold increase in the reclamation of wetlands since 1967.

Nearly 40 per cent of the working population derives its income directly from wetland related activities, such as agriculture, mat making, and fishery. The existing pattern of resource use and tenure rights as emerged from the study shows that open access resources such as fishing grounds and mangrove forests in the paramboke play an important role in the subsistence economy of the communities.

In fact, the waters that provide fish - protein, the kaippadu that provides the grain – starch and calories, the vegetation that provide the vitamins, be they from the sedge grass kavarikka or the parippu from the avicenia or other vegetables like gourds etc that grow easily in the wetlands, cows that feed on the hay or sedge grass which in their turn provide milk and manure, the wood for fuel and the honey that mangroves give - are all intrinsic links in the chain of interdependence.

- Since the local population, the panchayat members, and the bureaucrats are ignorant of the importance of the basic ecological processes and their role in ensuring livelihood, a detailed and effective resource literacy programme needs to be planned and implemented.
- Promoting group farming of paddy with Governmental support to carry out paddy cultivation in a profitable manner.
- Possibilities of setting up local co-operatives for supplying raw materials and procuring and marketing products, especially in the traditional sector, need to be explored. Manners in which and the areas where wetland loss is taking place and to plan to counter it.

- Above all the popularization of the great progressive step in land use practices initiated by the farmers itself called the Integrated Farming which combine paddy cultivation with aquaculture in polders or padasekharams and animal husbandary, piggery, duck and chicken farming in garden, land or raised beds should be given urgent attention. This will increase the total economic returns several folds and help to overcome most of the environmental problems.
- Making paddy cultivation a sustainable livelihood option is essential to ensure the sustainability of the ecosystem, which will have to face the detrimental effects of paddy cultivation.

Table:- 18.4

WETLAND DETAILS

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Edakkad Block	Chelora	Marshy land	225.98
		Other landuses	1622.21
		Paddy converted to banana+tapioca	1.32
		Paddy converted to built-up land	0.20
		Paddy converted to coconut	8.46
		River	40.42
		Virippu+Mundakan+Punja	221.74
			2120.34
	Chembilode	Mundakan	1.30
		Other landuses	1893.93
		Paddy converted to built-up land	3.63
		Paddy converted to coconut	45.45
		Paddy converted to mixed trees	78.12
		River	1.36
		Virippu+Mundakan	2.71
		Virippu+Mundakan+Punja	33.95
	Edakkad	Mud	14.99
		Mundakan	51.18
		Other landuses	1746.81
		Paddy converted to banana+tapioca	4.23
		Paddy converted to built-up land	1.57
		Paddy converted to coconut	19.46
		Paddy converted to fallow land	5.23
		Paddy converted to mixed trees	12.53
		River	14.00
		Virippu	7.04
		Water Body	1.95
			1878.99
	Elayavoor	Marshy land	9.78
		Other landuses	989.30
		Paddy converted to banana+tapioca	10.64
		Paddy converted to built-up land	0.74
		Paddy converted to	25.84
		Paddy converted to fallow land	4.38
		Paddy converted to mixed trees	31.05
		Paddy converted to rubber	2.68
		River	3.06
		Virippu+Mundakan	26.37
	Virippu+Mundakan+Punja	14.41	
		1137.91	

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Irikkur Block	Kadamboor	Other landuses	845.92
		Paddy converted to banana+tapioca	0.88
		Paddy converted to coconut	49.19
		Paddy converted to mixed trees	23.19
		Virippu	2.37
		Virippu+Mundakan	12.53
			934.07
	Kolacherry	Marshy land	163.07
		Other landuses	1460.85
		Paddy converted to mixed trees	6.94
		River	65.52
		Virippu+Mundakan	224.96
			1921.33
	Munderi	Marshy land	110.48
		Other landuses	1581.91
		Paddy converted to banana+tapioca	0.78
		Paddy converted to fallow land	0.22
		Virippu+Mundakan	276.89
		Virippu+Mundakan+Punja	1.14
	Peralassery	Other landuses	1645.29
		Paddy converted to coconut	3.02
		Paddy converted to mixed trees	0.50
		River	36.90
		Virippu+Mundakan	238.25
			1923.95
		13951.03	
	Eruvassy	Other landuses	4945.97
		Paddy converted to built-up land	10.93
		Paddy converted to coconut	11.95
		Paddy converted to mixed trees	30.81
		Paddy converted to plantation crops	5.37
		Paddy converted to rubber	6.40
		River	54.65
Virippu+Mundakan+Punja		5.96	
		5072.04	
Irikkur		Other landuses	957.98
		Paddy converted to built-up land	3.56
		Paddy converted to coconut	2.53
		Paddy converted to mixed trees	10.94
		Paddy converted to plantation crops	12.25
	River	87.65	
	Virippu+Mundakan	33.23	
	1108.14		

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
	Kuttiyattoor	Marshy land	23.36
		Other landuses	3158.15
		Paddy converted to built-up land	4.37
		Paddy converted to coconut	6.47
		Paddy converted to fallow land	2.68
		Paddy converted to mixed trees	1.81
		River	18.94
		Virippu+Mundakan	320.13
			3535.91
	Malapattom	Other landuses	1653.24
		Paddy converted to mixed trees	4.21
		River	74.77
		Virippu+Mundakan	184.98
			1917.20
	Mayyil	Other landuses	2428.25
		Paddy converted to arecanut	0.40
		Paddy converted to banana+tapioca	0.43
		Paddy converted to coconut	0.68
		Paddy converted to	5.45
		Paddy converted to fallow land	4.12
		River	206.16
		Virippu+Mundakan	6.12
			609.64
			3261.25
	Padiyur	Other landuses	4921.91
		Paddy converted to built-up land	9.87
		Paddy converted to cashew	1.39
		Paddy converted to coconut	3.58
		Paddy converted to mixed trees	20.24
		Paddy converted to plantation crops	36.94
		Reservoir	116.77
		River	65.62
		Virippu+Mundakan	191.09
		Water Body	1.77
			5369.18
	Payyavoor	Other landuses	6450.67
		Paddy converted to banana+tapioca	14.45
		Paddy converted to built-up land	9.86
		Paddy converted to coconut	13.68
		Paddy converted to mixed trees	65.07
		Paddy converted to plantation crops	2.73
		Paddy converted to rubber	5.20
		River	83.61
Virippu+Mundakan		54.65	
Virippu+Mundakan+Punja		2.82	
Water Body	2.73		
		6705.46	

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Iritti Block	Sreekandapuram	Other landuses	6239.29
		Paddy converted to built-up land	5.40
		Paddy converted to coconut	1.91
		Paddy converted to mixed trees	51.36
		Paddy converted to rubber	49.99
		River	134.26
		Virippu+Mundakan	301.24
			6783.46
	Ulickal	Other landuses	6971.74
		Paddy converted to banana+tapioca	1.12
		Paddy converted to built-up land	35.76
		Paddy converted to cashew	12.31
		Paddy converted to coconut	19.21
		Paddy converted to mixed trees	17.92
		Paddy converted to plantation crops	5.60
		Paddy converted to rubber	30.85
		River	144.06
		Virippu+Mundakan+Punja	158.56
			7397.13
			41149.76
	Aralam	Other landuses	4219.23
		River	108.42
		Virippu+Mundakan	1.54
			4329.19
	Ayyankunnu	Other landuses	14833.66
		Paddy converted to banana+tapioca	6.58
		Paddy converted to built-up land	30.59
Paddy converted to coconut		40.61	
Paddy converted to cultivable wasteland		1.24	
Paddy converted to fallow land		12.99	
Paddy converted to mixed trees		23.43	
Paddy converted to plantation crops		0.54	
Paddy converted to rubber		8.55	
River		262.64	
Virippu+Mundakan		204.02	
		15424.86	

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
	Keezhallur	Other landuses	2535.08
		Paddy converted to banana+tapioca	1.77
		Paddy converted to built-up land	4.91
		Paddy converted to cashew	55.98
		Paddy converted to coconut	7.00
		Paddy converted to cultivable wasteland	1.61
		Paddy converted to fallow land	9.75
		Paddy converted to mixed trees	22.34
		Paddy converted to rubber	49.53
		River	2.17
		Virippu+Mundakan	63.25
			2753.41
	Keezhur-Chavassery	Other landuses	3947.06
		Paddy converted to built-up land	61.34
		Paddy converted to cashew	13.03
		Paddy converted to coconut	20.07
		Paddy converted to cultivable wasteland	9.04
		Paddy converted to mixed trees	28.35
		Paddy converted to plantation crops	4.47
		Paddy converted to rubber	30.55
		Reservoir	155.83
		River	113.45
		Virippu+Mundakan	199.13
		Water Body	8.99
			4591.30
	Koodali	Other landuses	3742.48
		Paddy converted to banana+tapioca	1.90
		Paddy converted to built-up land	32.48
		Paddy converted to cashew	20.91
		Paddy converted to coconut	19.30
		Paddy converted to mixed trees	53.25
		Paddy converted to plantation crops	6.66
		Paddy converted to rubber	11.91
		River	66.60
		Virippu+Mundakan+Junja	162.87
			4118.35

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Kalliassery Block	Payam	Other landuses	4709.12
		Paddy converted to banana+tapioca	1.70
		Paddy converted to built-up land	6.92
		Paddy converted to cashew	5.11
		Paddy converted to coconut	16.79
		Paddy converted to mixed trees	20.56
		Paddy converted to rubber	12.15
		Reservoir	3.92
		River	324.81
		Virippu+Mundakan	128.74
		Water Body	0.38
		5230.21	
	Thillankeri	Other landuses	2270.27
		Paddy converted to built-up land	0.78
		Paddy converted to coconut	2.66
		Paddy converted to fallow land	1.77
		Paddy converted to mixed trees	15.13
		River	1.13
		Virippu+Mundakan+Punja	191.14
			2482.87
		38930.21	
	Cherukunnu	Mud	23.05
		Other landuses	516.21
		Paddy converted to built-up land	24.30
		Paddy converted to coconut	58.33
		Paddy converted to	3.12
		Paddy converted to cultivable	17.25
		Paddy converted to fallow land	29.41
		Paddy converted to mixed trees	37.17
		River	384.12
		Virippu+Mundakan	387.87
		Water Body	33.20
		wetland	24.35
		1538.37	
Cheruthazham		Mud	4.74
		Other landuses	2380.94
		Paddy converted to arecanut	4.35
		Paddy converted to built-up land	1.05
		Paddy converted to coconut	27.86
		Paddy converted to	3.55
	Paddy converted to fallow land	7.77	
	Paddy converted to mixed trees	3.56	
	River	138.32	
	Swampy lands	4.03	
	Virippu+Mundakan	688.84	
Water Body	0.46		
	3265.47		

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
	Ezhome	Other landuses	894.44
		Paddy converted to arecanut	59.03
		Paddy converted to banana+tapioca	38.68
		Paddy converted to built-up land	12.97
		Paddy converted to coconut	107.37
		Paddy converted to	0.03
		Paddy converted to cultivable	55.36
		Paddy converted to fallow land	17.90
		Paddy converted to mixed trees	34.08
		River	172.56
		Virippu+Mundakan	449.74
			1842.15
	Kalliasseri	Marshy land	62.50
		Other landuses	895.10
		Paddy converted to banana+tapioca	6.59
		Paddy converted to built-up land	29.07
		Paddy converted to coconut	255.28
		Paddy converted to	50.55
		Paddy converted to cultivable	3.40
		Paddy converted to fallow land	1.23
		Paddy converted to mixed trees	65.02
		River	62.30
		Virippu+Mundakan	229.90
			1660.93
	Kannapuram	Other landuses	886.20
		Paddy converted to banana+tapioca	5.98
		Paddy converted to built-up land	2.25
		Paddy converted to coconut	78.06
		Paddy converted to fallow land	0.76
		Paddy converted to mixed trees	48.45
		River	192.17
		Virippu+Mundakan	295.31
		wetland	8.84
			1518.01
	Madayi	Mud	9.65
		Other landuses	1097.43
		Paddy converted to arecanut	3.53
		Paddy converted to banana+tapioca	3.79
		Paddy converted to built-up land	16.59
		Paddy converted to coconut	106.66
		Paddy converted to	150.26
		Paddy converted to cultivable	33.73
		Paddy converted to fallow land	4.39
		Paddy converted to mixed trees	53.56
		River	132.60
		Virippu+Mundakan	85.71
		Water Body	2.75
			1700.63

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
	Chirakkal	Marshy land	96.53
		Other landuses	904.23
		Paddy converted to banana+tapioca	22.48
		Paddy converted to built-up land	20.55
		Paddy converted to coconut	28.41
		Paddy converted to cultivable	12.56
		Paddy converted to fallow land	6.00
		Paddy converted to mixed trees	13.09
		River	148.38
		Virippu	4.23
		Virippu+Mundakan	44.02
		Water Body	4.83
		wetland	0.22
			1305.53
	Pallikunnu	Other landuses	550.09
		Paddy converted to banana+tapioca	2.14
		Paddy converted to built-up land	8.42
		Paddy converted to coconut	76.94
		Paddy converted to fallow land	4.76
		Paddy converted to mixed trees	42.36
		River	0.04
		Virippu+Mundakan	1.38
			686.14
	Pappinisseri	Marshy land	1.07
		Mud	26.74
		Other landuses	852.23
		Paddy converted to banana+tapioca	35.66
		Paddy converted to built-up land	16.78
		Paddy converted to coconut	49.00
		Paddy converted to	54.44
		Paddy converted to cultivable	11.39
		Paddy converted to fallow land	3.08
		Paddy converted to mixed trees	27.96
		River	312.89
		Virippu+Mundakan	62.63
		wetland	5.72
			1459.58
	Puzhathi	Marshy land	106.98
		Other landuses	626.61
		Paddy converted to banana+tapioca	18.68
		Paddy converted to built-up land	1.10
		Paddy converted to coconut	26.91
		Paddy converted to cultivable	1.55
		Paddy converted to fallow land	0.74
		Paddy converted to mixed trees	11.12
		River	52.06
		Virippu+Mundakan	25.03
			870.78

