

GENERAL INFORMATION

Palakkad District came into existence as an administrative unit on the 1st January, 1957. The ancient history of the District is closely associated with the mythical hero Lord Parasurama, said to have created Kerala and divided it into 64 gramams. According to William Logan, the author of the "Malabar Manual", the Pallava dynasty of Kanchi might have invaded Malabar in the second or third century. One of their headquarters was a place called 'Palakkada' which could be the present day Palakkad. Malabar had been invaded by many of the ancient rulers. For centuries it was ruled by Perumals having powerful "Utayavars" under them to hold authority in their respective territories. After the rule of Perumals, the country was divided among these chieftains. The Valluva Konathiri (ruler of Valluvanad), the ruler of Vangunad (Kollangode Rajas) and Sekhari Varma, Rajas of Palakkad were the prominent rulers of those Perumals, the last being Cheraman Perumal. The emergence of royal dynasties and principalities in this tract came only after the break-up of Perumal's empire. Of these Nadumpurayur Swaroopam and Tarur Swaroopam, Kollangode kingdom, Valluvanad and Kavalappara are important. A brief outline of these principalities is given in the following paragraphs.

The earliest dynasty which is believed to have ruled the area falling in this District was the Nadumpurayur Swaroopam, Palakkad Rajas who were supposed to be descendents of this Swaroopam had their original seat in Athavanad amsom (Ponnani Taluk), but later they exchanged their lands with Azhuvancheri Thamprakkal and established their headquarters in Akathethara Village of Palakkad Taluk. Palakkad Rajas, who are considered as offspring's of Namboothiri Brahmins and Kshatriya women, also owned the titles 'Vadakke Naikkans' and 'Thekke Naikkans'. However, very little is known about the activities of these Rajas. An earliest account available is the encounter of the forces of Palakkad Rajas with the

help of Ernad, Valluvanad and Perumpadappu forces, against the forces of Kongu Rulers, who were instigated by Rashtrakutas. However, the Army, of Nedumpurayur won the onslaught of the Kongapada. To commemorate this victory a unique festival, known as Kongapada, is conducted every year in the month of Kumbham in Bhagavathy Temple of Chittur. Consequent on the dissolution of Chera Empire, small principalities emerged in the political scene of Kerala and Udayavars or Naduvazhis became independent rulers. Nedumpurayurnad later became Taravur or Tarur Swaroopam which had its seat at Tarur Village of Alathur Taluk about 40 Km. south-west of Palakkad. The place is known as Edam and the members of the royal house called Achans. As there were no male members in Tarur Swaroopam, Princesses had to take their partners from the Perumpadappu Swaroopam

This matrimonial relationship later necessitated Tarur Swaroopam to support Perumpadappu in their fight against Zamorins of Calicut. Palakkad Rajas were always subjected to military and political pressures from the Zamorins and it was on their request that Haider Ali invaded South Malabar in 1756. When the British supremacy was established, Palakkad Rajas were pensioned off by the East India Company.

Besides this, a small kingdom in this tract was the Kollangode Kingdom, extending over eight Villages, in and around Kollangode, which was later absorbed by the Zamorin. The Rajas of Kollangode also became a pensioner of the English East India Company.

The Valluvanad Kingdom (known as Vattabhakashani in Sanskrit and also as Orangottur Swaroopam) was founded by one Rajasekhara who lived in the 10th century A.D., with its capital at Valluvanagaram i.e. Angadipuram (in Perinthalmanna Taluk of Malappuram District). The kingdom extended over to Perinthalmanna, Mannarkad and Ottappalam Taluks. According to earlier tradition, Chera emperors

presided over the Mamamkam festival which was held once in 12 years i.e. a Vyazhavattam. The presidency of Valluva Konathiri in Mamamkam festival caused envy among other rulers of Kerala, particularly the Zamorin. This resulted in constant conflicts between the two and ultimately Zamorin succeeded in evacuating Valluva Konathiri from Thirunavaya and declared himself as the Rakshapurusha or Protector of Mamamkam. During the time of Mysore invasion, the territory of Valuvanadu Raja was confined to Attappady Valley and portion of Ottappalam Taluk. At the time of Tippu's invasion he sought asylum in Travancore, and later when Malabar was ceded by the British, he entered into an agreement with the East India Company and became a pensioner.

Kavalappara was a small territory, owned by a Nair Chief, known as Kavalappara Muppil Nair with some allegiance both to Cochin Raja and Zamorin. The East India Company eventually settled the claims of Kavalappara Chief by paying him Malikhana in return for his allegiance to the Company.

Palakkad being an upcountry, had little contacts with the western countries. The major intervention in the affairs of Palakkad Raja was from the Zamorins of Calicut. His expansionist policies resulted in a series of conflicts. The annexation of Naduvattom (which formed part of the territory of Palakkad Raja) in 1756-57 compelled Komu Achan, the Raja of Palakkad, to seek the help of the king of Mysore. The Mysorean ruler deputed Hyder Ali, who was the Faujdar of Dindigal to help Palakkad Raja but he had to leave for Seringapatam.

In his place his brother-in-law Mukudam Ali led the forces and the combined army put the Calicut forces to flight. The Zamorin had to give Rs.12 lakhs as War Indemnity. Haider ascended the throne of Mysore in 1761 but his conquests were confined to Central Malabar Region. After Haider's death, Tippu occupied his father's throne in November 1783. The English Army under Col. Fullerton captured Palakkad

Fort and Zamorin was entrusted with the administrative control over the region. But Tippu's forces soon re-occupied the fort and extended his territory to almost all the south of Malabar. In November 1789 Tippu decided to invade Travancore and moved his forces via Palakkad, his southern Headquarters. But the conquest had to be suspended due to the onslaught of monsoon. Knowing the marching of the British forces to Seringapatam, Tippu decided to withdraw his forces from Kerala and left via Coimbatore in May 1790. Soon Cochin declared their allegiance to the British. The British forces under Col. Stuart besieged Palakkad fort on the 22nd September, 1790. By Seringapatam treaties signed on the 22nd February and the 1st March 1792, Tippu formally ceded Malabar to the British.

The British Government decided to revamp the administration of the newly ceded areas and for that purpose a Commission known as "Joint Commissioners" appointed to inspect into the State and condition of the previous Malabar and submitted the report on the 14th October 1793. Primarily the claims of the local Rajas and chieftains were settled by the Commission which included Rajas of Palakkad, Konathiri and Kavalappara Nair. On the 21st May 1800 Malabar became part of the Madras Presidency under the administration of principal Collector stationed at Calicut.

Even though the District could achieve significant progress in various fields under British Administration, the period also witnessed some of the violent disturbances known as 'Mappila riots'. Those outbreaks also took place in various parts of the then Valluvanad, Palakkad and Ponnani Taluks, major portions of which now form Palakkad District. According to Malabar District Gazetteer, the Mappila outbreaks may be attributed to three main causes-poverty, agrarian discontent and fanaticism.

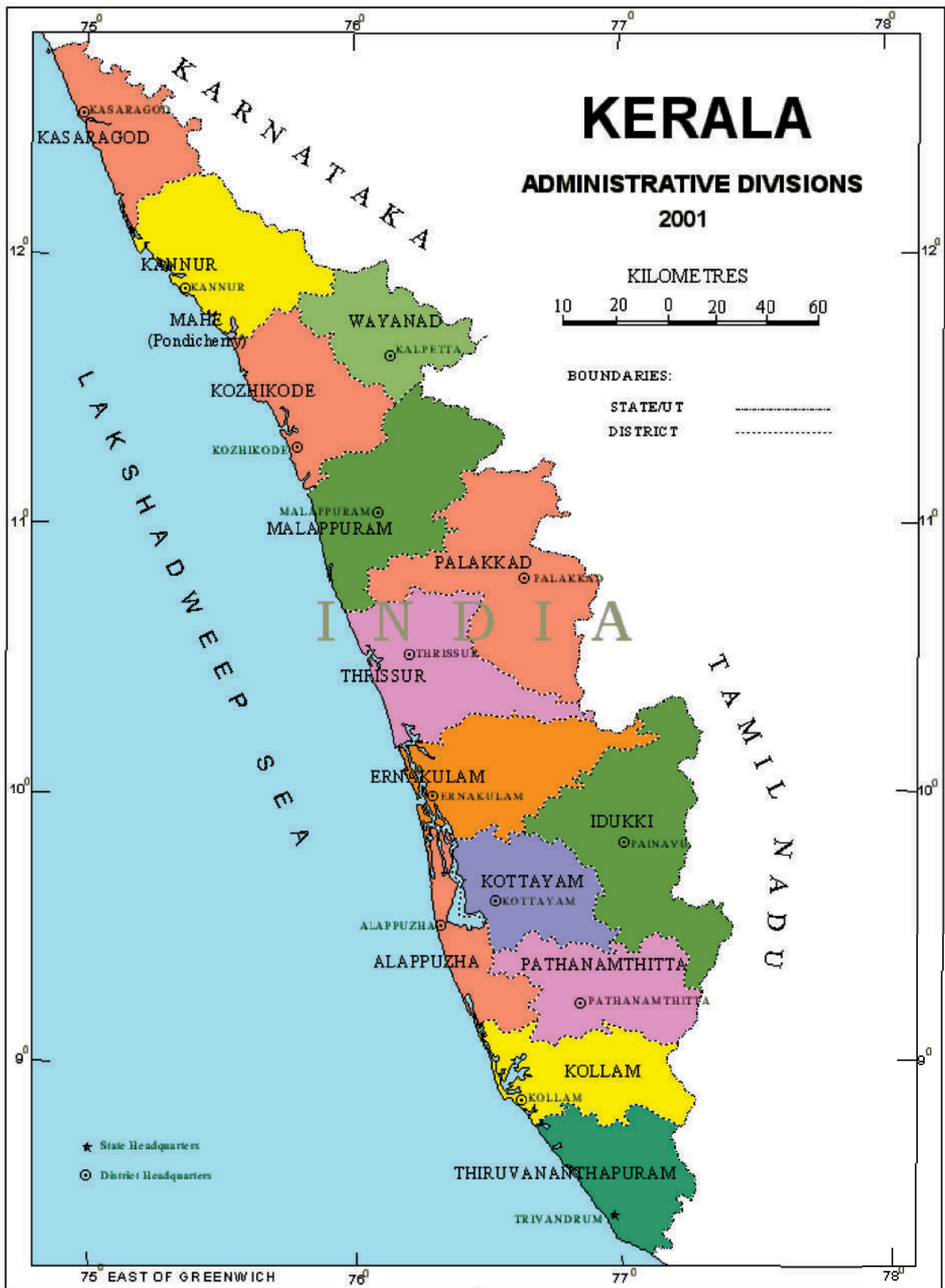
The formation of Congress organization in 1910 in Malabar paved the way for the national movement in the District. The first National Conference in the State was held at Palakkad on the 4th and the 5th May 1916 under the President ship of Annie Beasant. Malabar District conference held at Ottappalam on the 23rd April 1921, was an important turning point in the political movement of the country. The police excesses could not suppress the national awakening of the freedom loving people. Two publications, Mathrubhumi (started by K.P.Kesava Menon and other Congressmen) and Al-Amin (under the editorship of Mohammed Abdul Rahiman) which were released in 1923 and 1924 respectively fostered the spirit of nationalism. Their impact on the masses deserves special mention. A movement for the tenancy reform was started in Malabar during the same period under the leadership of Mannath Krishnan Nair, K.P.Raman Menon, G.Sankaran Nair and others. Ultimately it lead to the passing of the Malabar Tenancy Act of 1930. Many freedom fighters boycotted Simon Commission (1928) and participated in the Salt Sathyagraha (1930) and Civil Disobedience Movement. The emergence of Communist party in 1939 had its effects and influence among the working classes. The active participation of the people in the freedom struggle carried on till the achievement of Indian Independence on the 15th August, 1947.

As per the State Reorganization Act on 1st November 1956. Kerala State was formed comprising of Malabar District (Excluding Laccadive and Minicoy Islands) and Kasaragod Taluk of South Kanara District of Madras State and Travancore-Cochin State (excluding Thovala, Agastheeswaram, Kalkulam, Vilavancode and Shenkottah Taluks). With the enactment, Kasaragod Taluk of South Kanara District was made part of the new Malabar District. On the 1st January 1957, Malabar District was trifurcated into three Districts viz. Kannur, Kozhikode and Palakkad. Palakkad District thus formed consisted of old Valluvanad Taluk, Palakkad Taluk and portion of Ponnani Taluk of Malabar District and Chittur Taluk of erstwhile Travancore-Cochin

State. On the same date, the Valluvanad Taluk was bifurcated into Perinthalmanna and Ottappalam Taluks. The old Palakkad Taluk was trifurcated into Palakkad, Alathur and portion of Chittur Taluk. The present Chittur Taluk thus covers the Chittur Taluk of erstwhile Travancore-Cochin State and 14 Villages of old Palakkad Taluk of the erstwhile Malabar District. The old Ponnani Taluk of Malabar District was also trifurcated to form Ponnani, Chavakkad and portion of Tirur Taluk. Of these, Palakkad District was formed comprising of 6 Taluks viz. Perinthalmanna, Ponnani, Ottappalam, Palakkad, Alathur and Chittur. Consequent on the formation of Malappuram District on the 6th June 1969, the boundaries of Palakkad District underwent some additional changes. Mannarkad Taluk was newly formed comprising of 19 re-organised Villages of the erstwhile Perinthalmanna Taluk. Parudur Village of Tirur Taluk was transferred to Ottappalam Taluk. Ponnani Taluk which was part of Palakkad District was transferred to Malappuram District. Palakkad District was thus left with 5 Taluks viz. Ottappalam, Mannarkad, Palkkadm Alkathur and Chittur. After 1971 Census there were no major changes in the District. The changes were confined to the re-naming of 3 Villages viz. Attappady-I, Attappady-II and Attappady-III of Mannarkad Taluk as Agali, Pudur and Cholleyur respectively and addition of Silent Valley Reserve Forest of Karuvarakundu Village of Ernad Taluk to the newly renamed Pudur Village of Mannarkad Taluk. The change in jurisdiction effected during 1981-1991 are given in the District Census Handbook of Palakkad District, 1991.

Palakkad lies between 10^o20' and 11^o14'north latitude and between 76^o20' and 76^o54' east longitudes.

Source: Census Report



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

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KERALA AT A GLANCE

Location	:	North Latitude between 8 ^o 18' and 12 ^o 48' East Longitude between 74 ^o 52' and 77 ^o 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 1.1

Population	1991 Census	2001 Census	2011 Census
Total population (lakhs)	290.99	318.41	333.88
Male population (lakhs)	142.89	154.69	160.21
Female population (lakhs)	148.10	163.73	173.66
Density per sq. km.	749	819	859
Sex ratio (Females per 1000 males):	1036	1058	1084
Literacy (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, Gol

PALAKKAD AT A GLANCE

General Features

Date of Formation	1 st January 1957
District Head Quarters	Palakkad

Table : 1.2

ADMINISTRATIVE SETUP

Sl. No.	Particulars	Palakkad	State
1	Number of Revenue Divisions	2	21
2	Number of Taluks	5	63
3	Number of Revenue Village	163	1,478
4	Number of Corporation	-	5
5	Number of Municipalities	4	60
6	Number of Municipality Wards	150	2,216
7	Number of Block Panchayat	13	152
8	Number of Block Panchayat Wards	182	2,095
9	Number of Grama Panchayat	91	978
10	Number of Grama Panchayat Wards	1,542	16,680
11	Number of Assembly Constituencies	12	140
12	Number of Parliament Constituencies	2	20
13	Number of District Panchayat Wards	29	332

Table 1.3

GEOGRAPHICAL PARTICULARS

Total Area (Sq. Km)	4,480	38,863
Wet Area (Hectors)	7,599	4,62,797
Dry Area (Hectors)	2,43,378	22,73,603
Forest (Sq. Km)	1527	11309

Table 1.4

DEMOGRAPHIC PARTICULARS

Sl. No.	Particulars	Palakkad	State
1	Total Population (2001 Census)	26,17,482	3,18,41,374
	Male	12,66,985	1,54,68,614
	Female	13,50,497	1,63,72,760
2	Total Rural Population	22,60,907	2,35,74,449
	Male	10,93,515	1,14,51,282
	Female	11,67,392	1,21,23,167
3	Total Urban Population	3,56,575	82,66,925
	Male	1,73,470	40,17,332
	Female	1,83,105	42,49,593
4	Total SC Population	4,32,578	31,23,941
	Male	2,10,624	15,25,114
	Female	2,21,954	15,98,827
5	Total SC Rural Population	2,90,144	25,53,725
	Male	1,90,085	12,47,537
	Female	2,00,059	13,06,188
6	Total SC Urban Population	42,434	5,70,216
	Male	20,539	2,77,577
	Female	21,895	2,92,639
7	Total ST Population	39,665	3,64,189
	Male	19,990	1,80,169
	Female	19,675	1,84,020
8	Total ST Rural Population	39,236	3,50,019
	Male	19,764	1,73,267
	Female	19,472	1,76,752
9	Total ST Urban Population	429	14,170
	Male	226	6,902
	Female	203	7,268
10	Total number of households	5,30,216	67,26,356
	Urban households	4,55,911	50,10,259
	Rural households	74,305	17,16,097
11	Religion wise population		
	Hindus	18,02,766	1,78,83,449
	Muslims	7,03,596	78,63,842
	Christians	1,09,249	60,57,427
	Others	1,871	36,656
12	Sex Ratio		1,058
13	Child sex ratio		963
14	Growth rate 1991 to 2001	10	9
15	Literacy Rate (%)	84	91
	Male	20	94
	Female	80	88
16	Density of population	584	819

Table 1.5

ANIMAL HUSBANDRY AND FISHERIES

Sl. No.	Livestock Population	Palakkad	State
1	Cattle	263763	2122453
2	Buffaloes	9269	64618
3	Goats	125890	1213173
4	Pigs	1507	76452
5	Sheep	1885	3631

Table 1.6

EDUCATION

Sl. No.	Institutions	Palakkad	State
1	Lower Primary Schools	553	6817
2	Upper Primary Schools	235	3037
3	High Schools	153	2790
4	Higher Secondary Schools	96	1664
5	Vocational Higher Secondary Schools	24	375
6	Technical Higher Secondary Schools	1	25
7	Teachers Training Institute	16	102
8	Kendriya Vidyalaya	3	32
9	Novodaya Vidyalaya	1	13
10	CBSE School	42	396
11	ICSE School	2	78
12	ITIs	3	32
13	Ayurveda Medical Colleges	2	12
14	Dental Colleges	1	11
15	Nursing Colleges	1	51
16	Pharmacy Colleges	1	21
17	Engineering Colleges	3	84
18	Number of Arts and Science Colleges	12	186
19	Polytechnic Colleges	2	52

Table 1.7

INDUSTRIES

Sl. No.	Firms	Palakkad	State
1	Number of Factories	1895	18239
2	Total Number of SSI units	114	5305