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Koothuparamba Block	Valapattanam	Other landuses	153.38
		Paddy converted to built-up land	1.58
		Paddy converted to cultivable wasteland	4.80
		Paddy converted to mixed trees	5.11
		River	43.53
		Virippu	0.00
		Virippu+Mundakan	1.34
			209.74
	Chittariparamba	Mundakan	0.32
		Other landuses	3133.71
		Paddy converted to built-up land	41.54
		Paddy converted to cashew	11.78
		Paddy converted to coconut	115.94
		Paddy converted to mixed trees	18.54
		Paddy converted to plantation crops	35.52
		Paddy converted to rubber	17.15
		River	60.27
		Virippu+Mundakan	23.50
			3458.29
	Kottayam	Other landuses	812.20
		Paddy converted to built-up land	3.98
		Paddy converted to coconut	70.27
		Paddy converted to mixed trees	3.89
		River	6.52
		Virippu+Mundakan	0.05
		Water Body	4.19
			901.12
Kunnothuparamba	Other landuses	2741.52	
	Paddy converted to built-up land	47.60	
	Paddy converted to coconut	60.96	
	Paddy converted to mixed trees	19.28	
	Paddy converted to plantation crops	18.23	
	Virippu+Mundakan	78.93	
Mangattidom	Other landuses	2926.85	
	Paddy converted to coconut	79.49	
	Paddy converted to mixed trees	36.43	
	River	70.73	
	Virippu+Mundakan+Punja	116.12	

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)	
Koothuparambu Municipality	Pattiom	canal	3.03	
		Other landuses	3419.05	
		Paddy converted to banana+tapioca	1.87	
		Paddy converted to built-up land	59.66	
		Paddy converted to coconut	41.88	
		Paddy converted to cultivable	8.84	
		Paddy converted to mixed trees	28.46	
		Paddy converted to rubber	6.99	
		River	26.63	
		Virippu+Mundakan	51.93	
		Water Body	1.46	
			3649.80	
	Thriprangottur	Other landuses	2985.77	
		Paddy converted to built-up land	29.82	
		Paddy converted to coconut	77.00	
		Paddy converted to cultivable	0.25	
		Paddy converted to mixed trees	38.40	
		Paddy converted to rubber	10.84	
		River	13.92	
		Virippu+Mundakan	77.36	
		3233.37		
		17476.66		
	Mattannur Municipality		Other landuses	1551.17
			Paddy converted to built-up land	18.69
			Paddy converted to coconut	104.95
			Paddy converted to mixed trees	5.10
			River	1.53
			Virippu+Mundakan	38.25
				1719.70
		1719.70		
	Pannur Block		Other landuses	3920.88
			Paddy converted to banana+tapioca	16.54
			Paddy converted to built-up land	63.98
Paddy converted to cashew			42.30	
Paddy converted to coconut			9.14	
Paddy converted to fallow land			5.85	
Paddy converted to mixed trees			71.98	
Paddy converted to rubber			5.36	
River			98.02	
Virippu+Mundakan+Punja			135.89	
		4369.94		
Chokli		Other landuses	1005.39	
		Paddy converted to built-up land	2.49	
	Paddy converted to coconut	65.58		
	Paddy converted to cultivable	6.26		
	Paddy converted to mixed trees	21.47		
	River	15.44		
Virippu+Mundakan	42.35			
	1158.99			

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
	Kariyad	Other landuses	824.18
		Paddy converted to banana+tapioca	1.80
		Paddy converted to built-up land	62.18
		Paddy converted to coconut	66.53
		Paddy converted to mixed trees	34.58
		River	58.10
		Virippu+Mundakan	34.90
			1082.27
	Kathirur	Other landuses	42.13
		Paddy converted to built-up land	20.47
		Paddy converted to coconut	58.11
		Paddy converted to	12.57
		Paddy converted to mixed trees	30.13
		River	1040.35
		Virippu+Mundakan	9.03
		Water Body	0.66
			1213.44
	Mokeri	canal	5.99
		Other landuses	1017.97
		Paddy converted to built-up land	1.38
		Paddy converted to coconut	7.44
		Paddy converted to cultivable	15.13
		Paddy converted to mixed trees	5.32
		River	19.20
		Virippu+Mundakan	58.71
			1131.13
	Panniyannur	Other landuses	893.28
		Paddy converted to banana+tapioca	2.52
		Paddy converted to built-up land	22.11
		Paddy converted to coconut	48.83
		Paddy converted to mixed trees	2.44
		River	6.75
		Virippu+Mundakan	16.48
			992.39
	Panoor	canal	5.15
		Other landuses	761.51
		Paddy converted to built-up land	12.90
		Paddy converted to coconut	20.16
		Paddy converted to mixed trees	8.36
		Virippu+Mundakan	9.63
			817.72
	Peringalam	Mundakan	2.25
		Other landuses	854.71
		Paddy converted to built-up land	27.76
		Paddy converted to coconut	49.44
		Paddy converted to	26.30
		Paddy converted to cultivable	22.15
		Paddy converted to mixed trees	34.08
		River	4.55
		Virippu+Mundakan	1.44
			1022.68
			7418.62

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Payyannur Block	Cherupuzha	Other landuses	6166.19
		Paddy converted to arecanut	2.19
		Paddy converted to coconut	3.15
		Paddy converted to mixed trees	2.11
		Paddy converted to rubber	5.52
		River	77.23
		6256.40	
	Erimam-Kuttoor	Other landuses	7144.20
		Paddy converted to arecanut	16.72
		Paddy converted to built-up land	4.38
		Paddy converted to cashew	1.35
		Paddy converted to coconut	26.31
		Paddy converted to cultivable	10.27
		Paddy converted to fallow land	10.90
		Paddy converted to mixed trees	16.78
		Paddy converted to plantation crops	12.12
		Paddy converted to rubber	7.16
		River	33.34
		Virippu+Mundakan	116.90
		7400.44	
	Kankole- Alapadamba	Other landuses	3765.86
		Paddy converted to arecanut	0.57
		Paddy converted to banana+tapioca	1.66
		Paddy converted to built-up land	5.74
		Paddy converted to cashew	2.95
		Paddy converted to coconut	18.11
		Paddy converted to	4.79
		Paddy converted to fallow land	4.10
		Paddy converted to mixed trees	9.38
		River	5.16
		Virippu+Mundakan	382.98
	4201.30		
	Karivellur-Peralam	Other landuses	1590.90
		Paddy converted to built-up land	7.46
		Paddy converted to coconut	72.56
		Paddy converted to	6.04
		Paddy converted to fallow land	25.23
		Paddy converted to mixed trees	44.99
		River	11.79
	Virippu+Mundakan	461.11	
	2220.08		
	Kunjimangalam	Other landuses	886.60
		Paddy converted to built-up land	11.56
		Paddy converted to coconut	35.58
		Paddy converted to	13.73
		Paddy converted to fallow land	4.50
		Paddy converted to mixed trees	86.48
River		163.18	
Virippu+Mundakan	312.59		
1514.21			

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Payyannur Municipality	Peringome-Vayakkara	Other landuses	8514.85
		Paddy converted to banana+tapioca	1.23
		Paddy converted to built-up land	5.57
		Paddy converted to cashew	5.82
		Paddy converted to coconut	5.70
		Paddy converted to	8.54
		Paddy converted to mixed trees	21.38
		Paddy converted to pepper	18.27
		Paddy converted to plantation crops	18.46
		Paddy converted to rubber	4.73
		River	65.53
		Virippu+Mundakan	58.48
			8728.55
	Ramanthali	Other landuses	2210.03
		Paddy converted to arecanut	13.07
		Paddy converted to banana+tapioca	4.13
		Paddy converted to built-up land	25.34
		Paddy converted to coconut	230.55
		Paddy converted to	11.47
		Paddy converted to cultivable	29.58
		Paddy converted to fallow land	2.19
		Paddy converted to mixed trees	53.68
		River	308.59
		Virippu+Mundakan	122.39
		Water Body	14.60
			3025.63
		33346.62	
		Other landuses	3244.86
		Paddy converted to banana+tapioca	12.50
		Paddy converted to built-up land	21.87
		Paddy converted to coconut	339.70
		Paddy converted to	4.65
		Paddy converted to cultivable	1.76
Paddy converted to mixed trees		46.89	
River		302.05	
Virippu+Mundakan		1384.39	
Water Body		10.77	
	5369.45		

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Peravoor Block	Kanichar	Other landuses	3810.82
		Paddy converted to banana+tapioca	7.31
		Paddy converted to built-up land	14.38
		Paddy converted to coconut	39.67
		Paddy converted to mixed trees	48.20
		Paddy converted to plantation crops	10.50
		Paddy converted to rubber	35.93
		River	76.61
		Virippu+Mundakan	8.74
		Virippu+Mundakan+Punja	31.54
			4083.69
	Kelakom	Other landuses	3653.65
		Paddy converted to banana+tapioca	5.13
		Paddy converted to built-up land	13.14
		Paddy converted to coconut	30.52
		Paddy converted to mixed trees	42.54
		Paddy converted to plantation crops	7.24
		Paddy converted to rubber	3.37
		River	104.79
		Virippu+Mundakan	0.68
		3861.06	
	Kolayade	Mundakan	2.68
		Other landuses	10880.03
		Paddy converted to built-up land	13.73
		Paddy converted to cashew	9.55
		Paddy converted to coconut	11.49
		Paddy converted to mixed trees	62.70
		Paddy converted to plantation crops	43.74
		Paddy converted to rubber	161.97
		River	45.24
		Virippu+Mundakan	0.86
		Virippu+Mundakan+Punja	1.37
		11233.36	
	Kottiyoor	Other landuses	9708.18
		Paddy converted to banana+tapioca	2.82
		Paddy converted to built-up land	27.62
		Paddy converted to coconut	23.40
		Paddy converted to mixed trees	85.18
		Paddy converted to plantation crops	3.38
		Paddy converted to rubber	6.88
		River	62.89
	Virippu+Mundakan	1.57	
	9921.92		

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Thalassery Block	Malur	Mundakan	0.02
		Other landuses	4830.27
		Paddy converted to banana+tapioca	16.56
		Paddy converted to built-up land	52.73
		Paddy converted to cashew	6.17
		Paddy converted to coconut	40.11
		Paddy converted to cultivable	0.98
		Paddy converted to fallow land	1.74
		Paddy converted to mixed trees	47.06
		Paddy converted to plantation crops	30.45
		Paddy converted to rubber	55.06
		River	18.47
		Virippu+Mundakan+Punja	91.47
			5191.09
	Muzhakkunnu	Other landuses	2875.44
		Paddy converted to banana+tapioca	4.58
		Paddy converted to built-up land	28.53
		Paddy converted to cashew	6.03
		Paddy converted to coconut	23.20
		Paddy converted to mixed trees	29.81
		River	71.44
		Virippu+Mundakan+Punja	133.18
		3172.22	
	Peravoor	Mundakan	0.82
		Other landuses	2639.16
		Paddy converted to banana+tapioca	2.81
		Paddy converted to built-up land	36.37
		Paddy converted to cashew	13.81
		Paddy converted to coconut	37.07
		Paddy converted to mixed trees	53.78
		Paddy converted to rubber	9.95
		River	31.76
		Virippu+Mundakan	0.00
		Virippu+Mundakan+Punja	52.27
			2877.80
		40341.15	
	Other landuses	1463.45	
	Paddy converted to built-up land	4.45	
	Paddy converted to coconut	11.11	
	Paddy converted to	13.55	
	Paddy converted to fallow land	0.93	
	Paddy converted to mixed trees	23.38	
	River	3.24	
	Virippu+Mundakan	97.19	
	Virippu+Mundakan+Punja	4.49	
		1621.80	

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
	Dharmadom	Mangrove swamp	4.51
		Mud	56.43
		Other landuses	792.46
		Paddy converted to built-up land	5.62
		Paddy converted to coconut	32.09
		Paddy converted to cultivable	0.87
		Paddy converted to fallow land	28.17
		Paddy converted to mixed trees	53.42
		River	127.46
		Virippu+Mundakan wetland	19.33 5.62
			1125.96
	Eranjoli	Mud	44.10
		Other landuses	827.34
		Paddy converted to built-up land	9.49
		Paddy converted to coconut	51.58
		Paddy converted to cultivable	10.29
		Paddy converted to fallow land	0.75
		Paddy converted to mixed trees	0.67
		River	74.21
		Virippu+Mundakan	16.17
		Water Body	9.14
			1043.73
	Muzhappilangad	Marshy land	3.91
		Mud	2.94
		Other landuses	586.40
		Paddy converted to banana+tapioca	10.24
		Paddy converted to built-up land	2.56
		Paddy converted to coconut	36.45
		Paddy converted to mixed trees	38.15
		River	26.57
		Virippu	7.67
		Virippu+Mundakan	1.85
			716.74
	New Mahe	Other landuses	426.03
		Paddy converted to coconut	16.94
		Paddy converted to cultivable	10.90
		River	22.77
		Virippu+Mundakan	3.58
			480.22

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Thalassery Municipality	Pinarayi	Mangrove swamp	16.24
		Mud	40.91
		Other landuses	1587.17
		Paddy converted to banana+tapioca	7.58
		Paddy converted to built-up land	16.14
		Paddy converted to coconut	99.04
		Paddy converted to fallow land	4.16
		Paddy converted to mixed trees	57.38
		River	64.49
		Virippu+Mundakan	53.90
			1946.99
	Vengad	Other landuses	2499.33
		Paddy converted to built-up land	24.97
		Paddy converted to coconut	89.42
		Paddy converted to mixed trees	5.41
		River	78.45
		Virippu+Mundakan+Punja	139.40
		2836.97	
		9772.40	
	Thaliparambu Block	Alacode	Mud
Other landuses			2007.30
Paddy converted to built-up land			79.89
Paddy converted to coconut			60.05
Paddy converted to mixed trees			105.96
River			112.11
Virippu+Mundakan			1.07
Water Body			0.73
	2498.09		
Thaliparambu Block	Alacode	Other landuses	8711.72
		Paddy converted to arecanut	0.10
		Paddy converted to mixed trees	3.31
		Paddy converted to rubber	5.03
		River	61.15
			8781.31
	Chapparapadavu	Mundakan	8.95
		Other landuses	6287.71
		Paddy converted to arecanut	4.07
		Paddy converted to coconut	13.28
		Paddy converted to	5.18
		Paddy converted to mixed trees	45.20
		Paddy converted to plantation crops	12.93
		Paddy converted to rubber	2.74
River	154.63		
	6534.69		