Table 1.8

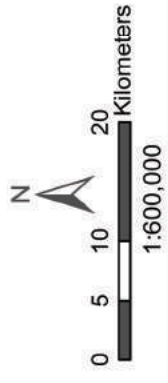
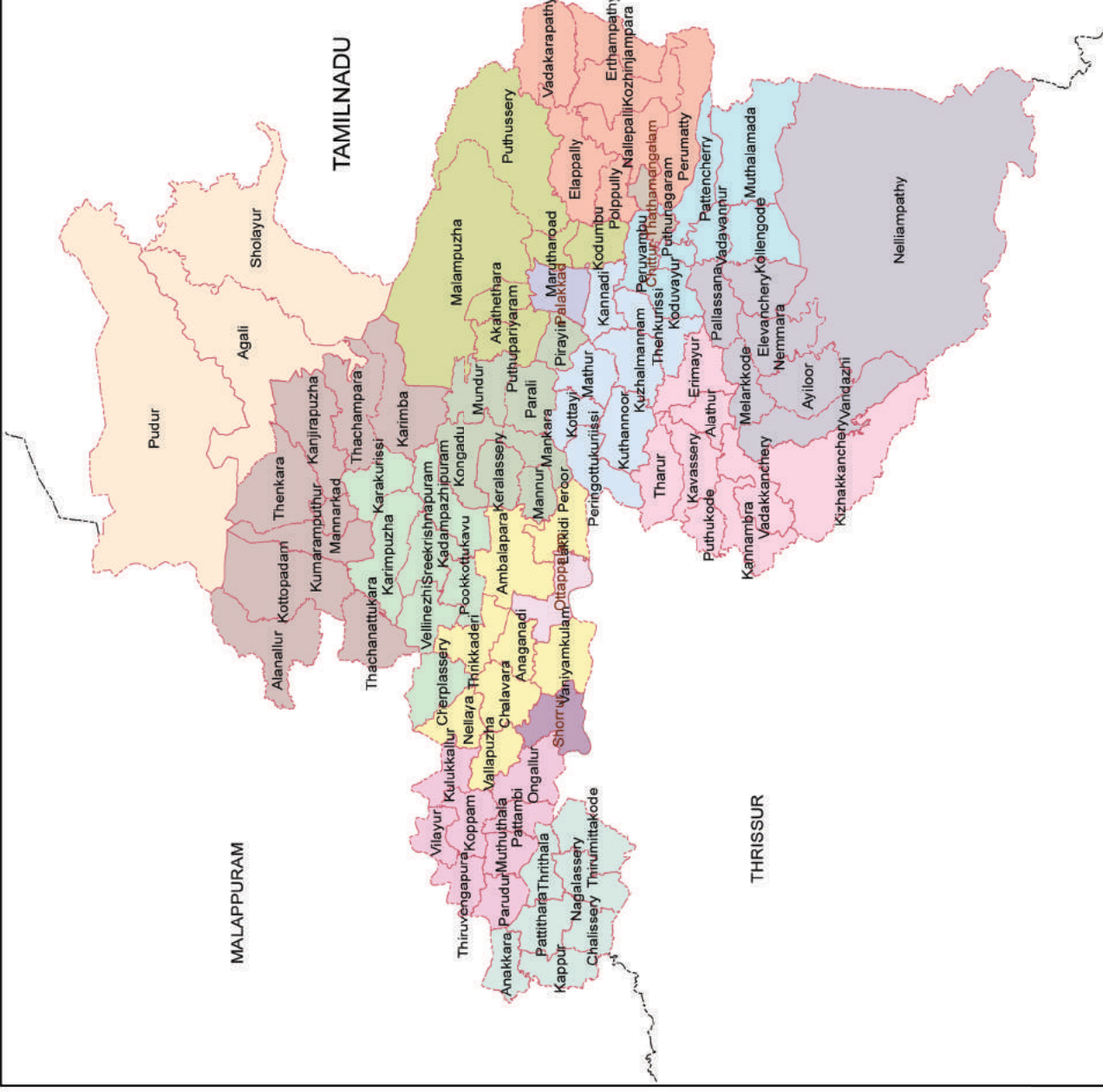
HEALTH

Sl. No.	Institutions	Palakkad	State
1	Government Hospitals (Allopathic)	8	132
2	Number of Child health centres	12	115
3	Number of Primary Health Centres	82	931
4	Number of Dispensaries and Mobiles Units	8	59
5	Number of TB Centre/Clinic	1	18
6	Number of Community health centres	12	115

Table 1.9

TRANSPORT

Sl. No.	Vehicles	Palakkad	State
1	Number of four wheeler (goods)	11577	161313
2	Cars	13456	378955
3	Jeep	3406	71656
4	Taxi	6000	93458
5	Number of three wheelers & goods carriage	2628	50455
6	Three Wheelers (Auto rickshaw)	16297	303092



**ADMINISTRATIVE BOUNDARY
PALAKKAD DISTRICT**

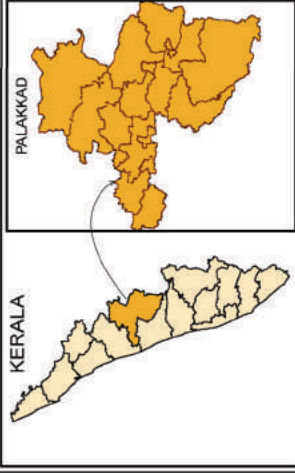
Blocks

- Alathur
- Attappadi
- Chittur
- Kollengode
- Kuzhalmannam
- Malampuzha
- Mannarkad
- Nemmara
- Ottappalam
- Palakkad
- Pattambi
- Sreekrishnapuram
- Thripathala

Municipalities

- Chittur-Thathamangalam
- Ottappalam
- Palakkad
- Shornur

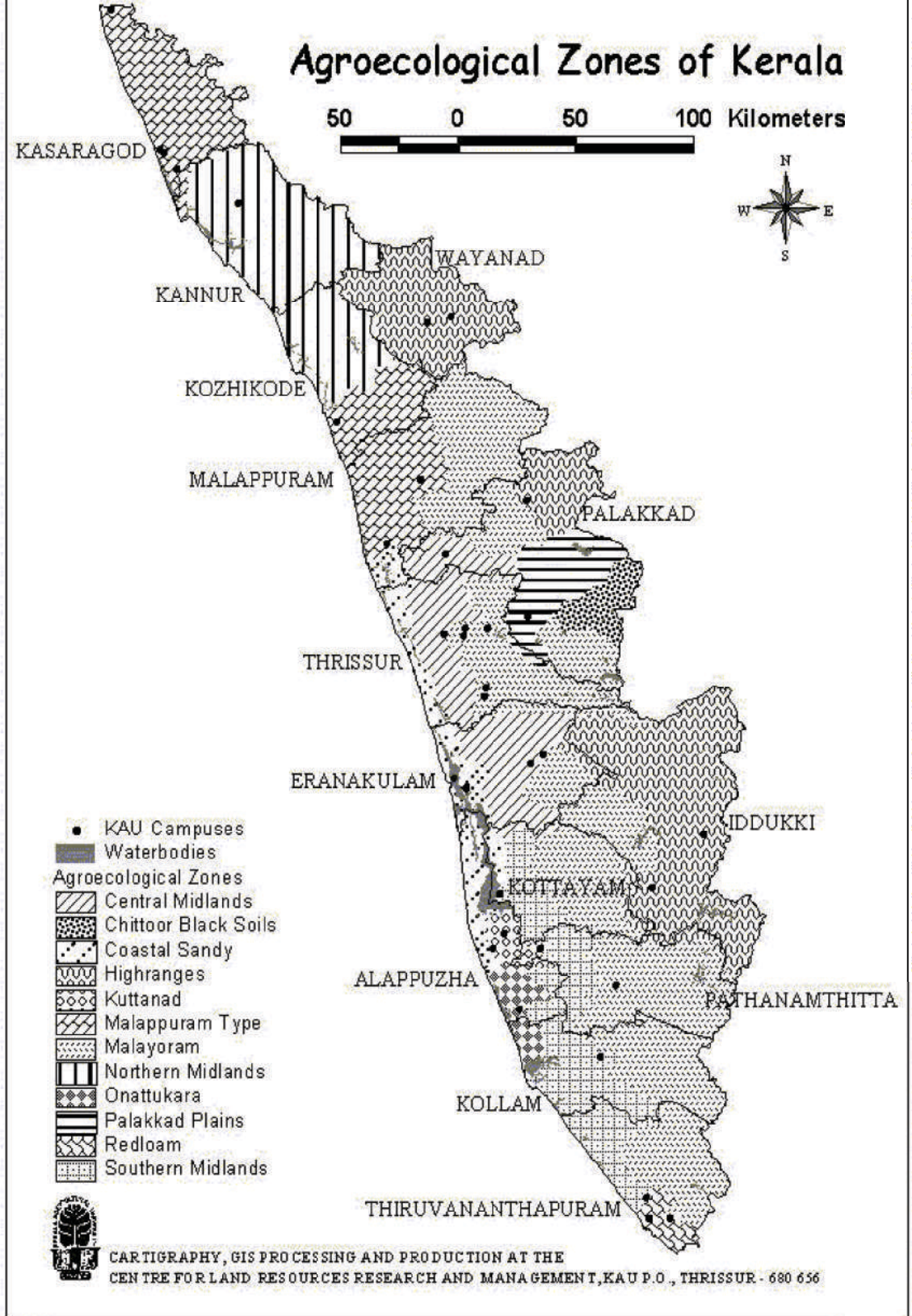
Panchayat Boundary



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



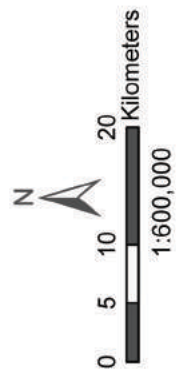
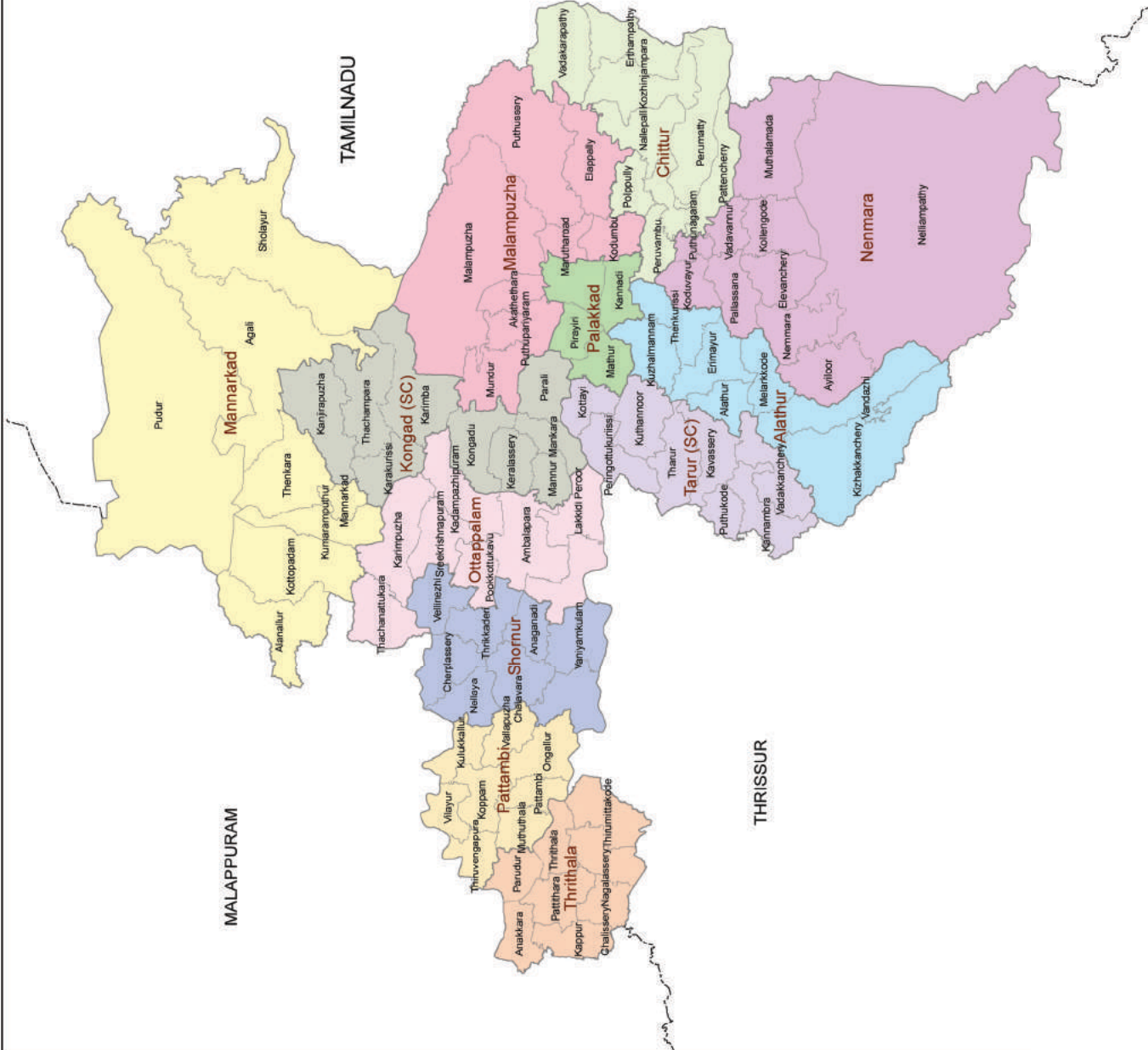
Agroecological Zones of Kerala



- 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

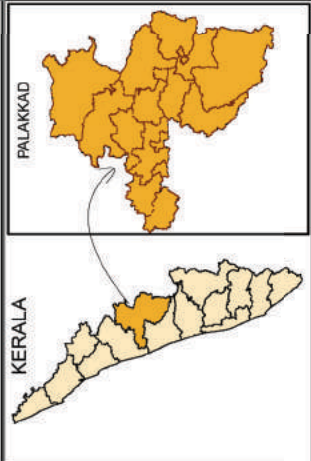


CARTOGRAPHY, GIS PROCESSING AND PRODUCTION AT THE
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**LEGISLATIVE ASSEMBLY
CONSTITUENCY
PALAKKAD DISTRICT**

Assembley	Color
Alathur	Light Blue
Chittur	Light Green
Kongad (SC)	Light Grey
Malampuzha	Pink
Mannarkad	Yellow
Nenmara	Purple
Ottappalam	Light Pink
Palakkad	Green
Pattambi	Orange
Shomur	Blue
Tarur (SC)	Light Blue
Thrithala	Light Orange



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



DEMOGRAPHY

INDIA'S POPULATION – CENSUS 2011

Table 4.1

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

KEY FINDINGS OF THE CENSUS

- Population grows to 1.21 billion
- 181 million people added during 2001-11
- Growth declines to 17.64% from 21.15% during 1991-2001
- There are 623.7 million males and 586.5 million females
- India accounts for 17.5% of the world's population, China 19.4%
- First decade (with exception of 1911-1921) which saw addition of lesser people than the previous decade.
- Child sex ratio — 914 females against 1,000 males — lowest since independence
- Overall sex ratio rises by seven points — 940 females per 1,000 males

- Literacy rate goes up from 64.83% to 74.04%
- 74% people aged seven and above are literate
- 82.14% male literacy, 65.46% female literacy
- In 2001, male literacy was 75.26%, female literacy was 53.67%
- Delhi (11,297 people per square km) has the highest population density, followed by Chandigarh (9,252)
- Uttar Pradesh is the most populous state with 199 million people while Lakshadweep is the least populated at 64,429

Source : Census Report 2011

Table:- 4.2

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

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

India/State/ District	Literacy rate (in Percentage)			Percentage decadal growth rate of population 2001-11	Sex Ratio (Number of Females per 1000 Males) 2011	Sex Ratio 0-6 population 2011
	Persons	Males	Females			
1	12	13	14	15	16	17
INDIA	74.04	82.14	65.46	17.64	940	914
KERALA	93.91	96.02	91.98	4.86	1084	959
Kasaragod	89.95	93.93	86.13	8.18	1079	960
Kannur	95.41	97.54	93.57	4.84	1133	962
Wayanad	89.32	92.84	85.94	4.6	1035	960
Kozhikode	95.24	97.57	93.16	7.31	1097	963
Malappuram	93.55	95.78	91.55	13.39	1096	960
Palakkad	88.49	92.27	84.99	7.39	1067	962
Thrissur	95.32	96.98	9385	4.58	1109	948
Ernakulam	95.68	97.14	94.27	5.6	1028	954
Idukki	92.2	94.84	89.59	1.93	1006	958
Kottayam	96.4	97.14	95.67	1.32	1040	957
Alappuzha	96.26	97.9	94.8	0.61	1100	947
Pathanamthitta	96.93	97.7	96.26	3.12	1129	964
Kollam	93.77	95.83	91.95	1.72	1113	960
Thiruvananthapuram	92.66	94.6	90.89	2.25	1088	967