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
	Chengalai	Other landuses	6250.53
		Paddy converted to arecanut	0.59
		Paddy converted to banana+tapioca	53.04
		Paddy converted to built-up land	35.56
		Paddy converted to coconut	52.24
		Paddy converted to	3.64
		Paddy converted to cultivable	5.81
		Paddy converted to fallow land	2.34
		Paddy converted to mixed trees	54.41
		Paddy converted to plantation crops	3.74
		Paddy converted to rubber	57.58
		River	94.81
		Virippu+Mundakan	249.14
			6863.45
	Kadannapalli-Panapuzha	Other landuses	4919.34
		Paddy converted to arecanut	0.63
		Paddy converted to banana+tapioca	9.04
		Paddy converted to built-up land	3.21
		Paddy converted to coconut	37.08
		Paddy converted to cultivable	5.01
		Paddy converted to mixed trees	8.13
		Paddy converted to plantation crops	8.95
		Paddy converted to rubber	10.19
		River	66.74
		Virippu+Mundakan	194.49
			5262.81
	Kurumathur	Other landuses	4642.47
		Paddy converted to arecanut	10.44
		Paddy converted to banana+tapioca	10.94
		Paddy converted to built-up land	4.84
		Paddy converted to cashew	1.89
		Paddy converted to coconut	74.51
		Paddy converted to	37.41
		Paddy converted to fallow land	8.14
		Paddy converted to mixed trees	29.60
		Paddy converted to plantation crops	8.41
		River	100.84
		Virippu+Mundakan	216.49
		Water Body	1.44
			5147.43
	Naduvil	Other landuses	7843.29
		Paddy converted to cashew	1.58
		Paddy converted to coconut	1.57
		Paddy converted to pepper	5.17
		Paddy converted to rubber	23.11
		River	13.14
		Virippu	10.59
			7898.45

BLOCK	PANCHAYAT	LAND USES	AREA (Ha.)
Thaliparambu Municipality	Pariyaram	Other landuses	4916.71
		Paddy converted to arecanut	7.18
		Paddy converted to banana+tapioca	5.64
		Paddy converted to built-up land	16.27
		Paddy converted to coconut	109.88
		Paddy converted to	15.82
		Paddy converted to fallow land	41.87
		Paddy converted to mixed trees	50.70
		Paddy converted to rubber	8.21
		River	131.56
		Virippu+Mundakan	295.22
			5599.06
	Pattuvam	Other landuses	883.65
		Paddy converted to arecanut	4.58
		Paddy converted to banana+tapioca	30.76
		Paddy converted to coconut	25.82
		Paddy converted to	4.08
		Paddy converted to cultivable	184.58
		River	159.93
		Virippu+Mundakan	316.32
		Water Body	0.71
		1610.43	
	Udayagiri	Other landuses	5772.51
		Paddy converted to coconut	0.99
		River	105.48
		5878.98	
		53576.61	
		Mud	9.56
		Other landuses	3357.16
		Paddy converted to arecanut	17.72
		Paddy converted to banana+tapioca	67.76
		Paddy converted to built-up land	39.94
		Paddy converted to coconut	290.56
Paddy converted to		11.85	
coconut+arecanut			
Paddy converted to cultivable		106.20	
Paddy converted to fallow land		28.16	
Paddy converted to mixed trees		45.61	
River		313.76	
Virippu+Mundakan		71.63	
Water Body		2.83	
wetland	1.93		
	4364.69		
	District Total	296600.00	













0 1.5 3 6 9 12
Kilometers

1 : 400,000

WETLAND KANNUR DISTRICT

WETLAND

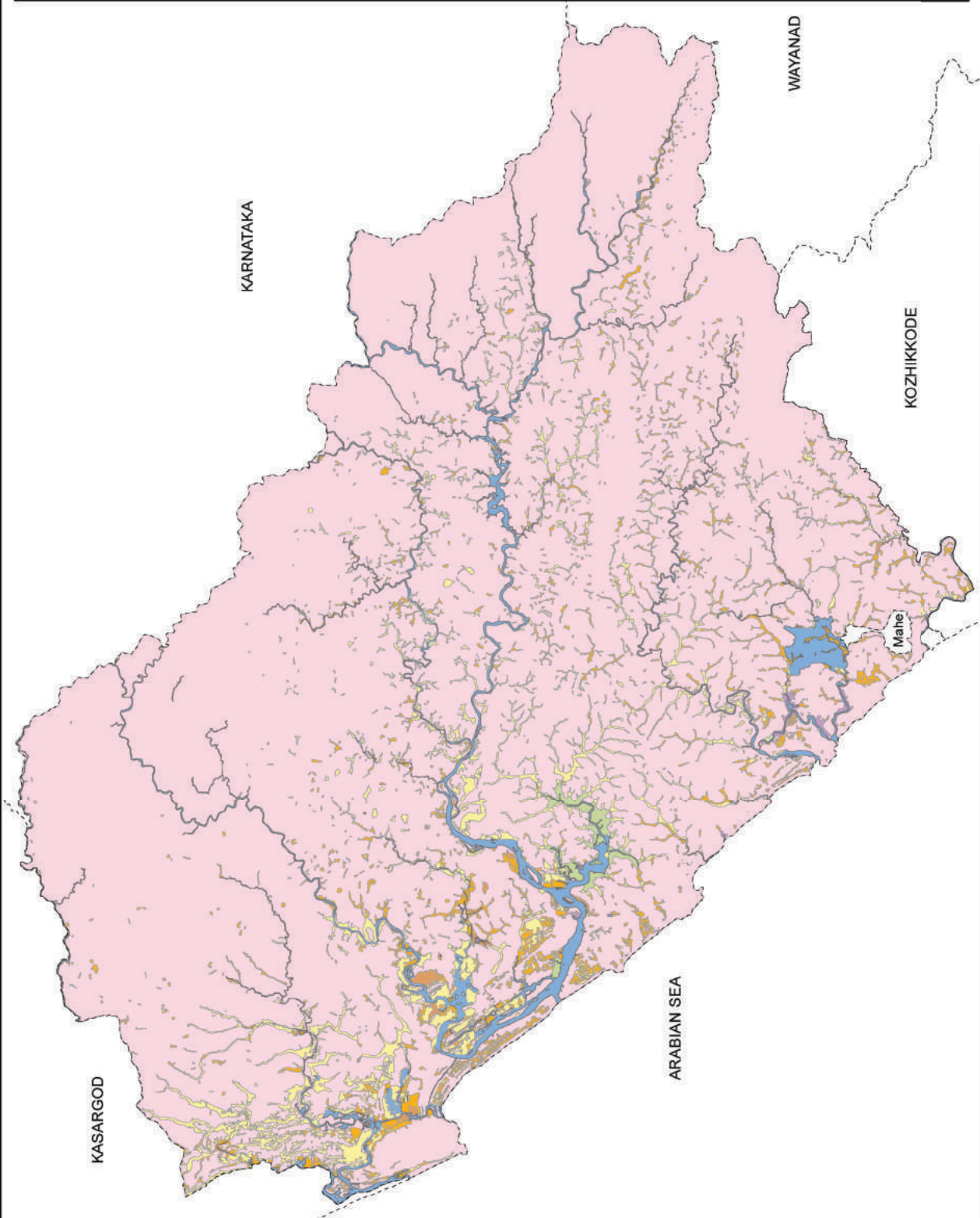
-  Paddy
-  Paddy converted to agriculture land
-  Paddy converted to cultivable wasteland
-  Mangrove swamp
-  Marshy land
-  Mud
-  Other landuses
-  Swampy lands
-  wetland
-  Water Body

KERALA

KANNUR



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



WASTELANDS

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 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 proejt is as follows:

1. Land with dense scrub
2. Land with open scrub
3. Waterlogged - permanent
4. Waterlogged - seasonal
5. Scrub dominated forest
6. Degraded pastures/grazing land
7. Sands – riverine
8. Coastal sands
9. Mining wastelands
10. Barren rocky area

Data base

Under wasteland mapping, four types of data are used. They are Satellite data, Topographic maps, Legacy data and Ground data.

Satellite data

The IRS P6 LISS III geometrically corrected data with in the framework of NNRMS specified standards form the primary input for updating of wastelands. Multi - temporal data sets are used for the updation of wastelans in a pursuit to achieve

improved classification accuracies. The geo-coded scene covers an area of 27 x 27 km covering approximately 729 sq. km.

Topographic maps

Survey of India topographical maps on 1:50000 scale in digital form will be used as a base layer for mapping and planning groundtruth collection. The digital topomap layer contains administrative boundaries (international, state, district, tehsil, village and forest management boundary), major roads, railway, drainage, settlements etc.

Legacy data

The wasteland layer generated earlier using the 2003 remotesensing data will form the primary legacy layer. The other layers such as landuse/landcover and biodiversity data generated on different scales will be used as a reference while updating wasteland categories.

Ground data

Ground truth or ground investigation forms are important and integral part of the interpretation methodology of remotely sensed data. Ground data is attributed to collection, verification and measurement of information about the different surface features on earth, which are responsible for the occurrence of specific spectral reflectance behavioral patterns. Ground truth is dependent upon the extent of doubtful areas, the sampling procedure adopted during field traverses, the terrain conditions, classification accuracy requirements etc. However, good quality satellite data (more contrast and cloud free), interpretation skill/experience and knowledge of the study area can minimize ground truth collection.

Methodology

The methodology is essentially digital interpretation of Multi – season IRS-P6 (LISS - III) geo-coded image (FCC) for identification of different categories of wasteland 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 wastelands. 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

Procedure

Preparing the data is a primary requirement before undertaking image interpretation and subsequent analysis. Preparation of datasets involves the following steps.

Step 1 - Geo - rectification

Satellite data which is available in a raster form need to be geo-referenced to a map coordinate system so as to generate spatial information to be used subsequently in a GIS environment. The process of geo-rectification involve assigning a coordinate system and transforming the raster image to input coordinate system which enables viewing, querying, and analyzing the geographic data. Images of different points of time are often aquired from sensors / platforms with varying geometry. Hence such images need to be referenced to a common projection system. The ETM +data which is available in UTM projection with wgs84 datum as a reference image is used for rectification of IRS LISS III 2005 - 2006 data using image to image registration algorithm.

Step 2 - Tile preparation for image interpretation

In conformity with the National Spacial Frame work defined for NNRMS standards the entire state is devided to tile scheme (consisting of 15 minutes x 15 minutes) for interpretation, edge matching, quality assurance and final map preparation. For the ease of interpretation these tiles will be further devided in to grids of 5'x5'.

Step 3 - Image preparation

Consistency in the image handling requires a thorough pre-processing of satellite data for inter and intra image alignments in terms of geometry and radiometry. Image data in Geo Tiff format may be imported using suitable format converters (National spatial framework projection parameter from NNRMS standards) and care to be taken to maintain the geo referencing scheme.

Step 4 - Image enhancements

In order to improve the classification accuracy image enhancement methods are used. It is essential for improving the image contrast and allows the best possible delineation of wastelands by fine tuning the contrast.

Image interpretation

Image interpretation is defined as “the art of examining the images for the purpose of identifying objects or surface features and judging their significance”. Interpretation key was prepared on the basis of image characteristics like tone, texture, shape, size, pattern, location and association that generally play a very important role for identification of various objects. Wasteland vector data of year 2003 is used as a template for updating the wasteland vector polygons by overlying it on to 2005-2006 satellite data.

Analyzing wasteland dynamics

For analyzing wasteland dynamics, overlay operation is done in between Interpreted vector for current year (2005-2006) and the wasteland vectors for the year 2003.

Ground data collection and verification

Ground truth / field verification is an important component in wasteland mapping and its validation exercise. It is very helpful in improving the classification accuracy of various wasteland categories.

Computation of statistics

The district wise area statistics of different wasteland categories is generated. Out of the different categories of wasteland classified by National Remote Sensing Agency, the following seven categories have been identified in the district. The different categories identified and mapped in the State are as follows.

Scrubland: - This is a land which is generally prone to deterioration due to erosion. Such land occupies relatively high topographic locations. Scrublands are associated with moderate slopes in plains and foot hills and are generally surrounded by agricultural lands.

On the basis of presence of vegetation cover scrublands are classified into two sub-classes.

- 1. Land with dense scrub:** - These areas possess shallow and skeletal soils, at times chemically degraded, extremes of slopes, severely eroded and land subjected to excessive aridity with scrub dominating the landscape. These are having a tendency for intermixing with cropped areas.
- 2. Land with open scrub:** - This is a land which is generally prone to deterioration due to erosion and having no scrub cover. Such lands possess sparse vegetation or devoid of scrub and have a thin soil covers.
- 3. Scrub dominated forest:** - Land, as notified under the Forest Act and those lands with various types of forest cover, in which vegetative cover is less than 20 per cent are classified as degraded land. These areas are generally confined to the fringe areas of notified forests.
- 4. Degraded pastures/grazing land :-** All those grazing lands in non-forest areas, whether or not they are permanent pastures or meadows, which have become degraded due to lack of proper soil conservation and drainage measures, fall under this category.

5. Sand (coastal / desert / riverine): - It refers to land with accumulation of sand, in coastal, riverine or inland areas. Mostly these lands are found in deserts, riverbeds and along the shores.

a. Sands – Riverine: - Riverine sands are those that are accumulated in the flood plains as sheets, or sand bars. These include inland sand which was accumulated along the abandoned river courses or by reworking of sand deposits by wind action leading to long stretches of sand dunes or sand cover areas.

b. Coastal sands: - These are the accumulation of sand that are seen as a strip along the seacoast due to action of seawater.