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 population in the age-group 0-6	Sex ratio of population in the urban population	Percent 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	58,84,89,174	17.64	13.12	12.93	13.30	74.04	82.14	85.46	940	914	31.16
	R	83,30,87,662	42,79,17,052	40,51,70,610	17.19	14.11	14.32	13.90	68.91	78.57	81.75	947	919	25.95
	U	37,71,05,760	19,58,07,196	18,12,98,564	18.12	10.93	11.07	10.78	84.98	89.57	79.92	926	902	47.72
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	1,084	959	
	R	1,74,55,506	84,03,706	90,51,800	-25.96	10.01	10.61	9.45	92.92	95.29	90.74	1,077	960	
	U	1,59,32,171	76,17,584	83,14,587	92.72	9.88	10.56	9.27	94.99	96.33	93.33	1,091	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	1,079	960	38.78
	R	7,97,424	3,87,324	4,10,100	-17.82	11.07	11.61	10.56	88.71	93.11	84.61	1,059	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	1,111	956	
Kannur District	T	25,25,637	11,84,012	13,41,625	4.84	10.50	11.42	9.70	95.41	97.54	93.57	1,133	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	91.46	1,071	956	
	U	16,42,892	7,57,769	8,85,123	35.45	10.53	11.61	9.60	96.23	98.12	94.64	1,168	965	
Wayanad District	T	8,16,558	4,01,314	4,15,244	4.60	10.99	11.41	10.58	89.32	92.84	85.94	1,035	960	3.87
	R	7,84,981	3,85,922	3,99,059	4.52	10.99	11.40	10.59	89.22	92.77	85.82	1,034	960	
	U	31,577	15,392	16,185	6.64	11.03	11.58	10.52	91.63	94.58	88.87	1,052	955	
Kozhikode District	T	30,89,543	14,73,028	16,16,515	7.31	10.47	11.19	9.82	95.24	97.57	93.16	1,097	963	67.15
	R	10,14,765	4,85,854	5,29,111	-42.83	10.91	11.63	10.25	94.79	97.42	92.41	1,089	961	
	U	20,74,778	9,87,374	10,87,404	88.42	10.26	10.87	9.61	95.47	97.64	93.52	1,101	964	
Malappuram District	T	41,10,956	19,61,014	21,49,942	13.39	13.45	14.38	12.60	93.55	95.78	91.55	1,096	960	44.19
	R	22,94,473	10,95,465	11,99,008	-29.82	13.40	14.31	12.56	92.67	94.97	90.61	1,095	961	
	U	18,16,483	8,65,549	9,50,934	410.00	13.51	14.47	12.64	94.66	96.81	92.74	1,099	959	
Palakkad District	T	28,10,892	13,60,067	14,50,825	7.39	10.26	10.80	9.75	88.49	92.27	84.98	1,067	962	24.08
	R	21,33,699	10,31,940	11,01,759	-5.63	10.39	10.94	9.88	87.23	91.27	83.49	1,068	964	
	U	6,77,193	3,28,127	3,49,066	89.82	9.84	10.37	9.34	92.45	95.41	89.70	1,064	958	
Thrissur District	T	31,10,327	14,74,665	16,35,662	4.58	9.30	10.07	8.60	95.32	96.98	93.85	1,109	948	67.19
	R	10,20,537	4,85,875	5,34,662	-52.20	9.43	10.13	8.79	93.99	96.09	92.11	1,100	955	
	U	20,89,790	9,88,790	11,01,000	148.95	9.23	10.03	8.51	95.97	97.41	94.70	1,113	944	
Ernakulam District	T	32,79,660	16,17,602	16,62,058	5.60	8.82	9.15	8.50	95.68	97.14	94.27	1,028	954	68.07
	R	10,47,296	5,18,040	5,29,256	-35.70	8.44	8.74	8.16	94.34	95.96	92.76	1,022	954	
	U	22,32,364	10,99,562	11,33,002	51.15	9.00	9.35	8.65	96.32	97.70	94.98	1,030	954	
Idukki District	T	11,07,453	5,51,944	5,55,509	-1.93	9.04	9.26	8.82	92.20	94.84	89.59	1,006	958	4.70
	R	10,55,428	5,26,420	5,29,008	-1.51	9.02	9.24	8.80	92.03	94.73	89.34	1,005	957	
	U	52,025	25,524	26,501	-9.67	9.49	9.83	9.16	95.74	97.10	94.45	1,038	968	
Kottayam District	T	19,79,384	9,70,140	10,09,244	1.32	8.52	8.88	8.17	96.40	97.17	95.67	1,040	957	28.58
	R	14,13,773	6,94,308	7,19,465	-14.52	8.56	8.91	8.23	97.17	97.97	96.40	1,036	957	
	U	5,65,611	2,75,832	2,89,779	88.66	8.41	8.80	8.03	94.49	95.16	93.86	1,051	958	
Alappuzha District	T	21,21,943	10,10,252	11,11,691	0.61	8.77	9.46	8.14	96.26	97.90	94.80	1,100	947	54.06
	R	9,74,916	4,62,571	5,12,345	-34.47	9.08	9.82	8.42	96.72	98.24	95.38	1,108	950	
	U	11,47,027	5,47,681	5,99,346	84.87	8.50	9.16	7.90	95.87	97.62	94.30	1,094	944	
Pathanamthitta District	T	11,95,537	5,61,620	6,33,917	-3.12	7.65	8.29	7.09	96.93	97.70	96.26	1,129	964	11.00
	R	10,64,076	4,99,745	5,64,331	-4.16	7.65	8.29	7.08	96.87	97.64	96.19	1,129	964	
	U	1,31,461	61,875	69,586	6.19	7.70	8.32	7.15	97.42	98.15	96.79	1,125	967	
Kollam District	T	26,26,703	12,44,815	13,84,888	1.72	9.05	9.76	8.42	93.77	95.83	91.95	1,113	960	45.11
	R	14,43,363	6,78,969	7,64,394	-31.89	9.02	9.78	8.35	94.10	96.15	93.90	1,126	961	
	U	11,86,340	5,65,846	6,20,494	154.59	9.09	9.73	8.50	93.38	95.46	91.52	1,097	958	
Thiruvananthapuram District	T	33,07,284	15,84,200	17,23,084	2.25	8.79	9.33	8.29	92.66	94.60	90.89	1,088	967	53.80
	R	15,26,030	7,25,230	8,02,800	-28.89	9.15	9.82	8.55	91.98	94.27	89.95	1,107	963	
	U	17,79,254	8,58,970	9,20,284	62.99	8.48	8.91	8.07	93.24	94.89	91.71	1,071	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	2011
No. of Towns		199	520	25.95
No. of Villages		1,364	1,018	47.72

NUMBER OF TOWNS AND URBAN POPULATION IN KERALA

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

GROWTH IN NO. OF TOWNS (KERALA)

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

Some Concepts and Definitions

What is census?

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

Classification of Area:

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

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

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

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

Out Growth (OG): Out Growth should be a viable unit such as a village or part of a village contiguous to a statutory town and possess the urban features in terms of infrastructure and amenities such as pucca roads, electricity, taps, drainage system, education institutions, post offices, medical facilities, banks, etc. Examples of OGs are Railway colonies, University campuses, Port areas, that may come up near a city or statutory towns outside its statutory limits but within the revenue limit of a village or villages contiguous to the town or city.

No. of OGs in Kerala: 16 *

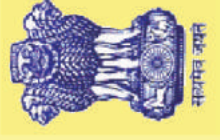
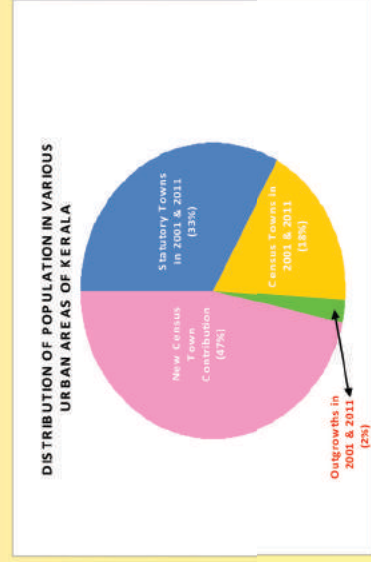
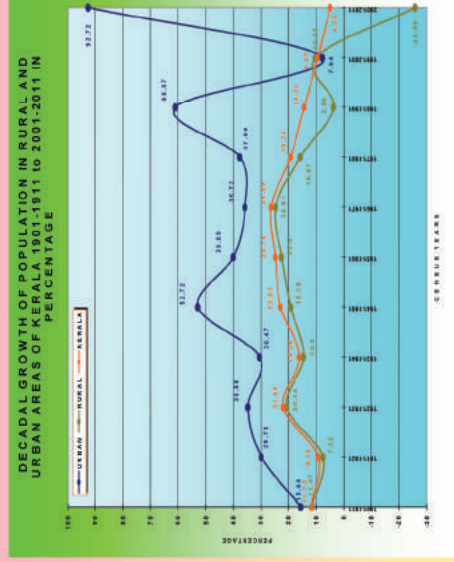
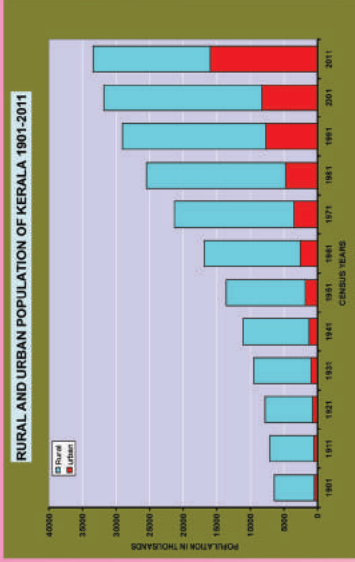
Urban Agglomeration (UA): It is a continuous urban spread constituting a town and its adjoining urban outgrowths (OGs) or two or more physically contiguous towns together and any adjoining urban out-growths of such towns.

No. of UAs in Kerala: 19 *

Rural: All areas other than urban are rural. The basic unit for rural areas is the revenue village.

No. of Villages in Kerala: 1018

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



CENSUS OF INDIA 2011

SUMMARY OF PROVISIONAL POPULATION FIGURES KERALA

RURAL – URBAN DISTRIBUTION

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



Our Census, Our Future

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METEOROLOGY

RAIN FALL DISTRIBUTION OF PALAKKAD

Table: 5.1

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Actual	Normal	Deviation
1997	0	14	36	27	124	337	806	380	155	216	283	27	2405	2363	42
State Average (Total/14)	3	4	37	62	133	562	942	521	290	283	285	92	3213	3052	161
1998	0	0	9	48	118	541	546	310	341	276	130	88	2407	2363	44
State Average (Total/14)	8	1	11	65	171	725	601	365	516	439	129	84	3115	3052	63
1999	0	17.2	52.8	40.4	284	437	619	170	45	446	60	2	2173.4	2363	-189.6
State Average (Total/14)	2	24	22	124	459	614	657	250	86	545	71	5	2859	3052	-193
2000	0	29	3	85	43	508	291	464	191	131	83	34	1862	2228	-366
State Average (Total/14)	14	68	23	99	130	649	336	580	249	216	81	70	2515	2919	-404
2001	3	17	0	87	117	577	363	218	117	265	205	1	1970	2363	-393
State Average (Total/14)	20	29	7	113	247	709	587	348	231	320	178	11	2800	2929	-129
2002	1	0	35	52	192	342	288	373	66	341	142	1	1833	2363	-530
State Average (Total/14)	7	10	35	117	341	491	319	435	94	519	148	2	2518	2929	-411
2003	0	64	88	124	44	362	343	238	57	365	37	6	1728	2264	-536
State Average (Total/14)	1	50	71	139	93	571	530	345	94	396	82	10	2380	2948	-568

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Actual	Normal	Deviation
2004	1	3	29	81	389	590	335	400	95	218	86	0	2227	2473	-246
State Average (Total/14)	3	8	38	114	622	665	373	405	197	327	119	2	2877	3092	-215
2005	14	8	13	220	83	516	812	284	360	171	109	57	2647	2472	175
State Average (Total/14)	21	6	27	225	136	628	789	274	400	249	194	62	3011	3091	-80
2006	5	0	83	65	404	502	458	348	414	245	148	0	2671	2472.1	199
State Average (Total/14)	10	1	75	71	525	574	551	388	475	380	219	2	3271	3091	180
2007	1	0	0	101	159	625	1033	478	507	310	32.6	19	3267	2472.1	795
State Average (Total/14)	0	7	8	152	210	729	953	492	534	357	101	11	3554	3091	463
2008		26.6	153.9	28.6	41.2	445.6	359.0	214.1	241.9	364.1	8.6	0.1	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	58.0	138.8	282.0	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

DISTRICT WISE ANNUAL AVERAGE RAINFALL(in mm.)

Sl. No.	District	2003	2004	2005	2006	2007	2008
1	Thiruvananthapuram	1567	1911	2112	2310.6	2052.1	1923
2	Kollam	2025	2427	2532	2830.8	2742.7	2495
3	Pathanamthitta	2575	2922	3319	3014.6	3302.8	2840
4	Alappuzha	2328	2804	2598	3012.5	3113.1	2992
5	Kottayam	2780	2910	3389	3746.1	3490.7	3208
6	Idukki	3152	3835	5757	4074.6	4499.9	3769
7	Ernakulam	2593	3201	3407	3864.2	4046.7	3578
8	Thrissur	2248	2928	2851	3499.7	3960.2	3074
9	Palakkad	1728	2227	2647	2670.8	3267.1	2472
10	Malappuram	2206	2644	2638	3358.4	3527.9	2850
11	Kozhikode	2274	3333	2347	3751.2	4701.4	3671
12	Wayanad	1915	2608	3203	2707.4	3083	3409
13	Kannur	2865	3370	2845	3475.1	4112.9	3374
14	Kasaragod	3064	3157	2504	3473.9	3850.6	3613

Source : Statistics for Planning 2008

Table 5.3

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 5.4

MEAN MONTHLY HUMIDITY - PALAKKAD (DURING THE YEAR 2005-07 (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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2006	-	-	-	-	-	-	-	-	-	-	89	79	91	83	91	80	91	84	84	77	77	73	64	47
2007	65	37	59	34	67	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: Agri. Stat., DES

Table 5.5

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		
Vellanikkar a	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	Data not available																			
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		

Source: Farm Guide

GEOLOGY

Palakkad district 'rice bowl of Kerala' occupies an area of 4480 sq.km. It is bordered on the east by the Coimbatore district of Tamilnadu, on the north and North West by Malappuram District and on the south by Thrissur district. It lies between 10°20' and 11°14' north latitude and between 76°20' and 76°54' east longitudes. The western ghat mountain ranges which dominate in this district have an average attitude of 1538 meters. The continuity of the majestic Western Ghats stretching over 100 km is broken as Palakkad, known as Palakkad gap with a width of 32 km.

The district has been broadly divided into the five geographical terrains.

1. Low land of charnockite country is the west.
2. Migmatic complex in the east.
3. Khondalite group occurring as linear bodies in the north eastern hill region.
4. Wayanad group, occurring as hills in the north in Attappady area.
5. Peninsular Gneissic Complex confined to north of Bharathapuzha river.

The area forms a part of the Precambrian metamorphic shield having a complex geological setup. Wayanad group is represented by rocks of upper amphibolite to lower granulite facies metamorphism. This complex can be divided into an ultramafic dominants upper group and amphibolite dominant lower group. The ultramafic group comprises talc-chlorite schist, talc-pyroxene-garnet schist. The amphibolites group consists of hornblende-biotite schist and gneisses with amphibolites bands garnet. These rocks are exposed in the Attapady area. Hornblende-biotite gneiss and pink granite gneiss of peninsular gneissic complex are exposed in the north especially north of Bharathapuzha River. The khondalite group, which out crops North East of Malampuzha reservoir, comprises garnet sillmanite gneiss and calc-granulites. Narrow bands of calc-granulites are exposed along the Walayar river bed.

Charnokite group is predominant in the western part of the district. This group comprises massive charnockite/gneissic charnockite, pyroxene granulite, Pyroxenite and norite pyroxene granulitic and magnetic quartzite occurs as narrow bands. This impersistent segregation of pyroxenite and norite occur in the 'Palaghat gap'. Charnockite group and Migmatic complex represented by the hornblende-biotite gneiss, garnet, biotite gneiss. These rocks occupy the eastern part and Palaghat gap. Intrusive features such as dolerite, dyke, gabbro pegmatite are also seen.

The valleys in this Palaghat district occupy mostly warkali sediments and fluvial alluvium of quaternary age.

Limestone, gold and magnetite are also reported from the district. Good deposits of Kankar occur in Chittur and Kozhinjampara areas.

The district is divided into (1) Undulating region (western part of the plateau) (2) Gorge region (Central part of the plateau) and (3) Plain at the foot of the ghats. The high mountainous belts made up of Archean rock consist of gneiss, Charnockite and dykes. Hornblende-biotite gneiss are found near Thathamangalam (Chittur taluk), Grey granite gneiss with biotite occur in the mangalam dam site area. Charnockites, characterised by the presence of hypersthene, bluish grey quartz and feldspar, are seen in Palakkad taluk.

Mineral Resources

The dolerite dykes which ophitic texture, containing basic or intermediate feldspars together with orthopyroxenes as essential minerals is seen in Mangalam dam site area. Laterite is found in the plains at the foot of the ghats. The important mineral found in this district is the Kankar limestone in Valiavallampathy, Ozhalapathy, Eruthempathy, along the Varattar river near Attapady. Low quantity of monazite, ilmenite, epidote and a few grains of tungsten ore are seen in the samples of heavy minerals from Siruvani river and its tributaries in Attapady valley.

GEOMORPHOLOGY

Physiographically the district is divided into 2 zones. 1) The high hills ranges of the Western Ghats in the east and 2) Low lying undulating midland region in the west.

The mountainous highlands are mostly seen concentrated on the north and southern parts which extend from either side up to the Palakkad gap on the east. Excepting the hilly uplands on the north and south, major part of the remaining area is midland region of gently undulating land of paddy fields and low hills of mixed cropped gardens. Isolated hillocks of medium elevation are located at random, this erosional landform are often seen interfingered with alluvial plains and laterite mounds and the terrain represents a dissected pediment. The structural cum denudational hill ranges border the dissected pediment to its north and south. Bharathapuzha is the major river draining the district Gayatri puzha and Kunthi puzha are the important tributaries of the Bharathapuzha. The Attapady area is drained by Bhavani River, which unlike other rivers of Kerala flows towards east.

Table 6.1

GEOLOGY DETAILS

BLOCK	PANCHAYATH	ROCK_TYPE	Area in Ha
Alathur	Alathur	Charnockite group of rocks	1686.48
		Migmatite Complex	328.23
			2014.71
	Erimayur	Charnockite group of rocks	2009.74
		Migmatite Complex	1293.01
			3302.75
	Kannambra	Basic Rocks	7.68
		Charnockite group of rocks	3101.85
		Migmatite Complex	101.90
			3211.42
	Kavassery	Charnockite group of rocks	1265.91
		Migmatite Complex	1819.17
			3085.08
	Kizhakkanchery	Basic Rocks	273.15
		Charnockite group of rocks	10491.50
		Migmatite Complex	26.14
		Tank/WB/River	60.17
			10850.96
	Puthukode	Charnockite group of rocks	1215.11
		Migmatite Complex	411.61
		1626.72	
Tharur	Charnockite group of rocks	1474.00	
	Khondalite Group of rocks	18.91	
	Migmatite Complex	1874.60	
		3367.51	
Vadakkanchery	Basic Rocks	10.99	
	Charnockite group of rocks	3062.55	
	Migmatite Complex	558.01	
		3631.54	
		31090.70	
Attappadi	Agali	Charnockite group of rocks	2845.71
		High grade metasedimentary rocks	4246.40
		Metabasic and Ultra basic rocks	3131.33
		Migmatite Complex	1732.39
		Penisular Gneissic Complex	3841.29
			15797.12
	Pudur	Basic Rocks	514.65
		Charnockite group of rocks	26998.45
		Metabasic and Ultra basic rocks	4726.08
		Penisular Gneissic Complex	5530.29
		37769.48	

BLOCK	PANCHAYATH	ROCK_TYPE	Area in Ha
Chittur	Sholayur	Charnockite group of rocks	751.56
		High grade metasedimentary rocks	4614.80
		Metabasic and Ultra basic rocks	1015.74
		Migmatite Complex	3428.35
		Pegmatite/Aplite/Quartz vein	142.66
		Penisular Gneissic Complex	9578.26
			19531.37
	Elappally	Migmatite Complex	4778.67
			4778.67
	Erthampathy	Khondalite Group of rocks	65.50
		Migmatite Complex	3631.88
			3697.38
	Kozhinjampara	Charnockite group of rocks	34.92
		Khondalite Group of rocks	18.07
Migmatite Complex		4560.16	
Pegmatite/Aplite/Quartz vein		25.22	
		4638.37	
Nallepalli	Charnockite group of rocks	49.56	
	Migmatite Complex	3732.85	
	Pegmatite/Aplite/Quartz vein	58.66	
		3841.08	
Perumatty	Charnockite group of rocks	26.02	
	Khondalite Group of rocks	30.20	
	Migmatite Complex	5639.70	
	Pegmatite/Aplite/Quartz vein	174.40	
		5870.32	
Polppully	Charnockite group of rocks	11.16	
	Migmatite Complex	1963.58	
		1974.74	
Vadakarapathy	Migmatite Complex	4971.76	
		4971.76	
		29772.32	
Kollengode	Koduvayur	Charnockite group of rocks	572.03
		Migmatite Complex	1703.57
			2275.60
	Kollengode	Charnockite group of rocks	647.21
		Migmatite Complex	3015.97
			3663.18
	Muthalamada	Charnockite group of rocks	286.22
		Migmatite Complex	7130.35
		Tank/WB/River	156.77
			7573.34