6. Mining wastelands: - Lands where mining operations bring about the deterioration of land are the mining wastelands. The industrial wastelands are lands which have deteriorated on account of large scale industrial effluent discharge.

7. Barren rocky area: - The rock exposures of varying lithology often barren and devoid of soil cover and vegetation. They occur amidst hill-forests as openings or as isolated exposures on plateau and plains. Barren rocky areas occur on steep isolated hillocks / hill slopes, crests, plateau and eroded plains associated with barren and exposed rocky / stony wastes, lateritic outcrops, mining and quarrying sites.

Brief description on spatial distribution/physical condition of the wastelands

Table:19.1

Area and percentage of total of each category of wasteland

Sl. No.	Wasteland Categories	Area in sq.km	% of total geographical area	% of total wastelands
1	Land with Dense Scrub	8.91	0.30	4.36
2	Land with Open Scrub	157.25	5.28	76.98
3	Scrub dominated forest	17.07	0.57	8.36
4	Degraded pastures / grazing land	2.75	0.09	1.35
5	Coastal Sands	2.31	0.08	1.13
6	Mining wastelands	0.26	0.01	0.13
7	Barren rocky area	15.70	0.53	7.69
	Total	204.26	6.86	100.00

1. Land with open scrub:- This is the major wasteland category mapped in the district. It covers over an area of 5.28 percent of the total geographical area and 76.98 percent of the total wastelands identified in the district. This category is distributed mainly in the Peringome Vayakkara Panchayath (1954.84 ha), Erimam-Kuttoor Panchayath (1867.18 ha), Kankole-Alapadamba Panchayath (1422.76 ha), Kadannapalli-Panapuzha (1033.49 ha). These patches may be either lying waste or having poor crop growth due to soil limitation is revealed during the

ground truth studies. Lack of adequate irrigation facilities added with poor management could be the main reason for the under utilisation of these lands.

2. **Barren rocky/ stony waste/ sheet rock area:-** This is the second major category of wasteland identified in the district. It is seen as the hard non-quarriable type of laterite occurring as capping in the flat to gently sloping hill tops and does not permit normal cultural operation due to its adverse physical condition. A thin film of such occurring in ditches or crevices in this hard laterite, permit grass to come up during monsoon. Occurring over 0.53 percent of the total geographic area, this category is distributed in all the three taluks of the district in a total area of 15.70 sq. km. This category is distributed mainly in the Padiyur Panchayath (203.99 ha), Pattiom Panchayath (192.08 ha), Sreekantapuram Panchayath (171.77 ha), Kuttiyattoor Panchayath(70.92 ha).

Suggestions and solutions for reclamation of wastelands

Development of any wasteland should commence only after ascertaining the reasons of these lands lying unutilized. Absentee land lordism, higher development cost, lack of proper irrigation facilities, lack of interest on the part of the owners due to poor return etc. are found to be the major reasons behind it. Detailed investigations are to be conducted by experts and suitable development plans, formulated with a long term perspective and to be implemented at Government initiative. The owners are to be persuaded by providing the required inputs in terms of finance and incentives for developing the land. The barren rocky/ stony wastelands mapped in the district are mainly the hard non - quarriable type of laterite that is not suitable for normal cropping. As is seen in Kasaragod, this type of wasteland can also be brought under cashew or other hardy vegetation. Appropriate steps are to be taken for afforestation of the degraded forest land mapped in the district.

Table:-19.2

WASTE LAND DETAILS

BLOCK	PANCHAYAT	DESCRIPTION	AREA (Ha)	
Edakkad Block	Chelora	Barren Rocky Area	1.72	
		Land with Open Scrub	89.14	
		Miscellaneous polygon	2029.48	
				2120.34
	Chembilode	Barren Rocky Area	12.78	
		Land with Open Scrub	9.86	
		Miscellaneous polygon	2037.83	
				2060.46
	Edakkad	Barren Rocky Area	73.65	
		Land with Open Scrub	156.37	
		Miscellaneous polygon	1648.97	
				1878.99
	Elayavoor	Barren Rocky Area	19.40	
		Miscellaneous polygon	1118.51	
				1137.91
	Kadamboor	Barren Rocky Area	54.23	
		Land with Open Scrub	68.14	
		Miscellaneous polygon	811.70	
				934.07
	Kolacherry	Land with Open Scrub	39.17	
		Miscellaneous polygon	1882.16	
				1921.33
	Munderi	Land with Open Scrub	42.28	
		Miscellaneous polygon	1931.70	
			1973.99	
Peralassery	Barren Rocky Area	38.58		
	Land with Open Scrub	11.01		
	Miscellaneous polygon	1874.37		
			1923.95	
			13951.03	
Irikkur Block	Eruvassy	Barren Rocky Area	16.43	
		Land with Dense Scrub	67.83	
		Land with Open Scrub	155.17	
		Miscellaneous polygon	4832.60	
				5072.04
	Irikkur	Barren Rocky Area	9.60	
		Land with Dense Scrub	37.91	
		Land with Open Scrub	2.69	
		Miscellaneous polygon	1057.94	
				1108.14

BLOCK	PANCHAYAT	DESCRIPTION	AREA (Ha)
Iritti Block	Kuttiyattoor	Barren Rocky Area	70.92
		Land with Open Scrub	171.82
		Miscellaneous polygon	3293.17
			3535.91
	Malapattom	Barren Rocky Area	21.08
		Land with Dense Scrub	7.69
		Land with Open Scrub	179.58
		Miscellaneous polygon	1708.85
			1917.20
	Mayyil	Land with Open Scrub	76.80
		Miscellaneous polygon	3184.45
			3261.25
	Padiyur	Barren Rocky Area	203.99
		Land with Dense Scrub	266.01
		Land with Open Scrub	468.05
		Miscellaneous polygon	4431.13
			5369.18
	Payyavoor	Land with Dense Scrub	31.92
		Land with Open Scrub	148.21
		Miscellaneous polygon	6276.15
		Scrub Dominated Forest	249.18
			6705.46
	Sreekandapuram	Barren Rocky Area	171.77
		Land with Dense Scrub	34.08
		Land with Open Scrub	143.29
		Miscellaneous polygon	6434.33
			6783.46
	Ulickal	Land with Open Scrub	155.64
		Miscellaneous polygon	7230.97
		Scrub Dominated Forest	10.52
			7397.13
			41149.76
			0.00
Aralam	Land with Open Scrub	10.44	
	Miscellaneous polygon	3647.92	
	Scrub Dominated Forest	670.84	
		4329.19	
Ayyankunnu	Barren Rocky Area	47.92	
	Land with Dense Scrub	59.31	
	Land with Open Scrub	60.06	
	Miscellaneous polygon	14715.20	
	Scrub Dominated Forest	542.37	
	15424.86		

BLOCK	PANCHAYAT	DESCRIPTION	AREA (Ha)
Kalliassery Block	Keezhallur	Barren Rocky Area	15.42
		Land with Dense Scrub	71.97
		Land with Open Scrub	260.08
		Miscellaneous polygon	2405.94
			2753.41
	Keezhur-Chavassery	Barren Rocky Area	5.60
		Land with Dense Scrub	30.54
		Land with Open Scrub	228.97
		Miscellaneous polygon	4326.20
			4591.30
	Koodali	Barren Rocky Area	68.48
		Land with Dense Scrub	2.06
		Land with Open Scrub	276.15
		Miscellaneous polygon	3771.65
			4118.35
	Payam	Land with Dense Scrub	6.68
		Land with Open Scrub	71.09
		Miscellaneous polygon	5152.44
			5230.21
	Thillankeri	Land with Open Scrub	47.85
		Miscellaneous polygon	2435.02
			2482.87
			38930.21
	Cherukunnu	Barren Rocky Area	6.72
		Land with Open Scrub	9.37
		Miscellaneous polygon	1522.28
			1538.37
Cheruthazham	Land with Open Scrub	214.32	
	Miscellaneous polygon	3051.15	
		3265.47	
Ezhome	Land with Open Scrub	120.05	
	Miscellaneous polygon	1722.09	
		1842.15	
Kalliasseri	Land with Open Scrub	4.52	
	Miscellaneous polygon	1656.42	
		1660.93	
Kannapuram	Barren Rocky Area	5.22	
	Land with Open Scrub	88.44	
	Miscellaneous polygon	1424.36	
		1518.01	
Madayi	Barren Rocky Area	20.92	
	Land with Open Scrub	212.30	
	Miscellaneous polygon	1467.41	
		1700.63	

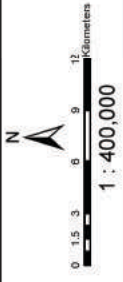
BLOCK	PANCHAYAT	DESCRIPTION	AREA (Ha)	
Kannur Municipality	Mattool	Miscellaneous polygon	1355.12	
			1355.12	
	Narath	Land with Open Scrub	2.35	
		Miscellaneous polygon	1697.76	
			1700.11	
			14580.79	
	Kannur Block		Miscellaneous polygon	1354.85
				1354.85
		Azhikode	Miscellaneous polygon	1602.98
				1602.98
Chirakkal		Miscellaneous polygon	1305.53	
			1305.53	
Pallikunnu		Miscellaneous polygon	686.14	
			686.14	
Pappinisseri		Land with Open Scrub	6.57	
		Miscellaneous polygon	1453.01	
		1459.58		
Puzhathi	Miscellaneous polygon	870.78		
		870.78		
Valapattanam	Miscellaneous polygon	209.74		
		209.74		
		6134.75		
Koothuparambu Block	Chittariparamba	Barren Rocky Area	47.96	
		Land with Open Scrub	150.63	
		Miscellaneous polygon	3259.69	
			3458.29	
	Kottayam	Miscellaneous polygon	901.12	
			901.12	
	Kunnothuparamba	Barren Rocky Area	56.14	
		Land with Dense Scrub	2.54	
		Land with Open Scrub	15.15	
		Miscellaneous polygon	2897.21	
			2971.04	
	Mangattidom	Land with Open Scrub	29.40	
		Miscellaneous polygon	3233.64	
			3263.04	
	Pattiom	Barren Rocky Area	192.08	
Land with Open Scrub		5.57		
Miscellaneous polygon		3452.15		
		3649.80		

BLOCK	PANCHAYAT	DESCRIPTION	AREA (Ha)	
Koothuparambu Municipality	Thriprangottur	Land with Dense Scrub	5.27	
		Land with Open Scrub	113.28	
		Miscellaneous polygon	3114.82	
				3233.37
				17476.66
	Mattannur Municipality	Chokli	Barren Rocky Area	14.30
			Miscellaneous polygon	1705.40
				1719.70
	Pannur Block	Chokli	Land with Dense Scrub	10.87
			Land with Open Scrub	121.73
			Miscellaneous polygon	4237.35
				4369.94
		Chokli	Miscellaneous polygon	1158.99
				1158.99
		Kariyad	Miscellaneous polygon	1082.27
				1082.27
		Kathirur	Miscellaneous polygon	1213.44
				1213.44
		Mokeri	Barren Rocky Area	11.92
			Land with Open Scrub	13.09
			Miscellaneous polygon	1106.12
			1131.13	
Panniyannur	Miscellaneous polygon	992.39		
		992.39		
Panoor	Miscellaneous polygon	817.72		
		817.72		
Peringalam	Land with Open Scrub	7.38		
	Miscellaneous polygon	1015.30		
		1022.68		
		7418.62		
Payyannur Block	Cherupuzha	Land with Open Scrub	18.79	
		Miscellaneous polygon	6221.31	
		Scrub Dominated Forest	16.30	
			6256.40	
	Erimam-Kuttoor	Barren Rocky Area	28.95	
		Land with Dense Scrub	30.88	
		Land with Open Scrub	1867.18	
		Miscellaneous polygon	5473.42	
			7400.44	
	Kankole-Alapadamba	Barren Rocky Area	2.33	
		Land with Dense Scrub	2.33	
		Land with Open Scrub	1422.76	
		Miscellaneous polygon	2773.87	
		4201.30		

BLOCK	PANCHAYAT	DESCRIPTION	AREA (Ha)
	Karivellur-Peralam	Land with Dense Scrub	5.50
		Land with Open Scrub	82.67
		Miscellaneous polygon	2131.92
			2220.08
	Kunjimangalam	Barren Rocky Area	38.18
		Land with Open Scrub	30.53
		Miscellaneous polygon	1445.50
			1514.21
	Perignome-Vayakkara	Barren Rocky Area	20.86
		Land with Dense Scrub	12.87
		Land with Open Scrub	1954.84
		Miscellaneous polygon	6739.97
			8728.55
	Ramanthali	Barren Rocky Area	23.75
		Coastal Sands	1.32
		Land with Open Scrub	326.50
		Miscellaneous polygon	2674.07
			3025.63
			33346.62
	Payyannur Municipality		Land with Open Scrub
		Miscellaneous polygon	5029.27
			5369.45
Peravoor Block			
Kanichar	Barren Rocky Area	4.36	
	Land with Open Scrub	23.93	
	Miscellaneous polygon	4038.65	
	Scrub Dominated Forest	16.76	
		4083.69	
Kelakom	Land with Dense Scrub	2.86	
	Land with Open Scrub	5.08	
	Miscellaneous polygon	3849.77	
	Scrub Dominated Forest	3.35	
		3861.06	
Kolayade	Barren Rocky Area	165.06	
	Land with Open Scrub	78.00	
	Miscellaneous polygon	10916.81	
	Scrub Dominated Forest	73.48	
		11233.35	
Kottiyoor	Barren Rocky Area	41.27	
	Land with Dense Scrub	0.69	
	Land with Open Scrub	2.83	
	Miscellaneous polygon	9867.68	
	Scrub Dominated Forest	9.45	
		9921.92	
Malur	Land with Open Scrub	490.35	
	Miscellaneous polygon	4700.74	
		5191.09	