BLOCK	PANCHAYATH	ROCK_TYPE	Area in Ha
Kuzhalmannam	Pattencherry	Migmatite Complex	3289.61 3289.61
	Peruvambu	Migmatite Complex	1911.22 1911.22
	Puthunagaram	Migmatite Complex	877.11 877.11
	Vadavannur	Charnockite group of rocks	0.61
		Migmatite Complex	1727.41 1728.02
	21318.09		
	Kannadi	Migmatite Complex	2309.08 2309.08
	Kottayi	Migmatite Complex	2003.77 2003.77
	Kuthannoor	Migmatite Complex	3514.37 3514.37
	Kuzhalmannam	Migmatite Complex	3143.22 3143.22
Malampuzha	Mathur	Migmatite Complex	2484.08
		2484.08	
	Peringottukuriissi	Charnockite group of rocks	74.08
		Migmatite Complex	3016.75 3090.83
	Thenkurissi	Charnockite group of rocks	1023.11
		Migmatite Complex	2011.55 3034.66
	19580.01		
	Akathethara	Migmatite Complex	1920.54 1920.54
	Kodumbu	Migmatite Complex	2325.98
	Malampuzha	Basic Rocks	Charnockite group of rocks
Khondalite Group of rocks			34.40
Migmatite Complex			1527.20
Pegmatite/Aplite/Quartz vein			18057.13
Penisular Gneissic Complex			24.36
9.94 19679.34			
Marutharoad	Migmatite Complex	1564.89 1564.89	
Puthupariyaram	Charnockite group of rocks	388.94	
	Migmatite Complex	2540.37 2929.31	

BLOCK	PANCHAYATH	ROCK_TYPE	Area in Ha	
Mannarkad	Puthussery	Khondalite Group of rocks	857.61	
		Migmatite Complex	10470.18	
			11327.79	
				39747.85
	Alanallur	Charnockite group of rocks	365.98	
		Laterite	3892.47	
		Migmatite Complex	328.80	
		Penisular Gneissic Complex	1357.61	
			5944.86	
	Kanjirapuzha	Charnockite group of rocks	146.85	
		High grade metasedimentary rocks	419.00	
		Migmatite Complex	4038.39	
		Penisular Gneissic Complex	777.57	
			5381.80	
	Karimba	Basic Rocks	23.99	
		Charnockite group of rocks	109.21	
		Khondalite Group of rocks	126.04	
		Migmatite Complex	3466.95	
		Penisular Gneissic Complex	2089.88	
			5816.06	
	Kottopadam	Charnockite group of rocks	1181.31	
		Laterite	1202.95	
		Migmatite Complex	4439.17	
		Penisular Gneissic Complex	861.78	
			7685.21	
	Kumaramputhur	Charnockite group of rocks	389.84	
		Migmatite Complex	2450.46	
		Penisular Gneissic Complex	686.68	
			3526.98	
	Mannarkad	Charnockite group of rocks	23.31	
		Migmatite Complex	1153.52	
			1176.83	
	Thachampara	Charnockite group of rocks	100.59	
		Migmatite Complex	2067.46	
		Penisular Gneissic Complex	2919.72	
			5087.77	
	Thachanattukara	Charnockite group of rocks	1608.70	
		Migmatite Complex	1521.82	
		Penisular Gneissic Complex	428.78	
			3559.30	
	Thenkara	Charnockite group of rocks	1447.78	
		High grade metasedimentary rocks	29.26	
Migmatite Complex		2347.13		
Penisular Gneissic Complex		1857.01		
		5681.18		
		43860.00		

BLOCK	PANCHAYATH	ROCK_TYPE	Area in Ha
Municipality		Charnockite group of rocks	4786.88
		Migmatite Complex	5744.88
			10531.76
Nenmara			10531.76
	Ayiloor	Charnockite group of rocks	4108.14
			4108.14
	Elevanchery	Charnockite group of rocks	1832.98
		Migmatite Complex	1504.65
			3337.63
	Melarkkode	Charnockite group of rocks	731.75
		Migmatite Complex	1845.85
			2577.60
	Nelliampathy	Basic Rocks	9.12
		Charnockite group of rocks	30300.80
		Migmatite Complex	26220.54
			56530.46
Nemmara	Charnockite group of rocks	3045.34	
	Migmatite Complex	436.84	
		3482.18	
Pallassana	Charnockite group of rocks	40.67	
	Migmatite Complex	2888.22	
		2928.89	
Vandazhi	Basic Rocks	51.53	
	Charnockite group of rocks	5459.24	
	Migmatite Complex	155.10	
	Tank/WB/River	284.97	
		5950.83	
		78915.74	
Ottappalam	Ambalapara	Charnockite group of rocks	4216.29
		Migmatite Complex	884.55
			5100.84
	Anaganadi	Charnockite group of rocks	838.58
		Migmatite Complex	1162.18
		2000.76	
Chalavara	Basic Rocks	34.44	
	Charnockite group of rocks	2153.73	
	Migmatite Complex	944.01	
		3132.18	
Lakkidi Peroor	Charnockite group of rocks	842.23	
	Migmatite Complex	2189.94	
		3032.17	

BLOCK	PANCHAYATH	ROCK_TYPE	Area in Ha	
Palakkad	Nellaya	Basic Rocks	114.81	
		Charnockite group of rocks	1095.64	
		Migmatite Complex	1310.94	
			2521.39	
	Thrikkaderi	Charnockite group of rocks	1639.77	
		Migmatite Complex	1243.06	
			2882.83	
	Vallapuzha	Basic Rocks	43.53	
		Charnockite group of rocks	1858.99	
		Migmatite Complex	285.10	
			2187.62	
	Vaniyamkulam	Charnockite group of rocks	3402.19	
		Migmatite Complex	56.92	
			3459.11	
			24316.89	
	Keralassery	Charnockite group of rocks	2210.93	
			Migmatite Complex	259.12
			2470.05	
		Kongadu	Charnockite group of rocks	1035.16
			Migmatite Complex	2227.89
			Penisular Gneissic Complex	384.75
				3647.80
		Mankara	Charnockite group of rocks	506.23
Migmatite Complex			1485.86	
			1992.09	
Mannur		Charnockite group of rocks	1224.39	
		Migmatite Complex	540.26	
			1764.65	
Mundur	Basic Rocks	67.82		
	Charnockite group of rocks	1896.48		
	Migmatite Complex	1530.92		
	Penisular Gneissic Complex	95.52		
		3590.74		
Parali	Charnockite group of rocks	535.63		
	Migmatite Complex	2436.16		
		2971.79		
Pirayiri	Migmatite Complex	1882.46		
		1882.46		
		18319.58		
Pattambi	Koppam	Basic Rocks	9.70	
		Charnockite group of rocks	1692.00	
		Migmatite Complex	925.41	
			2627.11	

BLOCK	PANCHAYATH	ROCK_TYPE	Area in Ha
	Kulukkallur	Basic Rocks	39.30
		Charnockite group of rocks	1558.65
		Migmatite Complex	475.95
			2073.90
	Muthuthala	Charnockite group of rocks	1497.00
		Migmatite Complex	426.72
			1923.72
	Ongallur	Basic Rocks	7.63
		Charnockite group of rocks	2780.96
		Migmatite Complex	437.60
			3226.19
	Parudur	Charnockite group of rocks	1915.74
		Migmatite Complex	145.37
		Sand and Silt	31.70
			2092.80
	Pattambi	Charnockite group of rocks	1483.33
		Migmatite Complex	214.10
			1697.43
	Thiruvengapura	Charnockite group of rocks	812.90
		Migmatite Complex	1204.38
			2017.28
	Vilayur	Basic Rocks	32.24
		Charnockite group of rocks	1507.68
		Migmatite Complex	244.18
		1784.09	
		17442.53	
Sreekrishnapuram			
Cherplassery	Basic Rocks	16.90	
	Charnockite group of rocks	1797.33	
	Migmatite Complex	1171.34	
		2985.57	
Kadampazhipuram	Basic Rocks	32.78	
	Charnockite group of rocks	737.44	
	Migmatite Complex	2877.97	
	Penisular Gneissic Complex	216.25	
		3864.45	
Karakurissi	Charnockite group of rocks	5.35	
	Migmatite Complex	401.12	
	Penisular Gneissic Complex	2452.59	
		2859.07	
Karimpuzha	Charnockite group of rocks	523.43	
	Migmatite Complex	2941.93	
	Penisular Gneissic Complex	1342.17	
		4807.53	
Pookkottukavu	Charnockite group of rocks	716.98	
	Migmatite Complex	1419.63	
		2136.61	

BLOCK	PANCHAYATH	ROCK_TYPE	Area in Ha
Thrithala	Sreekrishnapuram	Charnockite group of rocks	1468.77
		Migmatite Complex	1574.04
			3042.81
	Vellinezhi	Charnockite group of rocks	2111.42
		Migmatite Complex	590.15
			2701.57
			22397.60
	Anakkara	Charnockite group of rocks	885.68
		Sand and Silt	1215.83
			2101.51
	Chalissery	Charnockite group of rocks	1291.36
		Sand and Silt	643.87
		Sandstone and clay with lignite interc	23.68
			1958.91
	Kappur	Charnockite group of rocks	1459.47
		Sand and Silt	906.97
			2366.44
Nagalassery	Basic Rocks	12.00	
	Charnockite group of rocks	2195.63	
	Sand and Silt	474.59	
		2682.22	
Pattithara	Charnockite group of rocks	1801.25	
	Sand and Silt	902.39	
	Sandstone and clay with lignite interc	29.67	
		2733.31	
Thirumittakode	Basic Rocks	9.21	
		Charnockite group of rocks	3022.30
		Sand and Silt	212.71
			3244.22
Thrithala	Basic Rocks	34.03	
	Charnockite group of rocks	2064.32	
	Sand and Silt	30.96	
		2129.31	
		17215.92	
		District Total	448000.00

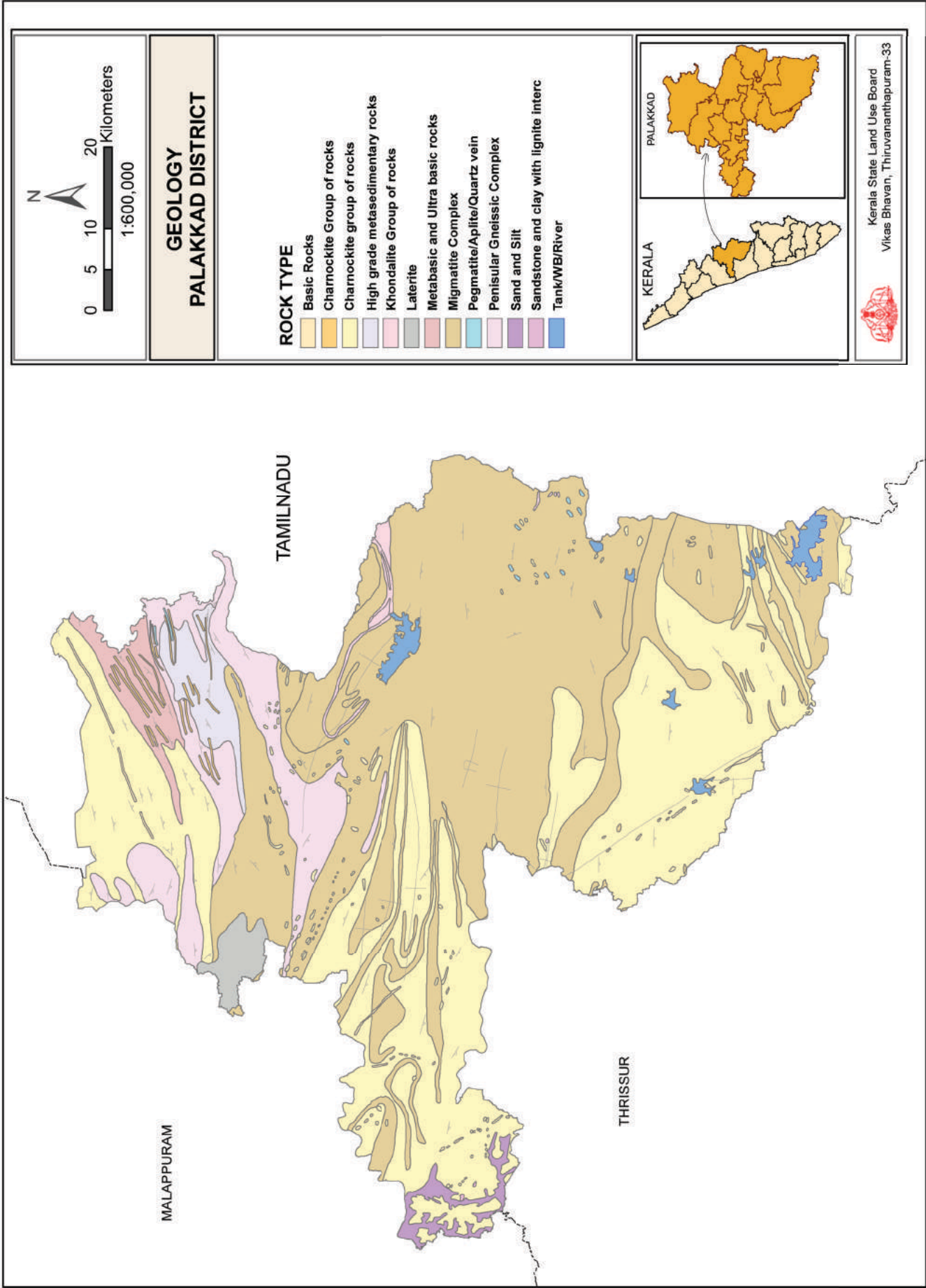


Table 6.2

GEOMORPHOLOGY DETAILS

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Alathur	Alathur	Residual Mount(Pediment)	11.72
		Lower Plateau (Lateritic) - Dissected	0.01
		Piedmont Zone	1227.06
		Rock Exposure	9.66
		Structural Hills	298.33
		Valley Fill	431.86
		Water Body	36.07
		2014.71	
	Erimayur	Residual Mount(Pediment)	40.06
		Denudational Hills	55.49
		Lower Plateau (Lateritic) - Dissected	1506.28
		Piedmont Zone	935.10
		Residual Mount	6.76
		Valley Fill	722.45
		Water Body	36.62
	3302.76		
	Kannambra	Residual Mount(Pediment)	76.96
		Denudational Structural Hills	87.99
		Piedmont Zone	2079.32
		Valley Fill	957.57
		Water Body	9.60
	3211.43		
	Kavassery	Residual Mount(Pediment)	150.44
		Denudational Hills	2.81
		Piedmont Zone	1838.07
		Valley Fill	1005.73
		Water Body	88.03
	3085.08		
	Kizhakkanchery	Residual Mount(Pediment)	11.26
		Denudational Structural Hills	5300.26
		Piedmont Zone	4157.29
		Valley	12.95
		Valley Fill	1269.20
		Water Body	100.03
	10850.99		
	Puthukode	Residual Mount(Pediment)	9.21
		Denudational Hills	71.35
		Piedmont Zone	830.92
		Valley Fill	707.52
		Water Body	7.73
	1626.72		
	Tharur	Residual Mount(Pediment)	125.54
		Denudational Hills	239.93
		Piedmont Zone	1979.05
		Valley Fill	944.79
		Water Body	78.20
	3367.51		

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Attappadi	Vadakkanchery	Residual Mount(Pediment)	104.85
		Denudational Structural Hills	84.92
		Piedmont Zone	2474.71
		Structural Hills	175.07
		Valley Fill	758.83
		Water Body	33.17
			3631.54
	Agali	Channel bar(Flood Plain)	8.89
		Channel Island (Flood Plain)	12.17
		Denudational Structural Hills	13992.40
		Piedmont Zone	78.08
		Point bar(Flood Plain)	4.89
		Rock Exposure	6.42
		Valley	1453.44
		Valley Fill	1.95
		Water Body	238.92
			15797.17
	Pudur	Channel bar(Flood Plain)	2.32
		Channel Island (Flood Plain)	0.43
		Denudational Structural Hills	35458.70
		Piedmont Zone	1055.99
		Point bar(Flood Plain)	2.00
		Rock Exposure	44.45
		Valley	989.28
		Valley Fill	9.77
		Water Body	206.58
		37769.51	
Sholayur	Denudational Structural Hills	18099.20	
	Rock Exposure	60.09	
	Valley	1208.41	
	Water Body	163.67	
	19531.37		
Elappally	Lower Plateau (Lateritic) - Dissected	2980.36	
	Pediplain Weathered	712.80	
	Rock Exposure	13.20	
	Valley Fill	969.95	
	Water Body	102.38	
	4778.67		
Chittur	Erthampathy	Lower Plateau (Lateritic) - Dissected	1687.09
		Pediplain Weathered	1843.41
		Residual Mount	18.76
		Rock Exposure	23.67
		Valley Fill	45.82
		Water Body	78.64
			3697.39

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha		
Kollengode	Kozhinjampara	Lower Plateau (Lateritic) - Dissected	3714.42		
		Pediplain Weathered	574.55		
		Residual Mount	13.25		
		Rock Exposure	59.89		
		Valley Fill	51.70		
		Water Body	224.55		
			4638.36		
	Nallepalli	Lower Plateau (Lateritic) - Dissected	3659.34		
		Residual Mount	2.99		
		Rock Exposure	36.05		
		Valley Fill	40.02		
		Water Body	102.67		
			3841.07		
	Perumatty	Lower Plateau (Lateritic) - Dissected	5624.19		
		Rock Exposure	25.01		
		Valley Fill	110.86		
		Water Body	110.27		
			5870.32		
	Polppully	Lower Plateau (Lateritic) - Dissected	1680.31		
		Point bar(Flood Plain)	0.89		
		Valley Fill	283.47		
		Water Body	10.06		
	Vadakarapathy	Pediplain Weathered	4714.86		
		Piedmont Zone	2.76		
		Rock Exposure	96.77		
		Valley Fill	92.69		
		Water Body	64.68		
			4971.76		
			29772.32		
	Kollengode	Koduvayur	Linear ridge(Lower Plateau)	5.96	
			Lower Plateau (Lateritic) - Dissected	1699.55	
			Residual Mount	20.98	
			Rock Exposure	1.38	
			Valley Fill	547.73	
				2275.60	
		Kollengode	Residual Mount(Pediment)	17.59	
			Denudational Structural Hills	475.94	
			Lower Plateau (Lateritic) - Dissected	6.79	
			Piedmont Zone	2915.25	
			Rock Exposure	65.66	
			Valley Fill	173.63	
		Water Body	8.32		
			3663.18		
	Muthalamada	Residual Mount(Pediment)	80.36		
		Denudational Structural Hills	157.52		
		Lower Plateau (Lateritic) - Dissected	1027.80		
		Piedmont Zone	5370.78		
Residual Mount		16.55			

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Kuzhalmannam		Rock Exposure	42.71
		Valley	141.32
		Valley Fill	553.16
		Water Body	183.14
			7573.34
	Pattencherry	Lower Plateau (Lateritic) - Dissected	3153.30
		Piedmont Zone	0.00
		Valley	5.95
		Valley Fill	118.64
			11.72
			3289.61
	Peruvambu	Lower Plateau (Lateritic) - Dissected	1694.37
		Point bar(Flood Plain)	0.98
		Valley Fill	155.20
		Water Body	60.68
			1911.23
	Puthunagaram	Lower Plateau (Lateritic) - Dissected	813.59
		Valley Fill	63.52
			877.11
	Vadavannur	Lower Plateau (Lateritic) - Dissected	1400.78
		Piedmont Zone	122.45
		Valley Fill	171.91
		Water Body	32.89
			1728.02
			21318.09
	Kannadi	Lower Plateau (Lateritic) - Dissected	1579.29
		Valley Fill	647.72
Water Body		82.07	
			2309.08
Kottayi	Lower Plateau (Lateritic) - Dissected	1267.55	
	Valley Fill	718.20	
	Water Body	18.02	
		2003.77	
Kuthannoor	Residual Mount(Pediment)	32.73	
	Denudational Hills	695.27	
	Lower Plateau (Lateritic) - Dissected	468.81	
	Piedmont Zone	1716.47	
	Rock Exposure	4.54	
	Valley Fill	596.55	
		3514.37	
Kuzhalmannam	Denudational Hills	158.29	
	Lower Plateau (Lateritic) - Dissected	1476.01	
	Piedmont Zone	715.60	
	Residual Mount	18.42	
	Valley Fill	774.90	
		3143.22	

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Malampuzha	Mathur	Lower Plateau (Lateritic) - Dissected	1561.14
		Valley Fill	914.34
		Water Body	8.60
			2484.08
	Peringottukuriissi	Residual Mount(Pediment)	61.82
		Denudational Hills	19.89
		Linear ridge(Piedmont Zone)	43.87
		Lower Plateau (Lateritic) - Dissected	804.30
		Piedmont Zone	1191.76
		Point bar(Flood Plain)	7.52
		Valley Fill	916.29
		Water Body	45.39
			3090.83
	Thenkurissi	Residual Mount(Pediment)	36.47
		Lower Plateau (Lateritic) - Dissected	2049.32
		Piedmont Zone	326.07
		Residual Mount	39.09
		Rock Exposure	1.36
		Valley Fill	582.35
		3034.66	
		19580.01	
	Akathethara	Denudational Structural Hills	278.66
		Lower Plateau (Lateritic) - Dissected	618.25
		Piedmont Zone	722.61
		Rock Exposure	9.25
		Valley Fill	288.14
		Water Body	3.63
		1920.54	
	Kodumbu	Lower Plateau (Lateritic) - Dissected	1844.74
		Point bar(Flood Plain)	0.51
		Valley Fill	338.13
		Water Body	142.60
		2325.98	
	Malampuzha	Denudational Structural Hills	13179.60
		Lower Plateau (Lateritic) - Dissected	111.27
		Piedmont Zone	4112.77
		Rock Exposure	208.98
Valley Fill		180.61	
Water Body		1886.17	
	19679.41		
Marutharoad	Lower Plateau (Lateritic) - Dissected	893.69	
	Valley Fill	657.37	
	Water Body	13.84	
	1564.89		
Puthupariyaram	Residual Mount(Pediment)	32.30	
	Lower Plateau (Lateritic) - Dissected	635.74	
	Piedmont Zone	1263.34	
	Structural Hills	23.47	

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Mannarkad	Puthussery	Valley Fill	908.41
		Water Body	66.03
			2929.30
		Residual Mount(Pediment)	12.69
		Denudational Structural Hills	2922.95
		Lower Plateau (Lateritic) - Dissected	422.44
		Pediplain Weathered	991.89
		Piedmont Zone	5549.74
		Rock Exposure	250.15
		Valley Fill	893.55
	Water Body	284.33	
		11327.74	
		39747.85	
	Alanallur	Residual Mount(Pediment)	48.44
		Denudational Structural Hills	1096.76
		Lower Plateau (Lateritic) - Dissected	544.53
		Piedmont Zone	3051.55
		Point bar(Flood Plain)	1.50
		Rock Exposure	6.01
		Valley Fill	1142.53
		Water Body	53.54
			5944.87
		Kanjirapuzha	Residual Mount(Pediment)
	Channel bar(Flood Plain)		0.32
	Denudational Structural Hills		2436.22
	Piedmont Zone		2065.19
	Valley		9.55
	Valley Fill		706.15
	Water Body		13.53
			5381.80
	Karimba	Denudational Structural Hills	2641.72
		Piedmont Zone	2184.84
		Rock Exposure	52.45
		Valley Fill	931.68
		Water Body	5.37
		5816.06	
	Kottopadam	Residual Mount(Pediment)	44.65
		Denudational Structural Hills	2884.15
		Piedmont Zone	3400.78
		Rock Exposure	93.09
		Valley Fill	1246.13
		Water Body	16.42
		7685.22	
	Kumaramputhur	Denudational Structural Hills	579.23
		Piedmont Zone	1989.69
		Rock Exposure	24.05
		Valley Fill	876.53
Water Body		57.50	
	3526.98		

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Municipality	Mannarkad	Residual Mount(Pediment)	39.37
		Piedmont Zone	784.00
		Valley Fill	317.58
		Water Body	35.89
			1176.83
	Thachampara	Residual Mount(Pediment)	54.69
		Denudational Structural Hills	3458.90
		Piedmont Zone	1115.39
		Rock Exposure	26.88
		Valley Fill	385.29
		Water Body	46.62
		5087.77	
	Thachanattukara	Residual Mount(Pediment)	196.94
		Lower Plateau (Lateritic) - Dissected	681.38
		Piedmont Zone	1763.52
		Point bar(Flood Plain)	0.70
		Residual Mount	48.41
		Valley Fill	816.10
		Water Body	52.26
	3559.30		
	Thenkara	Channel bar(Flood Plain)	4.34
		Denudational Structural Hills	3142.08
		Piedmont Zone	1804.90
		Rock Exposure	8.58
		Valley	9.40
		Valley Fill	678.56
		Water Body	33.31
5681.17			
		43860.00	
Nenmara	Ayiloor	Residual Mount(Pediment)	94.40
		Denudational Hills	92.40
		Lower Plateau (Lateritic) - Dissected	5875.21
		Piedmont Zone	1720.34
		Point bar(Flood Plain)	140.58
		Residual Mount	132.60
		Rock Exposure	1.38
		Structural Hills	81.95
		Valley Fill	2138.38
		Water Body	254.53
		10531.75	

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
	Elevanchery	Denudational Structural Hills	868.73
		Linear ridge(Piedmont Zone)	39.82
		Lower Plateau (Lateritic) - Dissected	44.61
		Piedmont Zone	1993.76
		Rock Exposure	2.37
		Valley Fill	355.69
		Water Body	32.65
			3337.63
	Melarkkode	Residual Mount(Pediment)	73.19
		Lower Plateau (Lateritic) - Dissected	10.98
		Piedmont Zone	1752.08
		Rock Exposure	3.50
		Structural Hills	76.57
		Valley Fill	610.03
		Water Body	51.25
			2577.60
	Nelliampathy	Channel bar(Flood Plain)	0.99
		Denudational Hills	370.57
		Denudational Structural Hills	42508.50
		Piedmont Zone	9609.86
		Rock Exposure	664.89
		Valley	953.95
		Valley Fill	0.36
	Water Body	2421.35	
			56530.48
	Nemmara	Residual Mount(Pediment)	103.34
		Denudational Structural Hills	206.41
		Piedmont Zone	2378.33
		Rock Exposure	8.20
		Valley	96.08
		Valley Fill	541.77
		Water Body	148.06
			3482.18
	Pallassana	Residual Mount(Pediment)	4.94
		Linear ridge(Lower Plateau)	18.81
		Lower Plateau (Lateritic) - Dissected	2310.10
		Piedmont Zone	64.03
		Residual Hill	62.90
		Residual Mount	97.86
		Rock Exposure	4.79
		Valley Fill	324.95
Water Body	40.52		
		2928.89	
Vandazhi	Residual Mount(Pediment)	212.90	
	Denudational Hills	66.88	
	Denudational Structural Hills	1660.05	
	Piedmont Zone	3112.36	
	Rock Exposure	49.37	
		16.40	

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Ottappalam		Valley	24.12
		Valley Fill	499.91
		Water Body	308.84
			5950.83
			78915.75
	Ambalapara	Residual Mount(Pediment)	58.67
		Linear ridge(Piedmont Zone)	56.73
		Lower Plateau (Lateritic) - Dissected	166.21
		Piedmont Zone	3041.02
		Residual Hill	182.94
		Residual Mount	12.53
		Rock Exposure	77.24
		Structural Hills	481.71
		Valley Fill	1023.80
			5100.84
	Anaganadi	Residual Mount(Pediment)	97.01
		Denudational Hills	112.45
		Piedmont Zone	1480.50
		Rock Exposure	31.75
		Structural Hills	115.92
		Valley Fill	163.14
		2000.77	
	Chalavara	Residual Mount(Pediment)	22.85
		Denudational Hills	659.24
		Lower Plateau (Lateritic) - Dissected	91.11
		Piedmont Zone	1681.23
		Residual Hill	75.07
		Valley Fill	602.66
		3132.17	
	Lakkidi Peroor	Residual Mount(Pediment)	5.03
		Lower Plateau (Lateritic) - Dissected	1585.97
		Piedmont Zone	555.42
		Point bar(Flood Plain)	44.93
Residual Hill		16.70	
Residual Mount		23.61	
Rock Exposure		2.92	
Valley Fill		754.92	
Water Body		42.67	
	3032.17		
Nellaya	Residual Mount(Pediment)	28.21	
	Denudational Hills	108.99	
	Lower Plateau (Lateritic) - Dissected	745.09	
	Piedmont Zone	1057.58	
	Residual Hill	15.74	
	Residual Mount	60.93	
	Valley Fill	467.14	
	Water Body	37.71	
	2521.39		

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha	
Palakkad	Thrikkaderi	Residual Mount(Pediment)	71.43	
		Denudational Hills	58.01	
		Piedmont Zone	1749.09	
		Residual Hill	185.93	
		Rock Exposure	44.49	
		Structural Hills	531.27	
		Valley Fill	242.61	
			2882.83	
	Vallapuzha	Lower Plateau (Lateritic) - Dissected	1363.32	
		Piedmont Zone	110.63	
		Residual Hill	121.90	
		Residual Mount	59.24	
		Valley Fill	532.54	
		2187.63		
	Vaniyamkulam	Residual Mount(Pediment)	26.30	
		Denudational Hills	74.02	
		Lower Plateau (Lateritic) - Dissected	2471.31	
		Piedmont Zone	223.58	
		Point bar(Flood Plain)	104.50	
		Residual Mount	216.83	
		Valley Fill	267.78	
		Water Body	74.80	
		3459.11		
		24316.90		
	Keralassery	Lower Plateau (Lateritic) - Dissected	1545.05	
		Piedmont Zone	363.11	
		Residual Mount	23.57	
		Structural Hills	27.77	
		Valley Fill	510.40	
		Water Body	0.15	
			2470.05	
		Kongadu	Residual Mount(Pediment)	11.91
			Linear ridge(Piedmont Zone)	83.13
Lower Plateau (Lateritic) - Dissected			206.60	
Piedmont Zone	2431.11			
Structural Hills	26.82			
Valley Fill	888.23			
	3647.81			
Mankara	Lower Plateau (Lateritic) - Dissected	1161.20		
	Piedmont Zone	79.09		
	Point bar(Flood Plain)	4.13		
	Residual Mount	5.83		
	Structural Hills	63.76		
	Valley Fill	584.40		
	Water Body	93.68		
	1992.09			
Mannur	Lower Plateau (Lateritic) - Dissected	1309.20		
	Residual Mount	57.65		

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha	
Pattambi	Mundur	Rock Exposure	9.65	
		Valley Fill	388.13	
			1764.64	
		Residual Mount(Pediment)	62.57	
		Denudational Structural Hills	33.73	
		Linear ridge(Piedmont Zone)	19.77	
		Piedmont Zone	2646.33	
		Structural Hills	104.82	
		Valley Fill	721.14	
		Water Body	2.38	
		3590.75		
	Parali	Lower Plateau (Lateritic) - Dissected	1581.19	
		Piedmont Zone	145.41	
		Structural Hills	173.45	
		Valley Fill	909.63	
		Water Body	162.11	
		2971.78		
	Pirayiri	Lower Plateau (Lateritic) - Dissected	1064.36	
		Residual Mount	47.87	
		Valley Fill	645.68	
		Water Body	124.56	
		1882.47		
		18319.58		
	Koppam	Linear ridge(Lower Plateau)	28.35	
		Lower Plateau (Lateritic) - Dissected	1767.46	
		Residual Hill	247.19	
		Valley Fill	584.11	
			2627.10	
		Kulukkallur	Channel bar(Flood Plain)	4.20
			Lower Plateau (Lateritic) - Dissected	1505.91
			Point bar(Flood Plain)	8.79
			Residual Hill	41.68
			Residual Mount	47.64
	Valley Fill		426.74	
	Water Body	38.94		
		2073.91		
	Muthuthala	Channel bar(Flood Plain)	0.37	
		Linear ridge(Lower Plateau)	32.93	
		Lower Plateau (Lateritic) - Dissected	1151.99	
		Point bar(Flood Plain)	38.26	
		Residual Mount	32.74	
		Valley Fill	646.92	
		Water Body	20.50	
		1923.72		
	Ongallur	Channel bar(Flood Plain)	2.57	
		Lower Plateau (Lateritic) - Dissected	2011.89	
		Point bar(Flood Plain)	77.10	
Residual Hill		145.25		

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Sreekrishnapuram	Parudur	Residual Mount	194.81
		Valley Fill	741.42
		Water Body	53.15
			3226.20
		Channel bar(Flood Plain)	6.97
		Lower Plateau (Lateritic) - Dissected	1061.98
		Point bar(Flood Plain)	144.57
		Residual Mount	11.05
		Valley Fill	800.31
		Water Body	67.92
		2092.80	
	Pattambi	Channel bar(Flood Plain)	1.73
		Lower Plateau (Lateritic) - Dissected	1082.41
		Point bar(Flood Plain)	53.94
		Residual Hill	42.64
		Residual Mount	23.79
		Valley Fill	437.08
		Water Body	55.85
			1697.44
	Thiruvengapura	Linear ridge(Lower Plateau)	51.37
		Lower Plateau (Lateritic) - Dissected	1501.20
		Point bar(Flood Plain)	28.37
		Residual Hill	1.19
		Residual Mount	45.85
		Valley Fill	372.33
		Water Body	16.96
		2017.27	
	Vilayur	Lower Plateau (Lateritic) - Dissected	1391.21
		Point bar(Flood Plain)	5.70
		Residual Hill	45.44
		Valley Fill	324.01
		Water Body	17.74
	1784.09		
		17442.53	
Cherplassery	Residual Mount(Pediment)	101.20	
	Denudational Hills	368.81	
	Lower Plateau (Lateritic) - Dissected	1.40	
	Piedmont Zone	2078.33	
	Point bar(Flood Plain)	3.25	
	Valley Fill	367.40	
	Water Body	65.19	
		2985.56	
	Kadampazhipuram	Residual Mount(Pediment)	35.01
		Linear ridge(Piedmont Zone)	32.03
		Lower Plateau (Lateritic) - Dissected	5.71
		Piedmont Zone	2600.52
		Residual Hill	169.28
	Residual Mount	2.17	

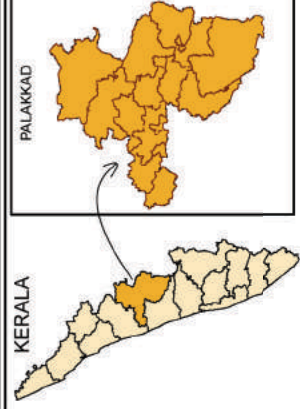
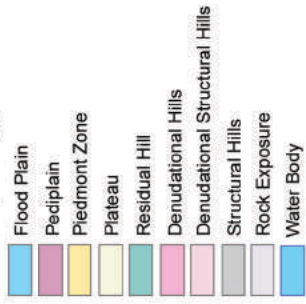
BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
Thrithala		Rock Exposure	10.73
		Valley Fill	980.69
		Water Body	28.32
			3864.46
	Karakurissi	Residual Mount(Pediment)	53.57
		Linear ridge(Piedmont Zone)	17.19
		Piedmont Zone	1882.60
		Valley Fill	862.93
		Water Body	42.78
			2859.07
	Karimpuzha	Residual Mount(Pediment)	254.40
		Linear ridge(Piedmont Zone)	169.43
		Lower Plateau (Lateritic) - Dissected	0.10
		Piedmont Zone	3023.12
		Valley Fill	1249.70
		Water Body	110.79
		4807.53	
	Pookkottukavu	Residual Mount(Pediment)	16.25
		Linear ridge(Piedmont Zone)	47.04
		Lower Plateau (Lateritic) - Dissected	596.58
		Piedmont Zone	813.22
		Residual Hill	96.40
		Residual Mount	82.80
		Rock Exposure	9.47
		Structural Hills	154.23
		Valley Fill	320.63
		2136.61	
	Sreekrishnapuram	Lower Plateau (Lateritic) - Dissected	1655.37
		Piedmont Zone	460.83
		Residual Hill	45.57
		Residual Mount	71.36
		Valley Fill	742.14
		Water Body	67.53
		3042.81	
	Vellinezhi	Residual Mount(Pediment)	34.01
		Linear ridge(Piedmont Zone)	24.27
		Lower Plateau (Lateritic) - Dissected	1329.18
		Piedmont Zone	610.56
		Point bar(Flood Plain)	3.75
		Residual Hill	81.12
		Residual Mount	137.34
		Valley Fill	456.82
		Water Body	24.53
		2701.57	
		22397.62	
	Anakkara	Lower Plateau (Lateritic) - Dissected	1109.15
		Point bar(Flood Plain)	175.14
Residual Mount		174.81	

BLOCK	PANCHAYATH	DISCR_L3	Area in Ha
		Valley Fill	632.68
		Water Body	9.73
			2101.51
	Chalissery	Lower Plateau (Lateritic) - Dissected	1368.19
		Piedmont Zone	0.47
		Residual Mount	36.98
		Valley Fill	553.28
			1958.91
	Kappur	Lower Plateau (Lateritic) - Dissected	1636.45
		Residual Mount	82.08
		Valley Fill	647.92
			2366.44
	Nagalassery	Lower Plateau (Lateritic) - Dissected	1401.13
		Piedmont Zone	393.51
		Residual Hill	43.96
		Residual Mount	142.61
		Rock Exposure	2.79
		Valley Fill	698.22
			2682.23
	Pattithara	Lower Plateau (Lateritic) - Dissected	1679.04
		Point bar(Flood Plain)	73.78
		Residual Mount	134.20
		Valley Fill	831.79
		Water Body	14.50
			2733.30
	Thirumittakode	Residual Mount(Pediment)	7.45
		Channel bar(Flood Plain)	0.03
		Linear ridge(Piedmont Zone)	14.30
		Lower Plateau (Lateritic) - Dissected	898.30
		Piedmont Zone	1109.11
		Point bar(Flood Plain)	1.22
		Residual Hill	180.65
		Residual Mount	41.03
		Valley Fill	990.45
		Water Body	1.68
			3244.21
	Thrithala	Channel bar(Flood Plain)	30.16
		Linear ridge(Lower Plateau)	88.91
		Lower Plateau (Lateritic) - Dissected	1129.45
		Point bar(Flood Plain)	151.76
		Residual Mount	23.63
		Valley Fill	643.79
		Water Body	61.62
			2129.31
			17215.92
		District Total	448000.00