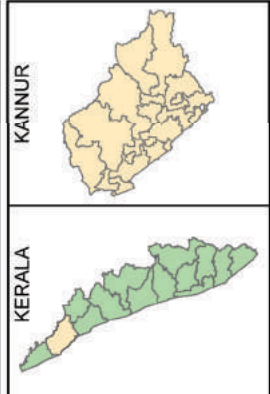
BLOCK	PANCHAYAT	DESCRIPTION	AREA (Ha)
Thalassery Block	Muzhakkunnu	Land with Open Scrub	81.96
		Miscellaneous polygon	3090.26
			3172.22
	Peravoor	Land with Open Scrub	38.20
		Miscellaneous polygon	2839.60
			2877.80
			40341.15
	Ancharakandy	Land with Open Scrub	40.91
		Miscellaneous polygon	1580.89
			1621.80
	Dharmadom	Coastal Sands	0.01
		Miscellaneous polygon	1125.96
			1125.96
	Eranjoli	Barren Rocky Area	8.22
Miscellaneous polygon		1035.51	
		1043.73	
Muzhappilangad	Miscellaneous polygon	716.74	
		716.74	
New Mahe	Land with Open Scrub	0.73	
	Miscellaneous polygon	479.48	
		480.22	
Pinarayi	Barren Rocky Area	6.33	
	Miscellaneous polygon	1940.66	
		1946.99	
Vengad	Land with Open Scrub	9.85	
	Miscellaneous polygon	2827.12	
		2836.97	
		9772.40	
Thalassery Municipality		Miscellaneous polygon	2498.09
			2498.09
Thaliparamba Block			
Alacode	Land with Open Scrub	185.24	
	Miscellaneous polygon	8595.28	
	Scrub Dominated Forest	0.80	
		8781.31	
Chapparapadavu	Land with Open Scrub	465.37	
	Miscellaneous polygon	6069.32	
		6534.69	
Chengalai	Land with Dense Scrub	59.86	
	Land with Open Scrub	934.73	
	Miscellaneous polygon	5868.86	
		6863.45	
Kadannapalli-Panapuzha	Land with Dense Scrub	19.50	
	Land with Open Scrub	1033.49	
	Miscellaneous polygon	4209.83	
		5262.81	

BLOCK	PANCHAYAT	DESCRIPTION	AREA (Ha)
	Kurumathur	Barren Rocky Area	18.20
		Land with Open Scrub	631.06
		Miscellaneous polygon	4498.18
			5147.43
	Naduvil	Barren Rocky Area	3.86
		Land with Dense Scrub	119.27
		Land with Open Scrub	136.60
		Miscellaneous polygon	7536.57
		Scrub Dominated Forest	102.14
			7898.45
	Pariyaram	Land with Open Scrub	1087.35
		Miscellaneous polygon	4511.71
			5599.06
	Pattuvam	Land with Open Scrub	251.93
		Miscellaneous polygon	1358.50
			1610.43
	Udayagiri	Land with Open Scrub	47.24
		Miscellaneous polygon	5824.38
		Scrub Dominated Forest	7.36
			5878.98
		53576.61	
Thaliparambu Municipality			
		Barren Rocky Area	17.37
		Land with Open Scrub	185.55
		Miscellaneous polygon	4161.77
			4364.69
		District Total	296600.00

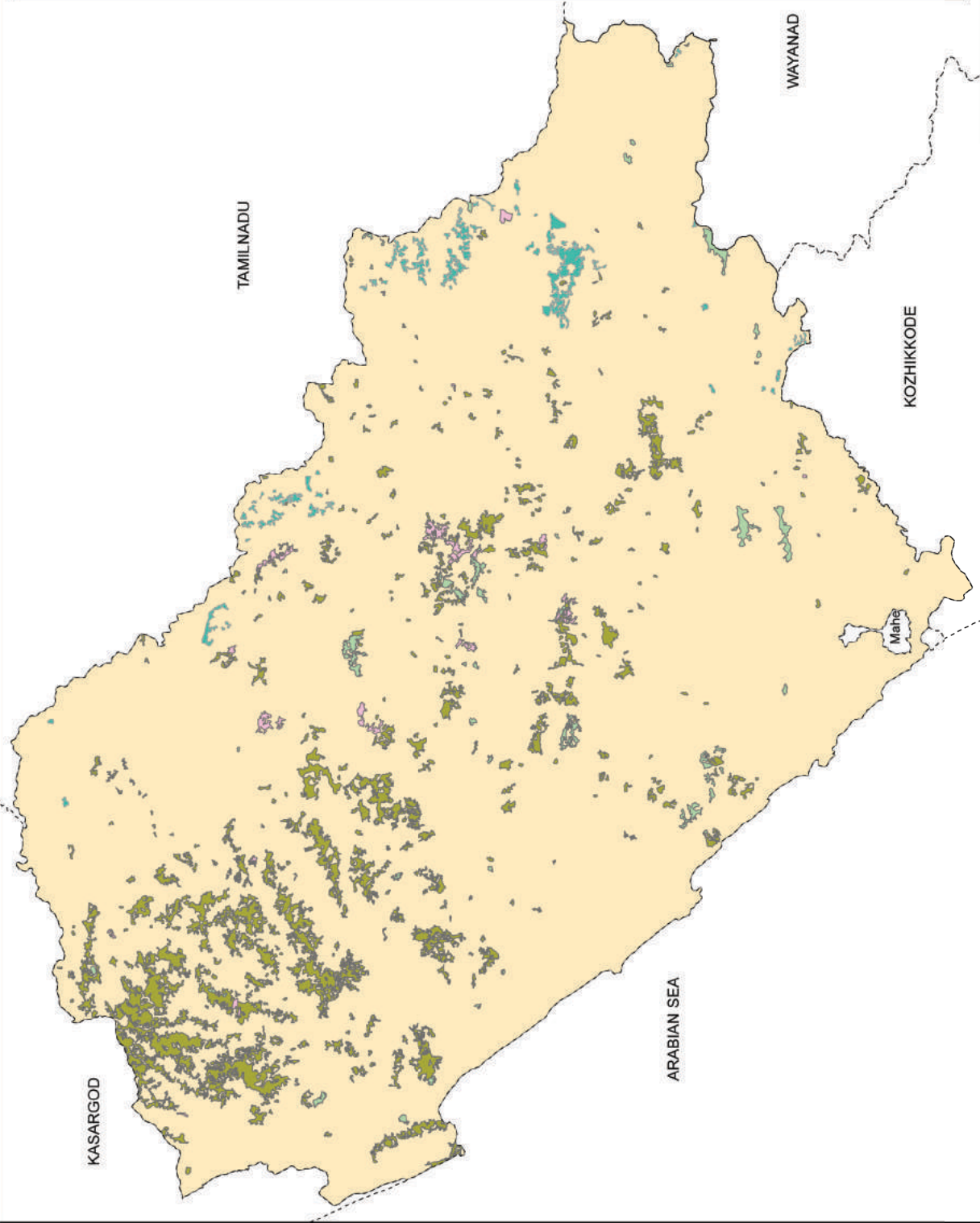


**WASTELAND
KANNUR DISTRICT**

- WASTELAND**
- Barren Rocky Area
 - Coastal Sands
 - Land with Dense Scrub
 - Land with Open Scrub
 - Miscellaneous polygon
 - Scrub Dominated Forest



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

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

WATER SHEDS

Sl. No.	WSCODE	Area(Ha)
1	MAHE	697.73
2	27K36ab	25.35
3	27K36ac	52.35
4	27K36ad	20.24
5	29M14a	85.22
6	29M15a	305.04
7	29M16a	65.78
8	29M16b	261.64
9	29M16c	6.86
10	29M17c	15.77
11	29M1a	339.93
12	29M26a	0.00
13	29M27a	5.99
14	29M28a	0.16
15	29M2a	281.09
16	29M30a	0.78
17	29M31a	6.48
18	29M32a	0.78
19	29M3a	927.70
20	29M4a	361.27
21	29M5a	362.06
22	29M6a	484.32
23	29M7a	380.17
24	29M8a	1081.15
25	29M8b	755.63
26	29M8c	543.96
27	29M8d	392.27
28	29M8e	292.89
29	29M8f	513.66
30	29M8g	460.06
31	29M8h	743.82
32	29M8i	105.19
33	29M8j	205.71
34	29M8k	473.68
35	29M9a	317.08
36	29M9b	258.84

Sl. No.	WSCODE	Area(Ha)
37	29M9c	660.34
38	29M9d	16.20
39	29M9g	0.54
40	29M9j	4.52
41	30T10a	533.93
42	30T11a	534.05
43	30T11b	714.94
44	30T11c	225.56
45	30T12a	394.74
46	30T12b	294.32
47	30T12c	892.40
48	30T12d	652.12
49	30T12e	420.80
50	30T12f	282.39
51	30T13a	235.49
52	30T13b	493.12
53	30T13c	269.05
54	30T14a	1001.10
55	30T15a	977.65
56	30T16a	301.50
57	30T17a	931.65
58	30T18a	518.86
59	30T1a	181.44
60	30T2a	496.43
61	30T3a	367.70
62	30T4a	200.09
63	30T5a	270.70
64	30T5b	241.05
65	30T5c	434.83
66	30T5d	931.97
67	30T5e	444.67
68	30T5f	353.84
69	30T6a	333.84
70	30T7a	523.39
71	30T8a	558.52
72	30T9a	883.54

Sl. No.	WSCORE	Area(Ha)
73	31A10a	631.93
74	31A11a	747.89
75	31A12a	1273.99
76	31A13a	410.14
77	31A13b	1505.72
78	31A13c	689.48
79	31A13d	106.70
80	31A13e	257.22
81	31A14a	262.85
82	31A14b	752.21
83	31A14c	999.20
84	31A14d	182.57
85	31A15a	463.00
86	31A16a	522.28
87	31A16b	546.72
88	31A16c	368.23
89	31A17a	461.50
90	31A18a	736.47
91	31A18b	330.83
92	31A18c	333.12
93	31A18d	511.91
94	31A18e	422.17
95	31A18f	887.77
96	31A18g	367.61
97	31A18h	672.22
98	31A18i	630.19
99	31A18j	1057.74
100	31A18k	651.15
101	31A18l	551.29
102	31A18m	440.99
103	31A19a	500.19
104	31A1a	527.70
105	31A20a	221.82
106	31A21a	232.11
107	31A22a	286.44
108	31A23a	1067.05
109	31A23b	811.65
110	31A23c	442.70

Sl. No.	WSCORE	Area(Ha)
111	31A24a	884.27
112	31A25a	633.61
113	31A26a	194.57
114	31A27a	230.07
115	31A27b	458.27
116	31A27c	267.55
117	31A28a	535.96
118	31A29a	548.60
119	31A2a	593.45
120	31A2b	1145.65
121	31A2c	539.53
122	31A30a	255.04
123	31A31a	286.79
124	31A32a	317.78
125	31A32b	866.13
126	31A32c	282.17
127	31A32d	327.42
128	31A33a	409.88
129	31A34a	588.76
130	31A35a	178.76
131	31A35b	209.52
132	31A35c	1014.81
133	31A35d	166.67
134	31A35e	230.59
135	31A35f	163.09
136	31A35g	267.41
137	31A36a	317.91
138	31A37a	450.46
139	31A38a	681.70
140	31A39a	413.89
141	31A3a	431.01
142	31A40a	510.09
143	31A4a	283.39
144	31A5a	479.98
145	31A5b	797.63
146	31A5c	285.22
147	31A5d	336.07
148	31A5e	408.95

Sl. No.	WSCORE	Area(Ha)
149	31A6a	481.24
150	31A7a	761.11
151	31A8a	170.19
152	31A8b	399.92
153	31A8c	733.97
154	31A8d	401.70
155	31A9a	305.79
156	32V10a	433.30
157	32V11a	210.84
158	32V12a	421.44
159	32V13a	172.09
160	32V14a	362.68
161	32V14b	533.76
162	32V14c	325.57
163	32V14d	250.88
164	32V14e	1050.38
165	32V14f	956.19
166	32V14g	332.46
167	32V14h	448.34
168	32V14i	553.79
169	32V14j	345.79
170	32V14k	394.66
171	32V14l	268.23
172	32V15a	539.72
173	32V16a	280.35
174	32V16aa	752.98
175	32V16ab	281.95
176	32V16ac	480.14
177	32V16ad	563.51
178	32V16ae	278.40
179	32V16af	315.93
180	32V16ag	230.48
181	32V16ah	315.48
182	32V16ai	1032.19
183	32V16aj	358.63
184	32V16ak	480.13
185	32V16al	276.39
186	32V16am	298.21

Sl. No.	WSCORE	Area(Ha)
187	32V16an	495.01
188	32V16ao	299.01
189	32V16ap	409.35
190	32V16aq	441.79
191	32V16ar	342.64
192	32V16as	280.91
193	32V16at	481.89
194	32V16au	124.94
195	32V16av	650.78
196	32V16aw	442.01
197	32V16ax	218.61
198	32V16ay	890.17
199	32V16az	390.84
200	32V16b	134.64
201	32V16ba	343.64
202	32V16bb	557.67
203	32V16bc	763.07
204	32V16bd	573.49
205	32V16be	426.31
206	32V16bf	323.25
207	32V16bg	410.61
208	32V16bh	176.08
209	32V16bi	262.01
210	32V16bj	323.41
211	32V16c	424.16
212	32V16d	649.18
213	32V16e	976.66
214	32V16f	1161.10
215	32V16g	192.49
216	32V16h	391.60
217	32V16i	378.23
218	32V16j	258.86
219	32V16k	311.02
220	32V16l	399.43
221	32V16m	233.93
222	32V16n	1006.80
223	32V16o	969.54
224	32V16p	243.36

Sl. No.	WSCORE	Area(Ha)
225	32V16q	952.76
226	32V16r	878.10
227	32V16s	536.42
228	32V16t	535.97
229	32V16u	425.53
230	32V16v	1409.43
231	32V16w	309.47
232	32V16x	181.65
233	32V16y	211.74
234	32V16z	384.05
235	32V17a	501.41
236	32V18a	775.56
237	32V19a	454.09
238	32V1a	480.40
239	32V20a	1348.11
240	32V21a	487.30
241	32V22a	240.38
242	32V23a	519.13
243	32V24a	212.91
244	32V25a	598.87
245	32V25b	187.06
246	32V25c	242.32
247	32V26a	246.51
248	32V26b	333.17
249	32V26c	262.12
250	32V27a	408.83
251	32V27b	322.26
252	32V27c	285.79
253	32V27d	623.27
254	32V27e	345.82
255	32V27f	424.39
256	32V27g	258.73
257	32V27h	361.36
258	32V28a	382.11
259	32V28b	669.66
260	32V28c	266.94
261	32V28d	295.40
262	32V28e	876.14

Sl. No.	WSCORE	Area(Ha)
263	32V28f	187.45
264	32V28g	767.67
265	32V28h	421.14
266	32V28i	845.37
267	32V28j	394.58
268	32V28k	1066.47
269	32V28l	608.53
270	32V28m	436.38
271	32V28n	645.09
272	32V28o	335.93
273	32V28p	336.13
274	32V28q	261.43
275	32V28r	791.10
276	32V28s	279.74
277	32V28t	453.02
278	32V28u	525.43
279	32V28v	446.25
280	32V28w	330.06
281	32V28x	565.19
282	32V28y	268.50
283	32V29a	603.47
284	32V2a	112.04
285	32V30a	943.34
286	32V31a	577.71
287	32V31b	748.09
288	32V31c	624.31
289	32V31d	730.17
290	32V31e	245.86
291	32V31f	249.72
292	32V31g	373.62
293	32V31h	185.68
294	32V31i	442.91
295	32V31j	1061.90
296	32V31k	349.21
297	32V31l	476.76
298	32V32a	335.97
299	32V33a	358.24
300	32V33b	259.68

Sl. No.	WSCORE	Area(Ha)
301	32V33c	358.44
302	32V34a	594.81
303	32V34b	448.86
304	32V34c	168.65
305	32V34d	631.08
306	32V34e	614.21
307	32V34f	596.19
308	32V34g	740.76
309	32V34h	436.35
310	32V34i	351.36
311	32V34j	865.43
312	32V34k	313.76
313	32V34l	248.76
314	32V35a	155.80
315	32V36a	359.20
316	32V37a	747.58
317	32V38a	414.04
318	32V39a	254.26
319	32V3a	435.12
320	32V40a	222.01
321	32V40b	418.82
322	32V40c	834.48
323	32V41a	372.86
324	32V41b	889.13
325	32V41c	164.03
326	32V41d	347.12
327	32V42a	117.41
328	32V42b	207.79
329	32V42c	67.26
330	32V42d	10.63
331	32V42e	104.63
332	32V43a	468.86
333	32V44a	323.19
334	32V45a	437.70
335	32V46a	635.63
336	32V47a	459.56
337	32V48a	665.16
338	32V49a	435.53

Sl. No.	WSCORE	Area(Ha)
339	32V4a	110.13
340	32V50a	392.75
341	32V50b	460.44
342	32V50c	350.61
343	32V51a	374.72
344	32V52a	516.87
345	32V53a	292.77
346	32V53b	929.05
347	32V53c	1010.74
348	32V53d	269.03
349	32V53e	1398.36
350	32V53f	770.05
351	32V53g	497.32
352	32V53h	718.96
353	32V54a	1212.93
354	32V55a	776.34
355	32V56a	448.90
356	32V57a	773.49
357	32V58a	195.71
358	32V59a	442.85
359	32V5a	267.45
360	32V5b	362.27
361	32V5c	455.91
362	32V5d	792.57
363	32V60a	355.53
364	32V60b	334.20
365	32V60c	1134.34
366	32V60d	762.23
367	32V60e	747.81
368	32V60f	1218.39
369	32V60g	1115.09
370	32V60h	389.56
371	32V61a	361.37
372	32V62a	496.97
373	32V63a	397.10
374	32V63b	845.88
375	32V63c	862.00
376	32V63d	537.19

Sl. No.	WSCORE	Area(Ha)
377	32V63e	431.80
378	32V64a	1183.94
379	32V65a	893.10
380	32V66a	985.46
381	32V67a	561.78
382	32V68a	445.80
383	32V69a	555.90
384	32V6a	287.87
385	32V70a	1151.28
386	32V71a	48.53
387	32V72a	323.63
388	32V73a	382.79
389	32V74a	665.45
390	32V75a	461.76
391	32V76a	269.79
392	32V77a	527.04
393	32V78a	241.73
394	32V79a	316.28
395	32V79b	563.94
396	32V79c	229.16
397	32V79d	873.78
398	32V79e	266.41
399	32V79f	716.52
400	32V7a	413.74
401	32V80a	1057.79
402	32V81a	473.13
403	32V81b	419.87
404	32V81c	1588.50
405	32V82a	273.71
406	32V83a	1257.13
407	32V84a	490.38
408	32V85a	413.03
409	32V86a	974.86
410	32V87a	518.54
411	32V88a	801.89
412	32V89a	1015.50
413	32V8a	670.51
414	32V90a	533.96

Sl. No.	WSCORE	Area(Ha)
415	32V91a	771.32
416	32V92a	489.64
417	32V9a	543.62
418	33K10a	644.90
419	33K11a	440.83
420	33K12a	221.55
421	33K13a	449.03
422	33K14a	486.81
423	33K15a	344.42
424	33K15b	361.25
425	33K15c	685.52
426	33K15d	377.38
427	33K15e	694.67
428	33K16a	449.96
429	33K17a	531.05
430	33K18a	327.60
431	33K19a	580.87
432	33K1a	648.24
433	33K20a	267.23
434	33K20b	988.28
435	33K20c	722.11
436	33K20d	220.14
437	33K21a	442.05
438	33K21b	187.64
439	33K21c	180.77
440	33K21d	510.91
441	33K21e	504.67
442	33K21f	501.57
443	33K21g	308.50
444	33K22a	447.74
445	33K23a	506.00
446	33K24a	380.88
447	33K25a	351.57
448	33K26a	368.87
449	33K27a	222.06
450	33K27b	175.59
451	33K27c	241.04
452	33K27d	280.93

Sl. No.	WSCORE	Area(Ha)
453	33K27e	1181.37
454	33K27f	212.53
455	33K27g	247.34
456	33K27h	145.30
457	33K27i	184.11
458	33K27j	484.96
459	33K27k	647.11
460	33K27l	174.87
461	33K27m	558.56
462	33K27n	133.75
463	33K27o	780.44
464	33K27p	329.24
465	33K27q	284.07
466	33K28a	349.62
467	33K28b	383.44
468	33K28c	568.13
469	33K28d	304.93
470	33K28e	205.47
471	33K29a	321.29
472	33K2a	261.26
473	33K30a	467.86
474	33K31a	270.70
475	33K32a	542.93
476	33K33a	359.32
477	33K34a	257.81
478	33K34b	479.34
479	33K34c	252.51
480	33K35a	500.91
481	33K36a	244.41
482	33K37a	144.54
483	33K38a	488.74
484	33K39a	216.18
485	33K3a	382.43
486	33K40a	436.99
487	33K41a	361.22
488	33K41b	561.92
489	33K41c	385.89
490	33K42a	300.28

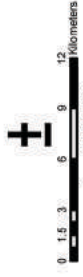
Sl. No.	WSCORE	Area(Ha)
491	33K43a	252.57
492	33K43b	191.02
493	33K43c	218.55
494	33K43d	516.04
495	33K43e	187.97
496	33K43f	948.99
497	33K43g	531.04
498	33K43h	849.30
499	33K43i	336.85
500	33K43j	129.34
501	33K43k	1434.64
502	33K43l	237.71
503	33K43m	303.14
504	33K43n	447.96
505	33K43o	470.47
506	33K44a	415.06
507	33K45a	526.09
508	33K46a	1114.14
509	33K47a	492.16
510	33K48a	975.11
511	33K49a	298.76
512	33K4a	300.27
513	33K50a	221.25
514	33K51a	1017.25
515	33K5a	152.48
516	33K6a	273.79
517	33K7a	416.94
518	33K8a	203.36
519	33K8b	441.87
520	33K8c	242.09
521	33K9a	339.66
522	34R10a	196.47
523	34R10b	140.25
524	34R10c	442.62
525	34R10d	257.10
526	34R11a	237.03
527	34R12a	354.58
528	34R13a	583.90

Sl. No.	WSCORE	Area(Ha)
529	34R14a	403.72
530	34R1a	188.16
531	34R2a	118.69
532	34R3a	218.62
533	34R4a	290.60
534	34R5a	158.15
535	34R6a	140.92
536	34R7a	948.70
537	34R8a	489.92
538	34R8b	127.93
539	34R8c	65.49
540	34R8d	277.48
541	34R9a	110.13
542	35P10a	265.11
543	35P12a	122.55
544	35P13a	262.15
545	35P14a	324.41
546	35P14b	250.56
547	35P14c	317.73
548	35P14d	459.03
549	35P14e	525.06
550	35P14f	340.91
551	35P14g	267.53
552	35P14h	531.77
553	35P14i	253.59
554	35P15a	201.69
555	35P15b	344.47
556	35P15c	230.35
557	35P15d	187.82
558	35P16a	159.26
559	35P16b	439.05
560	35P16c	162.63
561	35P17a	206.29
562	35P18a	601.70
563	35P19a	217.07
564	35P19b	382.87
565	35P19c	427.94
566	35P19d	530.43

Sl. No.	WSCORE	Area(Ha)
567	35P19e	980.02
568	35P19f	457.84
569	35P19g	758.12
570	35P19h	174.21
571	35P19i	482.04
572	35P19j	274.43
573	35P1a	105.32
574	35P20a	459.53
575	35P21a	395.88
576	35P22a	509.46
577	35P23a	323.67
578	35P23b	459.50
579	35P23c	106.33
580	35P23d	177.73
581	35P23e	386.68
582	35P23f	108.74
583	35P23g	302.10
584	35P24a	704.01
585	35P25a	318.94
586	35P26a	126.75
587	35P27a	512.61
588	35P28a	459.81
589	35P29a	27.63
590	35P2a	626.09
591	35P30a	175.40
592	35P31a	179.10
593	35P32a	115.83
594	35P33a	405.39
595	35P34a	468.63
596	35P35a	516.49
597	35P3a	208.20
598	35P4a	367.36
599	35P5a	360.38
600	35P6a	63.22
601	35P6b	170.86
602	35P6c	172.13
603	35P7a	773.15
604	35P8a	118.04

Sl. No.	WSCORE	Area(Ha)
605	35P8b	305.26
606	35P8c	431.22
607	35P9a	280.58
608	35P9b	308.20
609	35P9c	354.34
610	35P9d	297.09
611	35P9e	494.57
612	35P9f	330.59
613	35P9g	562.86
614	35P9h	1076.89
615	35P9i	166.84
616	35P9j	256.16
617	35P9k	572.47
618	35P9l	194.96
619	35P9m	311.17
620	35P9n	993.35
621	35P9o	369.30
622	35P9p	278.06
623	36K10a	19.73
624	36K11a	10.01
625	36K11c	606.07
626	36K12a	220.64
627	36K12d	397.06
628	36K13a	445.91
629	36K13b	107.03
630	36K13c	20.39
631	36K13d	307.06
632	36K13e	231.16
633	36K13f	338.57
634	36K13g	133.91
635	36K13h	676.47
636	36K13i	107.64
637	36K13j	260.26
638	36K13k	211.30
639	36K13l	783.86
640	36K13m	875.69
641	36K14a	872.43
642	36K15a	123.81
643	36K4a	16.89

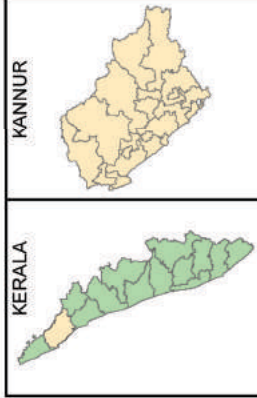
Sl. No.	WSCORE	Area(Ha)
644	36K9a	12.75
645	36P11a	316.61
646	37K16a	12.09
647	37K17a	15.68
648	37K18a	4.51
649	37K19a	10.40
650	37K19d	0.44
651	37K20a	29.71
652	37K21a	12.18
653	37K21d	0.94
654	37K22a	6.50
655	37K23a	252.25
656	37K24a	412.54
657	37K25a	414.78
658	37K26a	302.14
659	37K27a	615.23
660	37K28a	483.76
661	37K29a	455.72
662	37K30a	436.03
663	37K31a	230.12
664	37K31b	447.65
665	37K31c	361.06
666	37K31d	545.66
667	37K31e	433.04
668	37K31f	266.89
669	37K31g	566.87
670	37K31h	562.38
671	37K32a	327.20
672	37K33a	473.22
673	37K34a	577.53
674	37K35a	179.86
675	37K35b	400.79
676	37K35c	500.64
677	37K35d	250.42
678	37K35e	2.76
679	37K38c	2.30
680	WaterBody	44.37
	District Total	296600.00