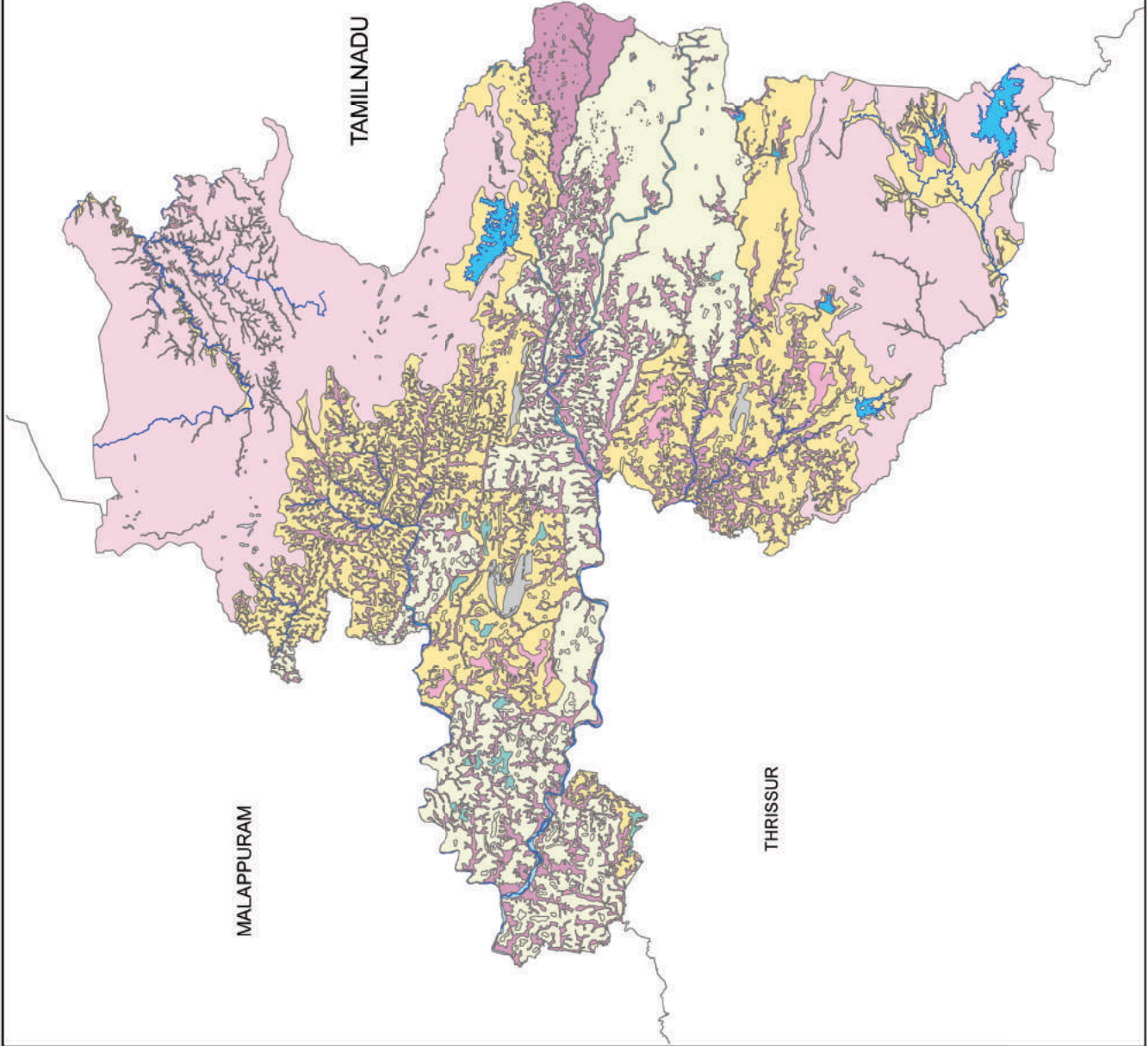


GEOMORPHOLOGY PALAKKAD DISTRICT

Geomorphology Level 1



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



PHYSIOGRAPHY

Palakkad district situated almost in the central part of the State is one of the five districts in the State without coastal line. This district with mountainous highlands, gently rolling plains and isolated low hills has got its own unique characteristics. Lying adjacent to the Western Ghats, Palakkad district provides the inlet for the rest of India to the State through the natural gap of about 30 Km. width in the 960 Km. long Western Ghats. The climate of the district is highly influenced by the gap, allowing entry of the dry wind of Tamil Nadu to this part of the State during November of February.

Based on the physical features, the district is divided into two natural divisions, viz., The mountainous highlands and the undulating midlands. The highland has high mountain peaks, long spurs deep valleys, dense forest and tangled jungles.

The mountainous highlands are mostly seen concentrated on the north and southern parts which extend from either side up to the Palakkad gap on the east. On the south of the gap, the highland rise at Thenmala and gradually swell to form the giant Anamala, Padagiri (1527 metres above MSL), Minampara (1633 metres), Pullalamala(1444 metres) etc. are the high elevated peaks in the southern side. Beginning from Vadamali on the north of Palakkad gap, the highlands extends northwards through Attappady, Silent Valley etc. Kumbanmala (1962 metres) Eluval Mala (2066 metres) and Attumala (1525 metres) are the high peaks along the northern mountainous region.

Excepting the hilly uplands on the north and south, major part of the remaining area is midland region of gently undulating land of paddy fields and low hills of mixed cropped gardens. Isolated hillocks of medium elevation are located at random.

Out of the five taluks, Ottappalam Taluk located in the western side falls entirely in midlands. Major portion of Mannarghat taluk that lies on the north is in the highlands. The remaining three taluks, Chittoor, Alathur and Palakkad have 40%, 20% and 20% respectively of their area under highlands.

The main rivers in the district are Bharathappuzha and Bhavanipuzha. Bharathapuzha, the most important river in the district with 375 kms length has 6186 sq. km. of catchment in the district with her numerous tributaries sprawling all over

the district. Gayathripuzha, Kannadipuzha, Kalpathipuzha, Kanjirampuzha etc, are its main tributaries draining different parts of the district.

A number of dams, viz. Parambikulam-Peruvaripallam, Thunkadavu, Mangalam, Pothundi, Malampuzha, Moolathara, Meenkara, Walayar, Kanjirapuzha and Chulliar are constructed along the river course of the different tributaries of Bharathapuzha for irrigation. Siruvani dam which supplies drinking water to Coimbatore town in Tamil Nadu is situated in the eastern part of the district.

Bhavani River, one among the three east flowing rivers of Kerala takes its origin from the Kundha Mountains in Nilgiris traversing through Attappady valley and joins the Kaveri basin in Tamil Nadu.

Table 7.1

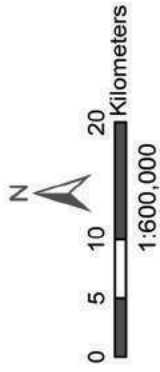
NATURAL REGIONS OF PALAKKAD - VILLAGE WISE AREA

District/Taluk/Village	Low land (Ha)	Mid land (Ha)	High land (Ha)
PALAKKAD DISTRICT			
1. Ottapalam Taluk			
1. Vilayur	-	1778	-
2. Kulakkallur	-	2289	-
3. Nellaya	-	2741	-
4. Cherplasserri	-	2760	-
5. Thrikkaderi - I	-	1936	-
6. Thrikkaderi - II	-	1346	-
7. Vellinezhi	-	3118	-
8. Karimpuzha -I	-	2691	-
9. Karimpuzha -II	-	2048	-
10. Kadampazhipuram - I	-	2119	-
11. Kadampazhipuram - II	-	1852	-
12. Sreekrishnapuram - I	-	2027	-
13. Sreekrishnapuram - II	-	2044	-
14. Ambalapara - I	-	2089	-
15. Ambalapara - II	-	2919	-
16. Ananganadi	-	2078	-
17. Chalavara	-	2790	-
18. Valapuzha	-	2164	-
19. Koppam	-	2585	-
20. Thiruvegapuram	-	2046	-
21. Paruthur	-	2071	-
22. Anakkara	-	2095	-
23. Kappur	-	2352	-
24. Chillisseri	-	1920	-
25. Pattithara	-	2870	-
26. Nagalasseri	-	2620	-
27. Thirumittacode - I	-	1707	-
28. Thirumittacode - II	-	1523	-
29. Thrithala	-	2128	-
30. Muthuthala	-	1995	-
31. Ongallur -I	-	1531	-
32. Ongallur - II	-	1637	-
33. Pattambi	-	1584	-
34. Vaniamkulam -I	-	1548	-
35. Vaniamkulam -II	-	2004	-
36. Ottappalam	-	1568	-
37. Lakkidiperur - I	-	305	-
38. Lakkidiperur - II	-	1774	-
39. Shornur (M)	-	3228	-

District/Taluk/Village	Low land (Ha)	Mid land (Ha)	High land (Ha)
40. Ottappalam Town	-	1698	-
Total	-	83578	-
2. Mannarkkad Taluk			
1. Alanallur - I	-	1405	-
2. Alanallur - II	-	1195	-
3. Thachanattukara - I	-	2296	-
4. Thachanattukara - II	-	1208	-
5. Kottapadam - II	-	1406	-
6. Mannarkkad - II	-	1735	-
7. Pottasseri - I	-	2020	-
8. Pottasseri - II	-	1476	-
9. Karakurissi	-	3024	-
10. Alanallur - III	-	-	3224
11. Kottapadam - I	-	-	4014
12. Kottapadam - II	-	-	2561
13. Kumaranputhur	-	-	3725
14. Mannarkkad - I	-	-	3293
15. Karimba - I	-	-	2378
16. Karimba - II	-	-	933
17. Agali	-	-	26242
18. Pudur	-	-	41347
19. Sholayur	-	-	15075
Total	-	18826	102792
3. Palakkad Taluk			
1. Parali - I	-	1596	-
2. Parali - II	-	1431	-
3. Mankara	-	2053	-
4. Munnur	-	1851	-
5. Kongad - I	-	-	1439
6. Kongad - II	-	-	2116
7. Mundur - I	-	-	1829
8. Mundur - II	-	-	1475
9. Puthupariyaram - I	-	-	1355
10. Akathethara (P)	-	-	1900
11. Puthupariyaram -II(P)	-	-	1604
12. Malampuzha - I	-	-	4580
13. Malampuzha - II	-	-	1900
14. Puthussery West	-	-	2047
15. Puthussery Central	-	-	2278
16. Puthussery East	-	-	2959
17. Elappully - I	-	-	2428
18. Elappully - II	-	-	2479

District/Taluk/Village	Low land (Ha)	Mid land (Ha)	High land (Ha)
19. Poplpully	-	-	1996
20. Peruvamba	-	-	2049
21. Kodumba	-	-	2238
22. Marutharode	-	-	952
23. Kannadi - I	-	-	1411
24. Kannadi - II	-	-	873
25. Pirayiri	-	-	1869
26. Keralasserri	-	-	2387
27. Hemambika Nagar	-	-	399
28. Palghat (M)	-	-	2660
Olavakot Range	-	-	17878
Total	-	6931	65101
4. Chittoor Taluk			
1. Eruvattaparathy	-	530	-
2. Vadakarapathy	-	2096	-
3. Thenampathy	-	672	-
4. Ozhalapathy	-	1165	-
5. Attampathy	-	488	-
6. Manalukunnampathy	-	1089	-
7. Eruthampathy	-	880	-
8. Kozhipathy	-	1724	-
9. Valiavallampathy	-	1919	-
10. Kozhinhampara	-	1106	-
11. Nallepilly	-	1196	-
12. Thekkedesom	-	1131	-
13. Chittoor (P)	-	765	-
14. Thottamangalam (P)	-	776	-
15. Pattanchery	-	2254	-
16. Vallanghy	-	808	-
17. Ayilur	-	859	-
18. Thiruvazhiyad	-	1501	-
Thathamangalam (M)	-	1471	-
20. Nenmara	-	1590	-
21. Kummarkuttupathy	-	-	1298
22. Kuttipallam	-	-	895
23. Perumathy	-	-	3458
24. Moolathara	-	-	2621
25. Muthalamada - I	-	-	4242
26. Muthalamada - II	-	-	3684
27. Kollamgode - I	-	-	1659
28. Kollamgode - II	-	-	3274
29. Vadavannur	-	-	1738

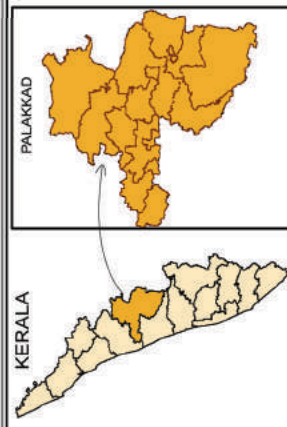
District/Taluk/Village	Low land (Ha)	Mid land (Ha)	High land (Ha)
30. Koduvayoor - I	-	-	1977
31. Koduvayoor - II	-	-	1008
32. Pallassana	-	-	2933
33. Elavanchery	-	-	3218
34. Pothundy	-	-	1286
35. Kairady	-	-	1734
Cheengan Range	-	-	-
Parambikulam Range	-	-	56404
Nelliampathy Range	-	-	-
Nenmara Range	-	-	-
Total	-	24080	91429
5. Althur Taluk			
1. Perumgottukurisi - I	-	1178	-
2. Perumgottukurisi - II	-	1967	-
3. Kottayi - I	-	1017	-
4. Erimayur - I	-	1737	-
5. Kuthanur - II	-	1132	-
6. Tharur - I	-	1382	-
7. Tharur - II	-	2045	-
8. Kavasseri - I	-	1515	-
9. Kavasseri - II	-	1531	-
10. Pattukode	-	1629	-
11. Kannambra - I	-	2293	-
12. Kannambra - II	-	679	-
13. Vadakkancherry - I	-	2113	-
14. Vadakkancherry - II	-	1675	-
15. Alathur	-	1962	-
16. Vandazhi - II	-	1036	-
17. Kottayi - II	-	-	978
18. Mathur - I	-	-	1283
19. Mathur - II	-	-	1171
20. Kuzhalmannam - I	-	-	1856
21. Kuzhalmannam - II	-	-	1206
22. Thenkurissi - I	-	-	1324
23. Thenkurissi - II	-	-	1668
24. Erimayur - II	-	-	1630
25. Kuthanur - I	-	-	2451
26. Kizhakkencherry I & II	-	-	11256
27. Vandazhi - I	-	-	4634
28. Melarcode	-	-	2552
Total	-	24891	32009



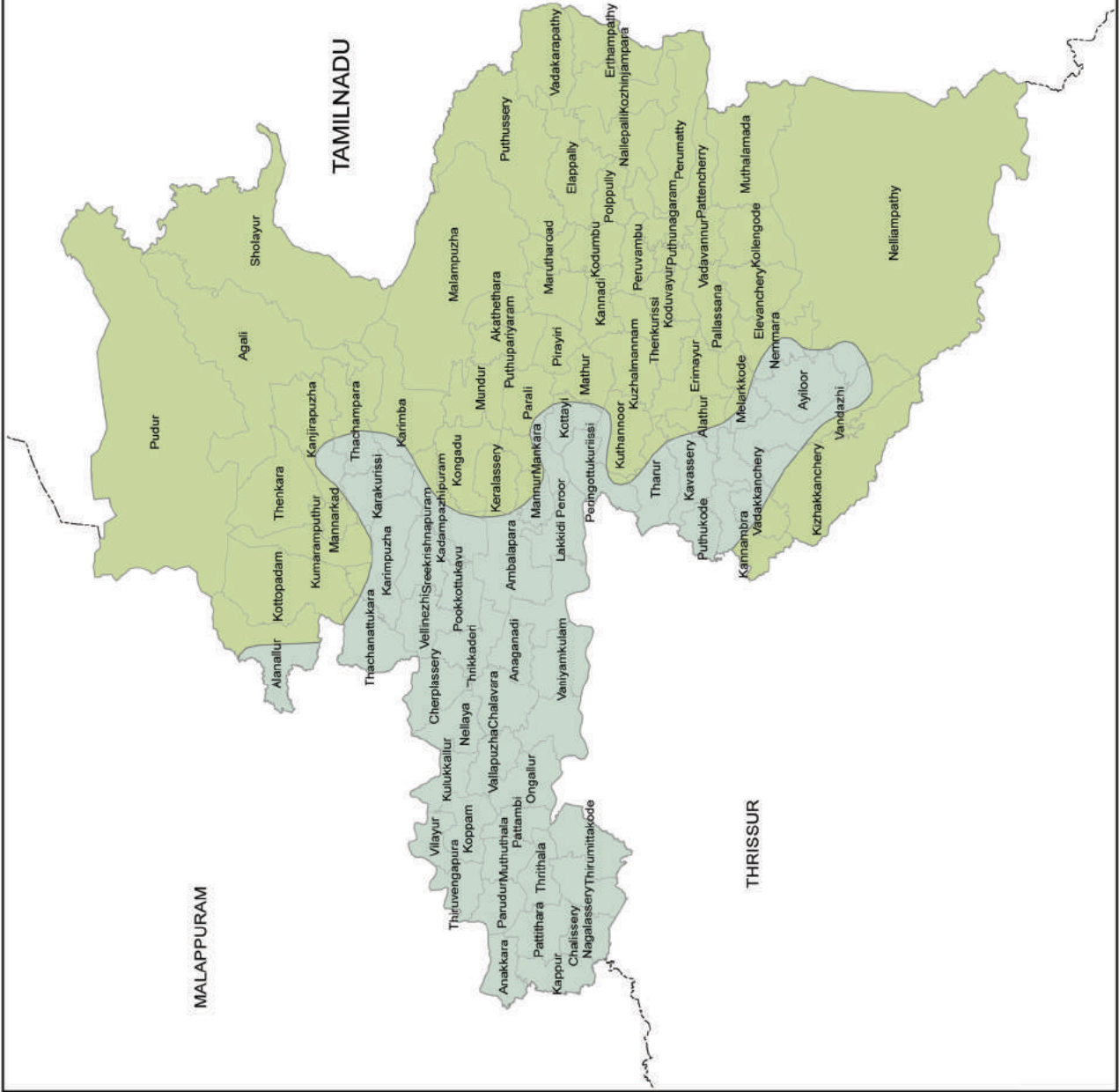
PHYSIOGRAPHY PALAKKAD DISTRICT

physiography

- Highland
- Midland



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



SOILS

Soil conditions show variations in different parts of the district (1) Deep Gravelly clay soil of laterite origin which is formed by weathering mainly acidic rocks under alternate wet and dry tropical conditions is seen to occur in major parts of the midland region falling in Ottappalam, Palakkad, Alathur and Chittoor taluks (2) Deep forest loam soil occurs in the forest high lands in the north and south in Mannarghat, Palakkad and Chittoor taluks (3) Deep black soil is seen to occur in certain parts on the eastern side of Chittoor taluk which is an extension of the black cotton soils of the Tamil Nadu. Soil is composed organic matter derived from forest growth. It is rich in Nitrogen but extremely poor in base due to leaching.

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 details of soils units in Palakkad district is furnished in below.

PATTAMBI UNDULATING PLAIN

Major portion is having alluvium bed. In its northern portion it has lateritic and charnockite bed. The soil of this region is alluvium and laterite. The soils technically classified as fluvents-tropepts-orthents.

MANNARKAD-PALAKKAD FORESTED HILLS

Major portion of this region has brown hydromorphic soil, red loam and forest loam soils. Technically the soils are classified as Udalfs-tropepts and Ustalfs-orthents.

Table 8.1

SOIL TYPES IN PALAKKAD (OLD LOCAL TERMINOLOGY)

District	Type of Soil	Details of location
Palakkad	Laterite soil	Major part of the District
	Black soil	North-Eastern part of Chittur taluk

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	
1	d	deep
2	vd	very deep
3	md	moderately deep
4	ms	moderately shallow

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

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

	Drainage	
1	mw	moderately well drained
2	w	well
3	e	excessive
4	i	imperfectly
5	vp	very poor
6	p	poor

Table 8.3

SOILS IN PALAKKAD

Soils Mapping Unit No.	Description Major soils	Classification	
		Major Soils	Inclusions
K 03	Very Deep, very poorly drained, clayey soils with moderately shallow water table on level submerged lands, swamps and marshes; associated with very deep, very poorly drained, sulphide-rich, saline, clayey soils with very shallow water tables.	Fine, Mixed, Typic Tropaquepts Fine, Mixed, Aeric Tropaquepts	Fine, Mixed, Typic Sulfaquents Fine mixed, Typic Dystropepts
K 07	Very deep, well drained gravelly clay soils on gently stopping coastal laterites, with moderate erosion; associated with very deep, well drained gravelly clay soils with moderate surface gravelliness.	Clayey-skeletal, Kaolinitic, Typic Kandiuults Clayey-skeletal, Kaolinitic, Typic Kanhaplustult	Loamy-skeletal, mixed, Ustoxic Dystropepts Clayey, Kaolinitic, Typic Kandiuults
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 Tropaquepts	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

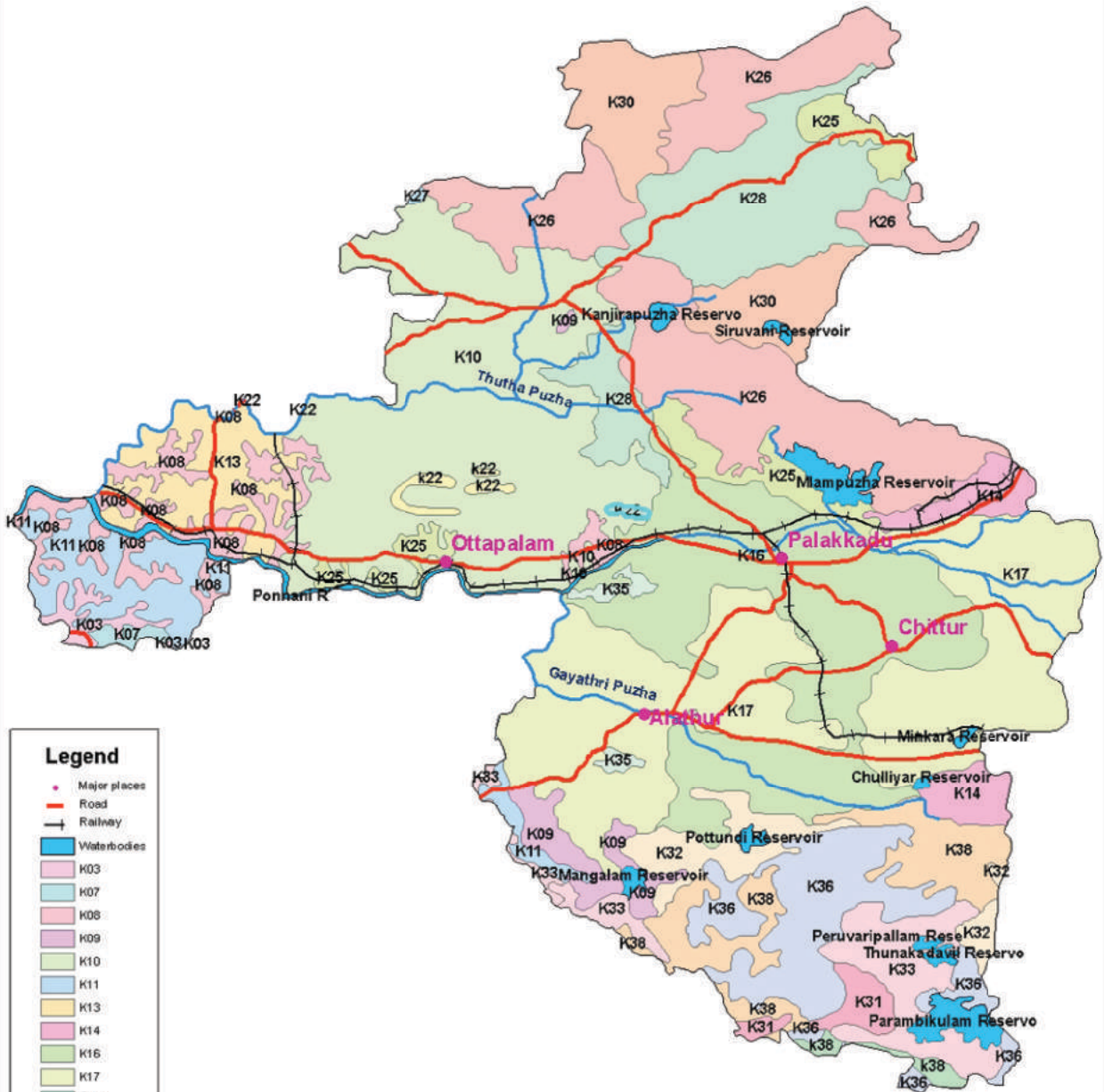
K 13	Deep, well drained, gravelly clay soils with moderate surface graveliness, and ironstone layer at 100 to 150 cm on gently sloping midland laterities, with moderate erosion; associated with laterite outcrops.	Clayey, kaolinitic, Ustic Haplohumults Ironstone	Fine, Kaolinitic, Petroferric Dystropepts Loamy-skeletal, mixed, Ustic Humitropepts
K 14	Moderately shallow, well drained, gravelly loam soils with coherent material at 50 to 75 cm on gently sloping lands of Palghat Gap with rock outcrops, with moderate erosion; associated with rock outcrops	Loamy-skeletal, mixed, Typic Haplustalfs Rock land	Fine-loamy, mixed, Pachic Argiustolls Loamy-skeletal, mixed typic ustropepts
K 16	Very deep, imperfectly drained, loamy soils with moderately shallow water table in nearly level broad valleys of Palghat Gap, with slight erosion; associated with moderately deep, well-drained, gravelly loam soils with coherent material at 75 at 100 cm on gentle slopes, moderately eroded.	Fine-loamy, mixed Aquic Ustropepts Fine-loamy, mixed, Typic Haplustalfs	Fine, mixed. Typic Ustropepts, Clayey-skeletal, Mixed Oxic Ustropepts
K 17	Very deep, moderately well drained, loamy soils with moderately shallow water table on very gently, sloping lands of Palghat Gap with valleys, with slight erosion; associated with deep, well-drained, gravelly loam soils with coherent material at 100 to 150 cm on gentle slopes, moderately eroded.	Fine-loamy, mixed Type Ustropepts Fine loamy, mixed, Typic Haplustalfs	Fine Loamy, mixed Aquic Ustropepts Fine montmorillonitic Vertic ustropepts
K 25	Very deep, well drained, gravelly clay soils with strong surface graveliness on moderately sloping medium hills with thin vegetation, with moderate erosion; associated with rock outcrops	Fine, mixed, pachic Argiustolls Rock land	Clayey-skeletal, Mixed, Lithic Rhodustalfs

K 26	Very deep, well drained, clayey soils on moderately steeply sloping high hills with thin vegetation, with moderate erosion; associated with rock outcrops	Clayey, mixed, Ustic Palehumults Rock land	Clayey-skeletal, mixed, Typic Ustropepts Free-loamy, mixed Ustic Haplohumults
K 27	Very deep, well drained, loamy soils on gently sloping medium hills with thick vegetation, with moderate erosion; associated with rock outcrops	Fine-loamy, mixed Pachic Haplustolls Rock land	Fine, Mixed, Pachic Arglostolls Clayey, Mixed, Ustic Haplohumults
K 28	Moderately deep, well drained, moderately calcareous, gravelly loam soils with moderate surface gravelliness on gently sloping foothills and valleys, with moderate erosion; associated with moderately shallow, somewhat excessively drained, gravelly clay soils with strong surface gravelliness and coherent material at 50 to 75 cm moderate slopes, severely eroded.	Loamy-skeletal, Mixed, Typic Ustropepts Clayey-skeletal, Mixed, Typic Ustropepts	Fine-loamy, mixed Typic Haplustalfs Loamy-skeletal, mixed, Lithic Ustorthents
K 30	Very deep, well drained, clayey soils on moderately sloping high hills with thick vegetation, with moderate erosion; associated with deep, well drained, gravelly clay soils with moderate surface gravelliness on moderately steep slopes.	Clayey, mixed, Ustic Palehumults Clayey-skeletal, mixed, Ustic Haplohumults	Clayey-skeletal, mixed, Ustic Humitropepts Rock land
K 31	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

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
K 35	Deep, Well drained, gravelly clay soils with coherent material at 100 to 150 cm on moderately sloping isolated hillocks, with severe erosion; associated with moderately shallow, well-drained, 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, well drained, clayed soils on moderately steeply sloping high hills with thick vegetation, with moderate erosion; associated with deep, well-drained, gravelly loam soils on gentle slopes.	Clayey, mixed, Ustic Haplohumults Fine-loamy, mixed oxic humitropepts	Fine mixed, Ustic Humitropepts Rock Land
K 38	Very deep, well drained, clayey soils on moderately steeply sloping high hills with thin vegetation, with moderate erosion; associated with rock outcrops	Clayey, mixed, Ustic Palehumults Rock land	Fine, Mixed, Ustic Humitropepts Fine-loamy, Mixed, Ustic Humitropepts

SOILS - PALAKKAD DISTRICT

SCALE - 1:570,000



Legend

- Major places
- Road
- Railway
- Waterbodies
- K03
- K07
- K08
- K09
- K10
- K11
- K13
- K14
- K16
- K17
- K22
- K25
- K26
- K27
- K28
- K30
- K31
- K32
- K33
- K35
- K36
- K38
- K22
- K38

Kerala State Land Use Board

WATER RESOURCES

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

(Mm³)

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

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

WEST FLOWING RIVER

1. The Kadalundi River

The Kadalundi River known also by the names Karimpuzha and Oravanpuram puzha, is formed by the confluence of its two main tributaries, the Olipuzha and the Veliyar. The total length of the river is 130km with a drainage area of 1099 sq.km.

2. The Bharathappuzha River

The Bharathapuzha river, the second longest river of the State takes its origin at an elevation of +1964m above M.S.L. from Anamalai Hills and flows through the districts of Coimbatore, Palakkad, Malappuram and Thrissur and joins the

Arabian Sea near the Ponnani Town. Its main tributaries are the Gayathripuzha, the Kannadi river or Chitturpuzha or Amaravathi, the Kalpathipuzha and the Thuthapuzha. The Gayathripuzha has four main sub tributaries viz. the Mangalam river in which Mangalam Dam is located, the Ayalurpuzha, in which the Pothundy Dam is located, the Vandazhipuzha, the Meenkada river, in which the Meenkada Dam is located and the Chulliyar, in which the Chulliyar Dam is located. The Cheerakuzhi weir is located across the Gayatri river near Pazhayannur. The length of the river is 209km with a catchment area of 6186sq.km. About two-thirds of the drainage area of the basin ie, 4400sq.km lies in Kerala State and the balance 1786 sq.km in Tamilnadu.

3. The Keecheri River

It is also known as the Wadakkanchery river on the Alurpuzha, is one of the smallest rivers in the State and is practically dry during summer. The river originates from Machad Malai at about +365m elevation in the upper reaches of Talappilly taluk forming part of the Western Ghats. The only important tributary of the Keecheri river is the Choondal thodu. The total length of the river is 51km. It has a total drainage area of 401sq.km.

4. The Karuvannur River

This river originates from the Western Ghats and is fed by its two main tributaries namely the Manali and is fed by its two main tributaries namely the Manali and the Kurumali. The Karuvannur river has a length of 48km. and and drains an area of 1054sq.km.

5. The Chalakkudy River

It is formed by the confluence of five streams, the Parambikulam, the Kuriarkutty, the Sholayar, the Karappara and the Anakkayam, all of them originating from the Anamalai Hills of the Western Ghats. The length of the river is 130km. and the total drainage area is 1704sq.km. Out of this 1404 sq.km lies in Kerala State and the rest 300sq.km, in Tamilnadu.

6. Gayathripuzha

This river originates from Anamalai hills and after traversing through Kollengode, Nanmara, Alathur, Wadakkancherry and pazhayannur, joins

Bharathappuzha at Mayannur. This tributary has five main sub- tributaries. They are Managalam river, Ayalurpuzha, Vandazhipuzha, Meenkara puzhas and Chulliyar.

7. Kannadipuzha

It is also known as Chitturpuzha or Amaravathi puzha. This river, which also starts from the Anamalai hills, flows through Thathamangalam and Chittur and joins the main river at Parli. Three main streams combine to form this river. They are Palar, Aliyar and Uppar.

8. Kalpathypuzha

This river starts from the place called Chenthamarakulam in the hills, north of Walayar. This is also known as Korayar. Kalpathypuzha is formed by four streams, viz., Korayar, Varattar, Walayar and Malapuzha.

9. Thuthapuzha

Thuthapuzha otherwise known as Pилanthol river, starts from the Silent Valley hills and joins the main river about two kilometers. off Pallippuram railway station. The important streams, which feed this tributary, are Kunthipuzha, Kanjirapuzha, Ambankadavu and Thuppanadipuzha.

10. The Bhavani River (East Flowing)

Its origin in the Western Ghats about +2500m elevation near Bhavaniar Betta in Nilgiri District of Tamilnadu. Its main tributaries within the state are the Siruvani and the Varagar. The catchment area of the Bhavani River in Kerala is 562sq.km.

Source: Rivers in Kerala, PWD

RIVERS OF KERALA



Legend

- STATE BOUNDARY
- RIVER/ WATERBODY

Table 9.2

GROUND WATER RESOURCES (DUG WELLS)-PALAKKAD

SI No	SITE_NAME	DATE TIME	WATER LEVEL (m bgl)	SI No	SITE_NAME	DATE TIME	WATER LEVEL (m bgl)	SI No	SITE_NAME	DATE TIME	WATER LEVEL (m bgl)
1	Alanallur	Apr/10	9.8	27	Vadakkancherry	Apr/10	4.7	53	Kanjirapuzha	Apr/11	2.06
2	Ambalappara	Apr/10	8.9	28	Vallapuzha	Apr/10	6.75	54	Kottapuram	Apr/11	8.07
3	Ariyur 1	Apr/10	11.9	29	Vaniyamkulam	Apr/10	6.7	55	Cherpalchery	Apr/11	9.43
4	Athipetta	Apr/10	4	30	Vattassery	Apr/10	4.05	56	Nemmara	Apr/11	1.89
5	Chalisseri	Apr/10	9.75	31	Wayalar	Apr/10	4.75	57	Adiparanda	Apr/11	6.61
6	Chullimade	Apr/10	9.18	32	Vadakkancherry	Apr/11	4.35	58	Thachanattukar	Apr/11	6.98
7	Kalladikode	Apr/10	9.8	33	Chemmampathi	Apr/11	10.1	59	Thachanpara	Apr/11	1.65
8	Kanjikode	Apr/10	6.3	34	Chittoor	Apr/11	4.61	60	Kalladikode	Apr/11	8.51
9	Kanjirapuzha	Apr/10	3.35	35	Kozhinjampara-R1	Apr/11	7.39	61	Punchapadam	Apr/11	8.06
10	Karimpuzha	Apr/10	2.4	36	Tholanur	Apr/11	3.09	62	Kumaramputtur	Apr/11	3.16
11	Kodavayur	Apr/10	5.34	37	Kuzhalmannam	Apr/11	3.18	63	Wayalar	Apr/11	6.15
12	Koppam	Apr/10	6.13	38	Athipetta	Apr/11	3.2	64	Malampuzha	Apr/11	1.8
13	Kottapuram	Apr/10	9.35	39	Ottapalam	Apr/11	7.39	65	Vattassery	Apr/11	3.22
14	Kuzhalmannam	Apr/10	4.03	40	Tannirkod	Apr/11	8.56	66	Vaniyamkulam	Apr/11	5.58
15	Malampuzha	Apr/10	2.25	41	Trittala	Apr/11	4.8	67	Mankara	Apr/11	4.45
16	Mankara	Apr/10	4.55	42	Chalisseri	Apr/11	9.74	68	Ambalappara	Apr/11	8.76
17	Mundur	Apr/10	3.85	43	Palappuram-ii	Apr/11	8.83	69	Shoranur	Apr/11	9.85
18	Nemmara	Apr/10	2.42	44	Kanjikode	Apr/11	5.46	70	Meenakshipura	Apr/11	7.37
19	Ottapalam	Apr/10	8.5	45	Chullimade	Apr/11	9.15	71	Gopalapuram	Apr/11	10.73
20	Palappuram-ii	Apr/10	8.85	46	Pattambi	Apr/11	5.95	72	Palghat	Apr/11	10.16
21	Punchapadam	Apr/10	7.8	47	Koppam	Apr/11	6.03	73	Alathur	Apr/11	2.5
22	Tannirkod	Apr/10	8.85	48	Vallapuzha	Apr/11	4.98	74	Odannur	Apr/11	2.84
23	Tenkara	Apr/10	1.05	49	Mundur	Apr/11	2.66	75	Kodavayur	Apr/11	6.44
24	Thachanpara	Apr/10	2.85	50	Alanallur	Apr/11	9.51	76	Kollengode	Apr/11	2.05
25	Tholanur	Apr/10	2.7	51	Mannarghat R-2	Apr/11	3.7				
26	Trittala	Apr/10	5.25	52	Ariyur 1	Apr/11	11.23				