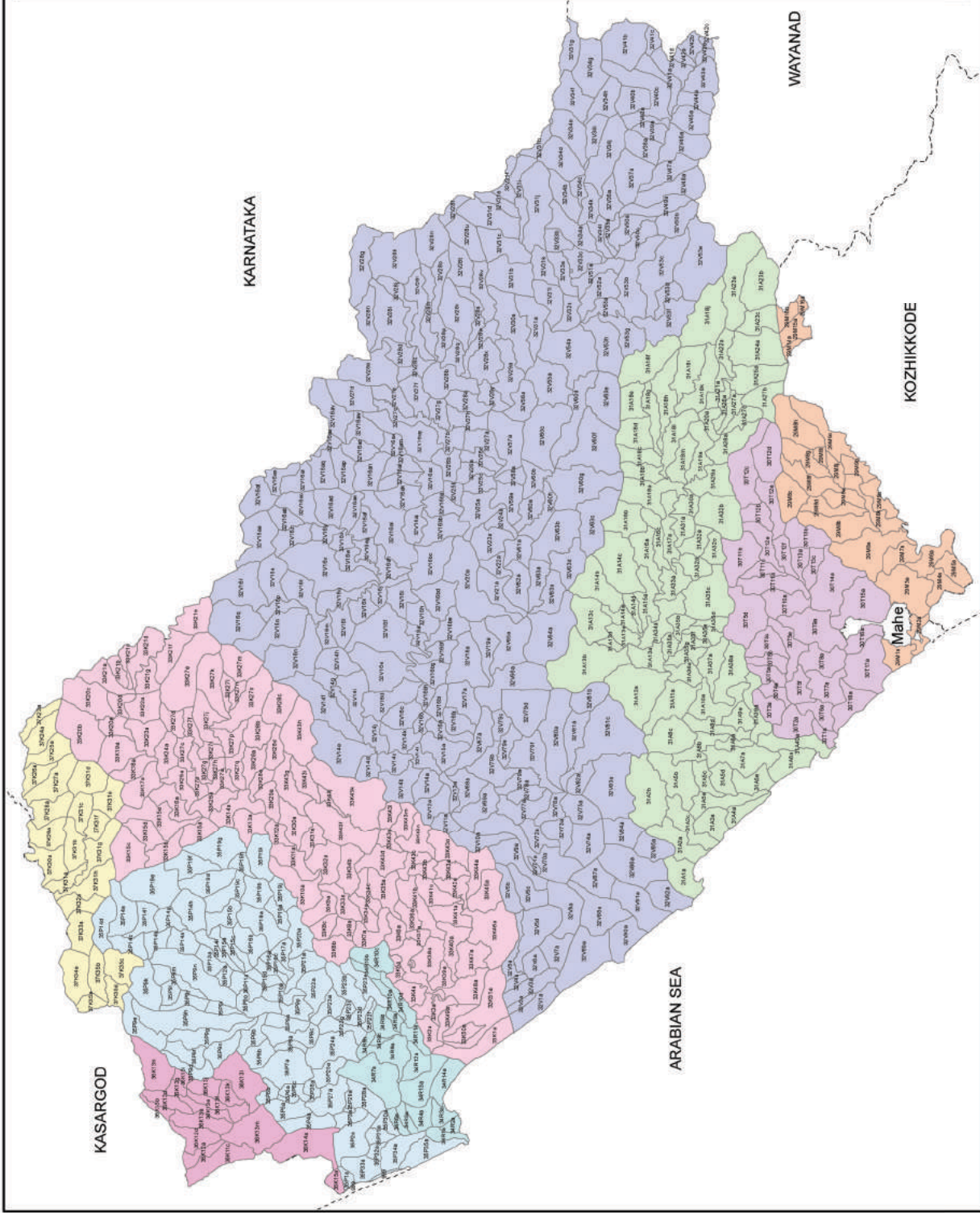
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**WATERSHED
KANNUR DISTRICT**

- WATERSHED**
- ANJARAKANDI
 - KABANI
 - KARINGOTE
 - KAVVAYI
 - KUPPAM
 - MAHE
 - PERUVAMBA
 - RAMAPURAM
 - TALASSERY
 - VALAPATTANAM



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



IRRIGATION

Table:- 21.1

Net Area Irrigated (Source wise)

(In Ha.)

Sl. No.	Source	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
1	2	3	4	5	6	7	8
1	Government Canals	101397	104669	98664	88318	95956	94813
2	Private Canals	4729	4965	4300	4324	6318	2656
3	Tanks	43983	45062	42064	41580	39752	40851
4	Wells	108445	110000	114477	131002	133312	125892
5	Other Sources	134802	135227	125900	122321	123915	122118
6	Total	393356	399923	385405	387545	399253	386330
7	Area irrigated more than once in a year		918341				
8	Gross irrigated area	455391	464765	475231	455310	458238	454783
9	Net area irrigated to net area Sown (%)	18	19	17.52	18.41	18.86	16.34
10	Gross irrigated area to gross cropped area (%)	15	15	16.29	16.44	16.96	17.04
11	Irrigated area under paddy to total irrigated area	40	38	45	40	37	37

PAZHASSI IRRIGATION PROJET

Pazhassi Irrigation project is the first major irrigation scheme taken up in the north Malabar region. It envisages construction of a diversion Barrage at Kuilur across Valapattanam River and main canal on the left side for 46.26 km to feed the paddy fields in the three taluks viz Kannur, Thalipparambu and Thalasseri of Kannur District. Although the original target was 16200 ha of paddy fields, this extend has been reduced to 11525 ha due to rapid urbanization and consequent spurt in transformation of paddy fields in the homesteads. Hence the target including the paddy fields and garden crops comes to 11525 ha. Now the original canals and all other structures are completed.

During the course of execution of the project there were three emergencies in the country

1. Indo Chinese war-1962
2. Indo-Pakistan war-I-1965
3. Indo-Pakistan war-II-1971

Due to this, no funds were allotted for the scheme. The first division viz, Mattannur division was started in 1969. During 1978 there were three divisions including Mattannur division, one at Kannur and another at Thalipparambu. Now when the major components were already completed, the Mattannur division and the Thalipparambu division were deployed to somewhere else.

MAIN COMPENENTS

1. RESERVOIR: The reservoir of the project is 650 ha spread over Kuilur. The capacity of reservoir works out to 3.44TMC based on 97.50mm³.

Since the FRL of the reservoir is 26.52 meters the depth up to 24.52 meter can be used for feeding the fields. The balance is dead in the reservoir.

The KWA is using the water for drinking purpose in Kannur, Mahe and Thalasseri towns. The area several other schemes in the district.

Valapattanam River at Kuilur in Kannur district. It is conceived for supplying irrigation water to the paddy lends of Kannur district. It is intended to benefit about 23650 ha of land lying in the basins of Kuppam, Valapattanam, Anjarakandi, Thalasseri and Mahe rivers. It is expected to raise one more crop, where only a single crop is raised is raised. The project is named after Kerala Varma Pazhassi, who was one of the foremost freedom fighters of Kerala. The dam is situated 35 km away from Kannur and Thalasseri. The main canal takes off on the left bank after traversing a length of 50 km, the canal crosses the main river to the right. There are six branches of which two are in right bank. Location long 75⁰ 37' East la 11⁰ 59' North, 34 km from Thalasseri.

BASIC INFORMATION

Ayacut (Potential)	Net 11525 ha Gross 23650 ha
(Achieved)	Net 11525 ha Gross 23650 ha

SALIENT FEATURES

HYDROLOGY - 1037.30sq.kms

1. Catchment Area	- 640 sq.km.
2. Average rainfall	- 362 cm.
3. Maximum flood discharge	- 3510 cumecs
4. Maximum flood level at Head works	- +22.70 m

HEAD WORKS

Length	- 245 m
FRL/MWL	- 26.52 m
Height	- 18.99 m
Deepest bed level	- 7.92 m
River Sluice portion Length	- 138 m

DETAILS OF HEAD SLUICE

A) Sill level of Sluice	- 24.66 m
B) Size and Number of Sluice	- 250x1.66m ³ No.
C) Type of Shutter	- Steel Screw lift type.
Longitude	- 75 ⁰ -20' and 75 ⁰ -43' E
Latitude	- 11 ⁰ -36' and 12 ⁰ -2'N.

CANALS

Total length of Main Canal	- 46 kms.
Total length of branch Canal	- 75.25 kms.
Designed maximum discharge	- 20 cumecs.
F.S.L at Head	- 26.52 mts.

SOCIAL BENEFITS OF THE PROJECT

A) TOURISM

Pazhassi Project headwork is now an attractive tourist centre in Kannur District. There are beautiful gardens on both sides of the Barrage. The DYPC has improved the gardens. Rowboats are available in the reservoir for the use of tourists. The panoramic scenes of Mountains and Valleys of the Western Ghats from the Barrage add the special attraction to the spot.

B) DRINKING WATER SUPPLY

The Kerala water authority has been using the reservoir of pazhassi Irrigation Project as their main source of water. They pump out water under different schemes that are given below.

1. Kannur Augmentation Scheme
2. Kolachery water supply Scheme.
3. Ancharakandy Thalasseri Scheme.
4. Mahe water supply Scheme.
5. Peralassery Augmentation scheme.
6. Pathuvam Japan drinking water Scheme.
7. Irikkur augmentation Scheme.
8. Thalasseri Augmentation water supply scheme.
9. Kuthparamba water supply Scheme.
10. Mattanur water supply Scheme.
11. Chavasseri and other Panchayat Scheme.
12. Japan aided Scheme Thalipparambu (Pattuvam).

Source: Irrigation Department

MINOR IRRIGATION

Kerala has a wide network of rivers and rivulets and springs spread over the entire cropped area. Minor Irrigation sector received considerable attention from Seventh Plan onwards and got a considerable boost during the Ninth Plan period consequent to the enhanced flow of funds from the grant in aid of the local bodies as well as special support received from the external agencies like European Economic Community, Dutch Government and assistance under RIDF of NABARD. With introduction of decentralized planning, all minor irrigation works (having cultivable command area up to 2000 ha.) were vested with the Panchayat Raj Institutions (PRIs). But by the enactment of new Act 'Kerala Irrigation and Water Management Act 2003' the definition of minor irrigation has been changed and works benefiting an area less than 15 ha. only come under the category of minor irrigation and are vested with PRIs. All other works having cultivable command area greater than 15ha. have been taken over by the Water Resources Department as medium irrigation. The major works implemented under surface water are minor irrigation Class-I, II and Lift irrigation schemes. Construction of check dam, Vented cross bars, weirs, tanks etc are the various works executed under minor irrigation Class-I & II.

The cumulative physical achievement of Minor irrigation up to Xth Five year plan was 235957 ha. (net). Minor irrigation has been given a considerable thrust during Eleventh Plan. About 24 per cent of the outlay in Irrigation sector is proposed for the development of Minor Irrigation. The details of physical achievement during the first two years of Eleventh Plan are shown in the table.

Table:- 21.2

Physical Achievement of Minor Irrigation (Surface Water)

Sl. No	Name of Schemes	(Net area in Ha.)	
		2007-08	2008-09
1	MI Class I	2217.00	1474.81
2	MI Class II	711.00	1522.93
3	Lift Irrigatoin works	712.00	173.75
4	Repairs to MI structure	40.00	0.00
5	MI Class I- NABARD	1802.00	2032.90
6	MI Class II- NABARD	1285.00	3015.90
7	Lift Irrigation- NABARD	53.00	88.62
	Total	6820.00	8308.91

The minor irrigation has always been a thrust area for NABARD not only in terms of providing increased refinance but also by introducing various developmental initiatives and financial incentives. The RIDF I, II and III have been closed on December 2002, RIDF IV by March 2005, RIDF V by June 2006 RIDF VI by September 2007, RIDF VII by December 2008. RIDF VIII by September 2008 and its reimbursement claim was closed by 31.12.2008. The RIDF X closed by December 2009 and its reimbursement claim by 31.03.2010.

Table:- 21.3

Details of Completed Projects under different Trenches of RIDF

Sl. No	RIDF Trenches	No. of Schemes completed
1	RIDF I	59
2	RIDF II	115
3	RIDF III	91
4	RIDF IV	66
5	RIDF V	122
6	RIDF VI	81
7	RIDF VII	39
8	RIDF VIII	43
9	RIDF IX	20
10	RIDF X	12
11	RIDF XI	135
12	RIDF XIII	176
13	RIDF XIV	8
	Total	967

MINOR IRRIGATION CENSUS – KANNUR (2000-2001)

Table:-21.4

CONSTRUCTION OF DUGWELLS OVER THE YEARS

Up to 1993-94	During 1994-95	During 1995-96	During 1996-97	During 1997 -98	During 1998 -99	During 1999 -2000	During 2000 - 2001	Total
6355	1856	1882	1480	976	1174	1145	350	15218

Table:-21.5

CONSTRUCTION OF SHALLOW TUBEWELLS OVER THE YEARS

Up to 1993-94	During 1994-95	During 1995-96	During 1996-97	During 1997 -98	During 1998 -99	During 1999 - 2000	During 2000 - 2001	Total
66	21	12	10	5	2	1	0	117

Table:-21.6

CONSTRUCTION OF DEEP TUBEWELLS OVER THE YEARS

Up to 1993-94	During 1994-95	During 1995-96	During 1996-97	During 1997 -98	During 1998 -99	During 1999 -2000	During 2000- 2001	Total
16	3	0	2	3	1	1	1	27

Table:-21.7

DISTRIBUTION OF SURFACE FLOW SCHEMES ACCORDING TO OWNERSHIP

Govt.	Coop. Societies	Panchayat	Group of farmers	Individuals Farmers	Others	Total
451	5	218	9	175	0	858

Table:-21.8

CONSTRUCTION OF SURFACE LIFT SCHEMES OVER THE YEARS

Up to 1993-94	During 1994-95	During 1995-06	During 1996-97	During 1997-98	During 1998-99	During 1999- 2000	During 2000- 2001	Total
494	96	74	63	78	56	81	13	955

Table:-21.9

MINOR IRRIGATION SCHEMES AT A GLANCE

No. of Blocks	No. of Villages	Number of Schemes							Total
		Ground Water				Surface Water			
		Dugwell	Shallow	Deep	Total	S. Flow	S. Lift	Total	
15	87	15218	117	27	15362	858	955	1813	17175

Table:-21.10

CROP WISE AREA IRRIGATED BY GROUND WATER SCHEMES

DUG WELLS					SHALLOW TUBEWELLS				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
886	581	5901	1078	8446	0	2	193	34	229

DEEP TUBEWELLS					TOTAL				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
11	12	13	14	15	16	17	18	19	20
0	0	37	3	40	886	583	6131	1115	8715

Table:-21.11

CROP WISE AREA IRRIGATED BY SURFACE WATER MINOR IRRIGATION SCHEMES

SURFACE FLOW					SURFACE LIFT				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
3674	4462	5059	7791	20986	216	258	1011	687	2172

TOTAL				
Karif	Rabi	Perennial	Other	Total
11	12	13	14	15
3890	4720	6070	8478	23158

Table:-21.12

CROP WISE AREA IRRIGATED BY MINOR IRRIGATION SCHEMES

GROUND WATER					SURFACE WATER				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
886	582	6131	1115	8714	3891	4720	6070	8478	23159

TOTAL				
Karif	Rabi	Perennial	Other	Total
11	12	13	14	15
4777	5302	12201	9593	31873

Table:-21.13

CROP WISE AREA IRRIGATED BY SURFACE FLOW SCHEMES

TANKS					OTHER STORAGES				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
406	575	439	714	2134	180	182	305	375	1042
PERMANENT DIVERSIONS					TEMPORARY DIVERSIONS				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
11	12	13	14	15	16	17	18	19	20
3026	3687	4278	6611	17602	22	18	28	43	111
WATER CONSERVATION CUM GROUND WATER RECHARGE					TOTAL				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
21	22	23	24	25	26	27	28	29	30
40	0	8	48	96	3674	4462	5058	7791	20985

Table:-21.14

**CROP WISE AREA IRRIGATED BY GROUND WATER SCHEMES AS
SUPPLEMENTARY SOURCE OF IRRIGATION**

DUG WELLS					SHALLOW TUBEWELLS				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
1	0	0	0	1	0	0	0	0	0
DEEP TUBEWELLS					TOTAL				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
11	12	13	14	15	16	17	18	19	20
0	0	0	0	0	1	0	0	0	1

Table:-21.15

**CROP WISE AREA IRRIGATED BY SURFACE WATER SCHEMES AS
SUPPLEMENTARY SOURCE OF IRRIGATION**

SURFACE FLOW					SURFACE LIFT				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
4	0	0	0	4	0	0	0	0	0
TOTAL									
Karif	Rabi	Perennial	Other	Total					
11	12	13	14	15					
4	0	0	0	4					

Table:-21.16

**CROP WISE AREA IRRIGATED BY SURFACE FLOW SCHEMES AS
SUPPLEMENTARY SOURCE OF IRRIGATION**

TANKS					OTHER STORAGES				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0

PERMANENT DIVERSIONS					TEMPORARY DIVERSIONS				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
11	12	13	14	15	16	17	18	19	20
4	0	0	0	4	0	0	0	0	0

WATER CONSERVATION CUM GROUND WATER RECHARGE					TOTAL				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
21	22	23	24	25	26	27	28	29	30
0	0	0	0	0	4	0	0	0	4

Table:-21.17

**CROP WISE AREA IRRIGATED BY SURFACE LIFT SCHEMES AS
SUPPLEMENTARY SOURCE OF IRRIGATION**

ON RIVER					ON STREAM				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0

ON DRAIN/ CANAL					ON TANK/ POND				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
11	12	13	14	15	16	17	18	19	20
0	0	0	0	0	0	0	0	0	0

TOTAL				
Karif	Rabi	Perennial	Other	Total
26	27	28	29	30
0	0	0	0	0

Table:-21.18

**CROP WISE AREA IRRIGATED BY MINOR IRRIGATION SCHEMES AS
SUPPLEMENTARY SOURCE OF IRRIGATION**

GROUND WATER					SURFACE WATER				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
1	2	3	4	5	6	7	8	9	10
1	0	0	0	1	4	0	0	0	4

TOTAL				
Karif	Rabi	Perennial	Other	Total
11	12	13	14	15
5	0	0	0	5

Table:-21.19

ELECTRICAL/ DIESEL PUMPS USED IN MINOR IRRIGATION SCHEMES

ELECTRICAL PUMPS							
Dugwell	Shallow Tubewell	Deep Tubewell	Lift on River	Lift on Stream	Lift on Drain/Canal	Lift on Tank/Pond	Total
1	2	3	4	5	6	7	8
8674	62	27	51	9	0	458	9281

DIESEL PUMPS							
Dugwell	Shallow Tubewell	Deep Tubewell	Lift on River	Lift on Stream	Lift on Drain/Canal	Lift on Tank/Pond	Total
9	10	11	12	13	14	15	16
2820	55	0	198	11	0	226	3310

TOTAL							
Dugwell	Shallow Tubewell	Deep Tubewell	Lift on River	Lift on Stream	Lift on Drain/Canal	Lift on Tank/Pond	Total
17	18	19	20	21	22	23	24
11494	117	27	249	20	0	684	12591

Source: Minor Irrigation Census, Irrigation Dept

POWER

DETAILS OF POWER GENERATION IN KERALA

Table: 22.1

1. KSEB HYDRO

Sl. No.	Name of Station	Power(in Mega Watts)	Energy (in Million Units)
1	Pallivasal	37.50	284.00
2	Sengulam	48.00	182.00
3	Poringalkuthu	32.00	170.00
4	Neriamangalam	52.50	251.60
5	Panniyar	30.00	148.00
6	Sabarigiri	325.00	1338.00
7	Sholayar	54.00	233.00
8	Kuttiady	75.00	248.00
9	Idukki	780.00	2398.00
10	Idamalayar	75.00	320.00
11	Kallada	15.00	65.00
12	Peppara	3.00	11.50
13	Lower Periyar	180.00	493.00
14	Mattupetty	2.00	6.40
15	Poringal left bank extension	16.00	74.00
16	Kakkad	50.00	262.00
17	Kuttiadi extension scheme	50.00	75.00
18	Malampuzha shep	2.50	5.60
19	Chembukadavu - I	2.70	6.24
20	Chembukadavu - II	3.75	9.66
21	Urumi - I	3.71	9.53
22	Urumi - II	2.40	6.10
23	Malankara	10.50	65.00
24	Lower Meenmutty	3.50	7.00
25	Neriamangalam extension	25.00	58.00

2. DIVERSION/AUGMENTATION SCHEMES

1	Vazhikadavu		24.00
2	Panniar Augmentation		10.00
3	Narakakkanam (To Idukki)		7.00
4	Poringal (To Idamalayar)		60.00
5	Azhutha		57.00
6	Vadakkepezha		12.00
7	Kuttiadi Augmentation		223.00

3. CAPTIVE HYDRO

1	Maniar	12.00	37.00
2	Kuthungal	21.00	79.00

4. KSEB DIESEL

1	Brahmapuram	106.60	535.00
2	KDPP Kozhikode	128.00	896.00

5. CENTRAL PUBLIC SECTOR - THERMAL

1	Kayamkulam (N.T.P.C)	359.58	2094.00
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6. THERMAL IPPs

1	B.S.E.S Kerala Power Limited Kochi (IPP)	157.00	1099.00
2	KPC Kasargod (IPP)	20.44	140.00

7. WIND ENERGY (KSEB)

1	Wind Farm, Kanjikode	2.03	5.00
2	Ramakkalmedu (private sector)	10.50	20.24
3	Agali (private sector)	6.00	12.01

MISCELLANEOUS

COMMUNICATIONS

1. POSTAL SERVICES

Postal Services in the District are managed by Kerala Postal Circle. There are two Postal Divisions- Kannur and Thalassery. Kannur Postal Division covers Kannur and Taliparamba Taluks and a small portion of Thalassery Taluk. The remaining portion of Thalassery Taluk comes under Thalassery Postal Division. As on 1.4.2002, the District had 384 Post Offices with a break-up of 3 (HO), 96 (SO), 28 (EDSO) and 257 (EDBO). The three Head Post Offices in the District are Taliparamba, Kannur and Thalassery. In the District as a whole there are 1310 Letter boxes. The District is conspicuous by the absence of National Speed Post Centre. Of the 33 Speed Post Centres of the State, two are located in Kannur District.

2. TELECOM

The District comes under Kannur Telecom Secondary Switching Area. The Kannur SSA controls 5 Telephone Exchanges. As on 31.03.2000, there were 113519 telephone connections in the District.

3. ALL INDIA RADIO, KANNUR

The FM Radio Station of All India Radio was set up at Kannur on the 4th May, 1991. The Station provides quality programmes to a population spread over an area of about 12000 sq. km with radius of about 60 km. in and around Kannur. The Station operates on 101.5 MHZ in the FM Band.

4. FIELD PUBLICITY OFFICE

For the dissemination of various governmental information through the medium of film shows, oral communication programmes, photo exhibitions, song and drama programmes, etc., the Filed Publicity Office of the Government of India. Ministry of Information & Broadcasting is functioning in the district. This has completed 35 years of fruitful service.

5. NEWSPAPERS

The pioneering venture in the field of Malayalam Journalism is associated with Kannur District. Dr. H. Gundart, the famous Lexicographer started two of the earliest Malayalam Newspapers from Thalassery in 1847.

ELECTRICITY AND POWER

There is no major power project in the District and the main source of electric power is the Kuttiadi Hydro Electric Project in Kozhikode District with an installed capacity of 75 MW. All the revenue villages in the District are electrified. However, low-tension electric lines are still to be extended to several remote pockets. There are four 110 KV Sub-Stations at Payyannur, Magad, Mundayad, Thalassery and three 66 KV Sub-Station at Koothuparamba, Nedumpoyil and Mattannur.

INDUSTRY

Being blessed with a variety of factors such as good soil, salubrious climate, rich forests, enormous fishing potentials, minerals as well as infrastructural facilities like road, rail, inland water transport, etc, the District offers ample scope for the development of industries.

Nevertheless, Kannur is an industrially backward District in the State. There are only major and five mini industrial estates in the district. Keltron Complex, Managattuparamba and Western India Plywood, Valapattanam are the two major industries in the District. The Western India Plywood is one of the biggest wood- based industrial complexes in the South East Asia. The District has about 14 medium scale industries, most of which are either Cotton Textiles or Plywood Manufacturing Units.

Textiles, Beedi and Coir are the important traditional industries in the District. About one lakh people depend on the textile industry for livelihood. The textile industry which accounts for 40 per cent of all small scale units in the District was introduced in the early 19th century by the German Basal Evangelical Mission.

There were 11247 Small Scale Industrial Units in the District in 2000. Of this, 978 units were registered during the year 1998-1999. AS regards registered working

factories they numbered 1063 in 1988. During 1988-1998 their number had increased to 1636 ie, an increase of more than 50 per cent within 10 years. There was a total employment of 23807 people accounting for about 5.36 per cent of the employment in factories in the state. Kannur, Thalassery, Payyannur, Taliparamba and Edakkad have been identified as growth centres having potential for industrial development.

The Kerala Khadi and Village Industries Board is vested with the responsibility of organizing, developing and promoting Khadi and Village Industries in the district. The Khadi and Village Industries Commission is extending financial assistance like loans for the development of Khadi and Village Industries.

Table: 23.1

KSRTC OPERATIONS STATISTICS DURING 2009-10

Unit	No. of Buses held daily	Average Kms Run per day per bus	Average Route length (Kms)	Earning per Vehicle on road per day (in Rs.)	Earning per Km of buses operated (in ps.)
Kannur					
Kannur	113	343	127	7045	2049
Payyannur	89	318	71	6363	2008
Thalassery	53	345	77	6977	2010

Table: 23.2

KSRTC OPERATIONS STATISTICS DURING 2009-10

Unit	No. of Buses held as on 31.03.10	No. of Schedules as on 31.03.10	No. of routes as on 31.03.10	Routes distance (Kms)	Gross Kms (in lakhs)	Effective Kms operated (in lakhs)	Passengers carried (in lakhs)	Average carrying capacity per bus
Kannur								
Kannur	110	97	57	7239	137.83	121.33	222.17	60
Payyannur	93	94	42	2982	109.63	85.98	231.65	60
Thalassery	57	46	53	4081	62.35	52.81	96.86	60

Table: 23.3

NUMBER OF MOTOR VEHICLES HAVING VALID REGISTRATION AS ON 31.03.2010

District	Goods		Buses		Four Wheelers		Three Wheelers		Tractors/ Trailers		Total			
	Four wheeler and above	Three wheeler	Stage carriage	Contract carriage	Motor Car	Motor Cab	Jeep	Auto rickshaw	Motor Cycle	Tractor		Tiller	Trailer	Other
Kannur	17554	7234	3991	5851	46953	10103	5936	34131	149193	1344	261	99	4343	286993

Table: 23.4

NEWLY REGISTERED VEHICLES FOR THE YEAR 2009-10 (Provisional)

TRANSPORT VEHICLES	KANNUR
Multi Axiled/ Articulated Vehicles	6
Trucks/ Lorries	151
Four Wheelers	0
Three Wheelers	361
Total	518
Stage Carriages	283
Contract Carriages	158
P.S.V.S	11
Other Buses EIV	82
Total Buses	534
Motor Cabs	340
Maxi Cabs	519
Other Taxis	10
Total Taxi	869
LMV Passenger 3 Wheeler	2681
4-6 Seaters	0
M Cycle on Hire	0
Total	2681
Other TVs	1
Total TVS	4303
Scooter	1444
Mopeds	415
Motor Cycle	8371
Total	10230
Cars	7303
Jeeps	594
Omni Buses	316
Tractors	12
Trailers	21
Other Vehicles	21
Total	8267
Total NTVS	18497
Grand Total	22800

Table: 23.5

GROWTH OF MOTOR VEHICLES IN KERALA AND THEIR INDEX (BASE 2001=100)

District	2000-01		2001-02		2002-03		2003-04		2004-05	
	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index
1	2	3	4	5	6	7	8	9	10	11
Kannur	113804	100	128484	112.9	144553	127	162838	143.1	199891	175.6

Motor Vehicles (Nos)	2005-06		2006-07		2007-08		2008-09		2009-10	
	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)
12	13	14	15	16	17	18	19	20	21	
226049	198.6	257255	226.1	232737	204.5	257384	226.2	286993	252.2	