Source : Central Ground Water Department

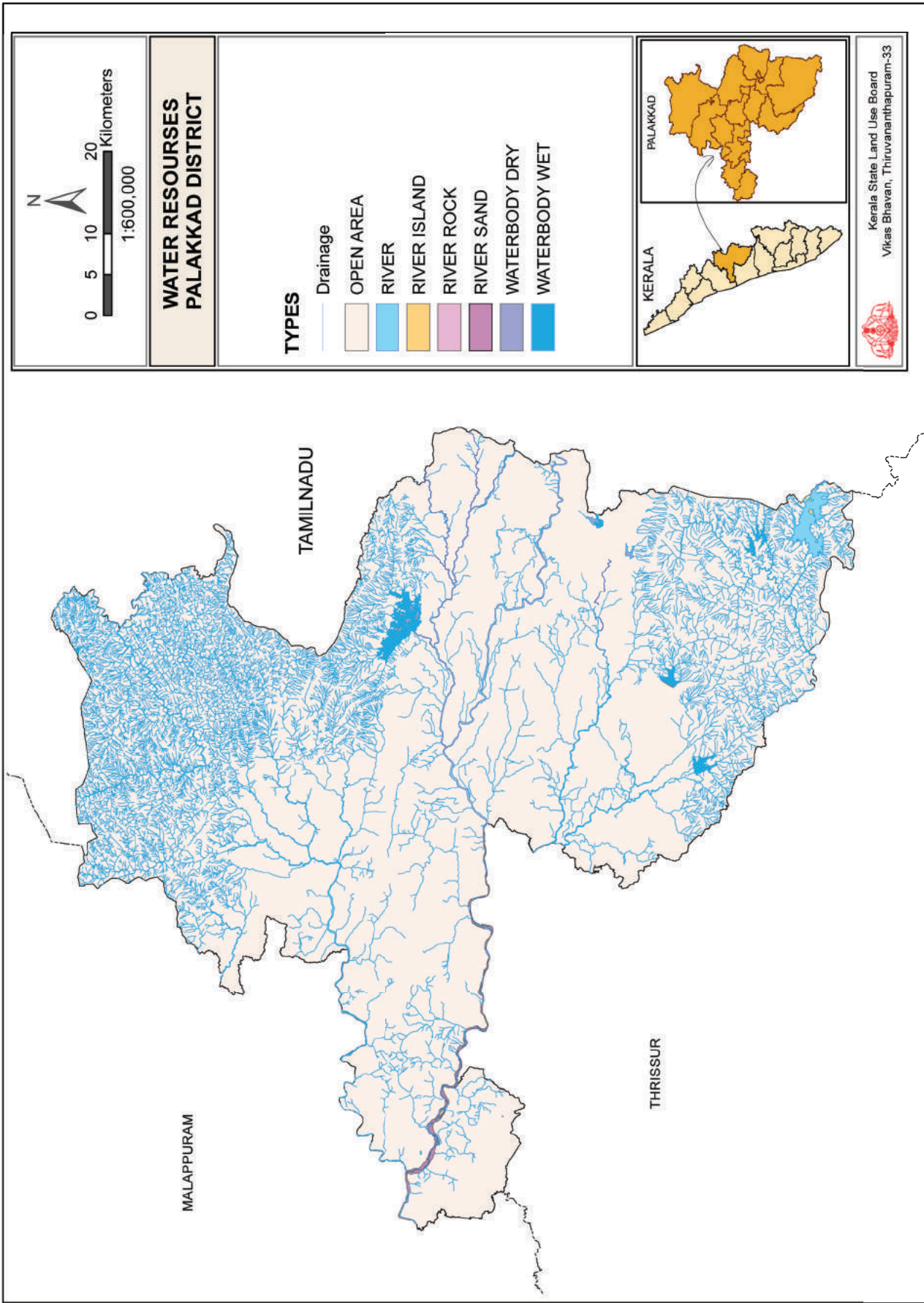
Table 9.3

GROUND WATER STATISTICS -PALAKKAD

SITE_NAME	SAMPLING_TIME	pH	EC	Na	K	Ca	Mg	PPM				Cl	NITRATE
								HCO ₃	CO ₃	CO ₃	Cl		
Adiparanda	Apr/08	8.22	166	11	1.2	9.6	4.39	68	0	14	0.28		
Alanallur	Apr/08	8.09	391	28	9.8	14	7.55	44	0	74	16		
Alathur	Apr/08	8.6	539	28	1.9	36	22	137	9.6	78	1.5		
Ambalappara	Apr/08	8.02	129	8.6	0.7	6.4	3.41	39	0	17	0.73		
Ariyur 1	Apr/08	7.55	66	1.6	0.1	7.2	0.98	29	0	4.3	0.86		
Athipetta	Apr/08	8.62	571	31	20	28	19.48	185	9.6	75	0.48		
Chalisseri	Apr/08	7.4	187	11	2.7	8.8	2.93	9.8	0	28	25		
Chemmapathi	Apr/08	8.61	1350	85	25	46	55.98	100	9.6	206	167		
Cherpulassery	Apr/08		275	14	18	6.4	1.47			82	18		
Chittoor	Apr/08	9.26	526	47	2	12	19	137	24	64	1.4		
Chullimade	Apr/08	8.86	1324	126	2.1	30	43.8	76	26	299	2		
Gopalapuram	Apr/08	9.3	1112	140	1	18	19.47	132	12	206	83		
Kalladikode	Apr/08	7.08	115	11	1	4	0	15	0	14	11		
Kanjikode	Apr/08	8.99	1383	107	103	36	27	220	42	192	76		
Kanjirapuzha	Apr/08	7.8	80	3.1	0.6	6.4	1.47	32	0	4.3	3.1		
Kanimpuzha	Apr/08	7.7	59	3.5	0.7	4.8	0.49	17	0	7.1	1.7		
Kodavayur	Apr/08	8.73	180	19	0.9	6.4	3.9	66	4.8	16	3.4		
Kollengode	Apr/08	8.89	612	44	3.4	22	31.63	165	24	75	0.75		
Koppam	Apr/08		184	14	2	7.2	3.9			38	4.3		
Kottapuram	Apr/08	8.37	250	16	5.8	17	3.4	49	-99	33	25		
Kozhinjampara	Apr/08		804	52	1.8	70	18.32			164	2.6		
Kumaramputtur	Apr/08	8.21	84	5.8	0.1	6.4	1.47	39	0	5.7	0.25		
Kuzhalimannam	Apr/08	8.63	459	40	4.6	16	13	127	12	44	0.52		
Malampuzha	Apr/08	8.53	412	27	9.2	24	9.75	93	12	64	1.4		

SITE_NAME	SAMPLING_TIME	pH	EC	Na	K	Ca	Mg	HCO ₃	CO ₃	Cl	NITRATE
Mankara	Apr/08	8.24	338	20	11	14	7.3	71	0	36	16
Mannarghat	Apr/08	8.22	315	15	10	24	4.41	63	0	31	30
Meenakshipuram	Apr/08	8.75	853	76	9.5	24	25	134	18	96	108
Meenkara	Apr/08	9.11	1144	136	0.9	12	46.21	256	48	156	4.7
Mundur	Apr/08	8.63	318	21	2.6	16	8.29	100	4.8	31	3.2
Nemmara	Apr/08	8.53	311	14	7.2	23	8.9	100	4.8	24	6.7
Odannur	Apr/08	8.23	179	8.7	3.6	11	5.48	49	0	21	5.7
Ottapalam	Apr/08	8.22	526	51	2.4	16	7.31	51	0	100	43
Palappuram-ii	Apr/08	8.09	756	56	29	30	12.19	66	0	100	101
Palghat	Apr/08		409	40	1.9	16	0.02			65	1.3
Pattambi	Apr/08		286	16	4.7	14	0.26			36	5.6
Punchapadam	Apr/08	8.21	103	5.3	4.3	6.4	1.47	34	0	9.9	4.2
Shoranur	Apr/08	8.78	195	14	4.1	9.6	4.87	37	7.2	30	0.63
Tannirkod	Apr/08	7.94	86	6.7	1.7	3.2	1.46	15	0	13	4.8
Tenkara	Apr/08	8.34	194	11	1.7	18	3.67	73	2.4	16	2.6
Thachanattukara	Apr/08	8.67	141	12	1.8	5.6	1.95	27	4.8	17	9
Thachanpara	Apr/08	7.31	158	11	7.7	7.2	1.95	15	0	21	28
Tholanur	Apr/08	8.22	339	16	15	26	8.05	115	0	38	1.7
Trittala	Apr/08	8.71	666	52	2.1	46	21	183	24	82	12
Vadakkancherry	Apr/08	8.46	554	43	4.9	34	14.63	115	4.8	82	23
Vallapuzha	Apr/08	8.05	116	8	2.4	7.2	2.4	34	0	16	5.2
Vaniyamkulam	Nov/08	9.85	993	112	18	47	14			240	68
Vaniyamkulam	Apr/08	9.66	975	95	25	40	15.85	61	12	228	70
Vattassery	Apr/08	8.34	137	7.4	2.2	9.6	3.9	44	-99	11	7.8
Wayalar	Apr/08	8.84	934	67	3.8	38	48.67	116	24	171	68

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 -
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
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 Minerals	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	Late rite	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

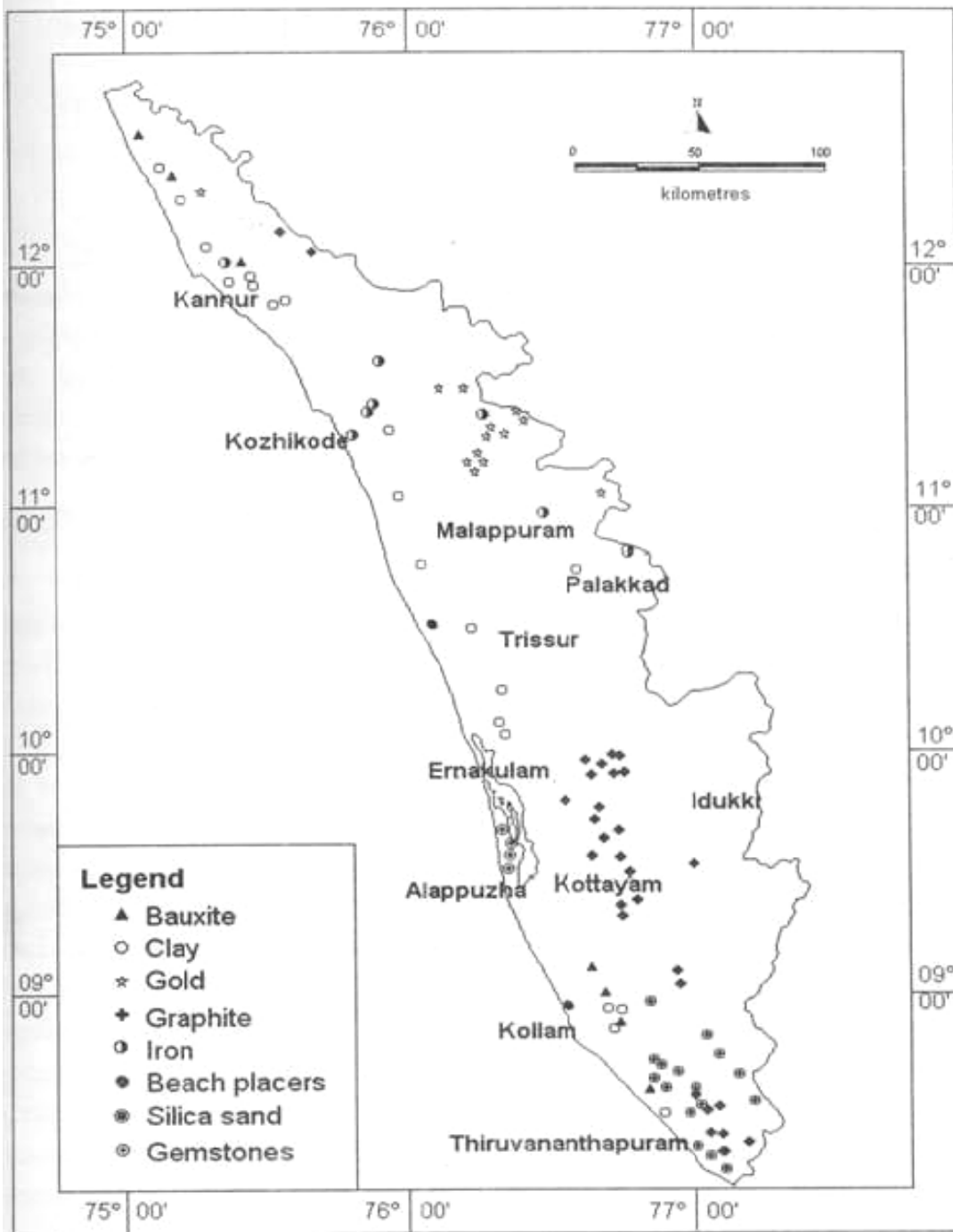
Table: 10.4

Quarrying Leases for 2003-2004 as on 31.3.2004

Sl. No.	District	Granite Building Stone	Lime shell	Sea shell	Granite Dimensi on Stone	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)

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, 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 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 Color Composite (FCC) generated on 1:12,500 scale of IRS (LISS-IV) was interpreted for identification of different Land use/Land cover classes, based on the image characteristics like tone, size, shape, pattern, texture, location, association etc. by developing a detailed interpretation key for each district.

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

METHODOLOGY

The methodology is essentially digital interpretation of IRS-1C (LISS - IV) geo-coded image (FCC) for identification of different categories of land use/land cover using standard visual image interpretation techniques which is based on

interpretation elements such as tone, texture, shape, size, etc. supplemented by the local knowledge of the interpreter. Other ancillary data like topographical maps and any other available information will be used for identification and mapping of land use/ land cover. The interpreted details are to be verified on the ground in order to rectify the doubtful areas, and based on the ground verification, the wasteland boundaries (interpreted details) are to be finalized.

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

Land Use/Land Cover Categories and their Spatial Distribution

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, and communication utilities in association with water, vegetation and vacant lands. A total area of 68.6 sq.km. which represent 1.53 % 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 2587.03 sq. km. which represent 57.809 % 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 non soil 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 impounded water, area in extent and often with a regulated flow of water,. It includes manmade reservoirs/lakes/tanks/canals, besides natural lakes, rivers/streams and creeks.

The 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 Palakkad district.

Table:11.1

LAND USE / LAND COVER CATEGORIES

Sl. No.	Category	Area (Sq. Km)	Percentage
1	Built up land (urban) - commercial	56.81	1.27
2	Built up land (rural) - residential	11.09	0.25
3	Built up land (rural) - mixed built-up	0.7	0.02
4	Paddy - viruppu + mundakan	618.78	13.83

5	Paddy reclaimed arecanut	0.07	0
6	Paddy reclaimed coconut	19.04	0.43
7	Paddy reclaimed rubber	0.96	0.02
8	Paddy reclaimed mixed crop	1.02	0.02
9	Paddy reclaimed banana	1.07	0.02
10	Paddy reclaimed tapioca	0.02	0
11	Paddy reclaimed banana + tapioca	2.1	0.05
12	Paddy reclaimed residential	0.31	0.01
13	Paddy - fallow	2.34	0.05
14	Coffee	3.22	0.07
15	Coffee + Cardamom	17.94	0.4
16	Rubber	353.95	7.91
17	Coconut	22.97	0.51
18	Arecanut	0.14	0
19	Cashew	11.37	0.25
20	Teak	26.85	0.6
21	Cardamom	0.74	0.02
22	Mixed crop	707.82	15.82
23	Coconut dominant mixed crop	670.48	14.98
24	Mixed trees	118.67	2.65
25	Banana	7.08	0.16
26	Banana + tapioca	0.09	0
27	Semi evergreen/Evergreen - Dense mixed forest	98.76	2.21
28	Semi evergreen/Evergreen - Dense mixed forest (Reserve Forest)	569.95	12.74
29	Semi evergreen/Evergreen - Dense mixed forest mainly bamboo	0.09	0
30	Semi evergreen/Evergreen - Dense mixed forest mainly bamboo (Reserve Forest)	40.3	0.9

31	Deciduous - Dense mixed forest mainly teak	11.88	0.27
32	Deciduous - Dense mixed forest mainly bamboo + teak (Reserve Forest)	46.92	1.05
33	Deciduous - Open mixed forest	24.51	0.55
34	Deciduous - Open mixed forest (Reserve Forest)	199.09	4.45
35	Deciduous - Open mixed forest mainly teak	0.7	0.02
36	Deciduous - Scrub forest	220.65	4.93
37	Forest plantation - Teak (Reserve Forest)	97.31	2.17
38	Forest plantation - Eucalyptus (Reserve Forest)	1.12	0.03
39	Forest plantation - Rubber	2.38	0.05
40	Forest plantation - Rubber (Reserve Forest)	4.29	0.1
41	Forest plantation - Cardamom (Reserve Forest)	2.15	0.05
42	Forest plantation - Coffee (Reserve Forest)	5.88	0.13
43	Forest plantation - Coffee + cardamom (Reserve Forest)	27.43	0.61
44	Forest plantation - Tea + cardamom (Reserve Forest)	1.77	0.04
45	Forest plantation - Tea + coffee + cardamom (Reserve Forest)	7.92	0.18
46	Forest plantation - Orange	1.08	0.02
47	Grassland	2.62	0.06
48	Grassland - degraded	0.77	0.02
49	Grassland - degraded (Reserve Forest)	5.74	0.13
50	Land with scrub	180.6	4.04
51	Land without scrub	10.14	0.23
52	Mining/Industrial wastelands	2.65	0.06
53	Barren rocky/sheet rock area	93.98	2.1
54	Water logged - temporary	0.73	0.02
55	Degraded land under plantation crop (Coffee)	2.34	0.05

56	Degraded land under plantation crop (Coffee + cardamom)	0.85	0.02
57	Degraded land under plantation crop (Tea)	0.18	0
58	Degraded land under plantation crop (Tea + cardamom)	0.17	0
59	Degraded land under plantation crop (Teak)	1.31	0.03
60	Degraded land under plantation crop (Rubber)	23.78	0.53
61	Degraded land under plantation crop (Cardamom)	0.51	0.01
62	Degraded land under plantation crop (Tea + coffee)	1.13	0.03
63	Underutilized/degraded notified forest	1.34	0.03
64	Sands - riverine	0.78	0.02
65	Marshy area	3.85	0.09
66	Water bodies	121.79	2.72
	Total	4480.00	100

Table 11.2

THRITHALA BLOCK

Sl. No.	Land Use	Anakkara	Chalisheri	Kappur	Nagalashery	Paddittara	Thirumittak kode	Thrithala	Total
1	Paddy - Virippu	19.25	0.00	0.00	28.96	24.00	13.12	0.00	85.33
2	Paddy - Mundakan	0.00	122.44	0.00	300.32	150.72	43.04	84.40	700.92
3	Paddy - Puncha	0.00	0.00	0.00	7.68	129.76	0.00	0.00	137.44
4	Paddy - Virippu + Mundakan	352.75	311.60	540.32	295.98	330.88	918.84	447.89	3198.26
5	Paddy - Mundakan + Puncha	0.00	0.00	0.00	0.00	40.80	0.00	0.00	40.80
6	Paddy - Virippu + Mundakan + Puncha	0.00	0.00	0.00	5.60	16.16	0.00	98.70	120.46
7	Paddy - Tuber Crops		0.48						0.48
8	Paddy	372.00	434.52	540.32	638.54	692.32	975.00	630.99	4283.69
9	Paddy land converted to Builtup land	9.75	2.24	6.56	6.24	1.28	0.00	0.60	26.67
10	Paddy land converted to Mixed Crops	33.00	8.16	11.84	0.00	13.44	19.04	19.93	105.41
11	Paddy land converted to Coconut	14.00	1.60	7.84	0.80	2.24	0.32	3.66	30.46
12	Paddy land converted to Banana	12.50	0.80	3.04	2.56	0.00	0.00	4.98	23.88
13	Paddy land converted to Arecanut	2.75	0.00	3.20	0.00	1.92	0.00	0.00	7.87
14	Paddy land converted to Rubber	0.00	0.00	0.00	0.00	2.44	0.00	2.75	5.19
15	Paddy Converted	72.00	12.80	32.48	9.60	21.32	19.36	31.92	199.48
16	Coconut	156.25	113.86	170.24	114.93	132.20	52.80	74.66	814.94
17	Arecanut	134.50	95.02	148.48	72.96	117.24	17.92	34.00	620.12
18	Banana	7.25	2.88	2.24	0.96	0.00	3.04	1.43	17.80
19	Vegetables	0.00	0.00	0.00	0.00	0.00	0.96	0.00	0.96
20	Tuber Crops	0.00	0.00	0.00		6.88	5.44	4.30	16.62
21	Mixed Crops	565.75	837.22	910.40	867.30	1364.66	768.64	810.40	6124.37

Sl. No.	Land Use	Anakkara	Chalisheri	Kappur	Nagalashery	Paddittara	Thirumittak kode	Thrithala	Total
22	Homestead	863.75	1048.98	1231.36	1056.15	1620.98	848.80	924.79	7594.81
23	Pineapple	0.00	0.00	0.00	0.00	0.00	0.00	6.40	6.40
24	Field Crops	0.00	0.00	0.00	0.00	0.00	0.00	6.40	6.40
25	Rubber	33.50	79.60	2.56	303.20	85.60	412.96	151.38	1068.80
26	Cashew	23.00	0.96	42.56	1.12	0.64	0.48	43.35	112.11
27	Plantation Crops	56.50	80.56	45.12	304.32	86.24	413.44	194.73	1180.91
28	Mixed Trees	409.75	232.96	316.16	395.67	160.08	890.16	170.25	2575.03
29	Teak	0.00	0.00	0.32	0.16	0.00	0.00	0.24	0.72
30	Agroforestry	409.75	232.96	316.48	395.83	160.08	890.16	170.49	2575.75
31	Forest	0.00	0.00	0.00	100.64	0.00	0.00	0.00	100.64
32	Forests	0.00	0.00	0.00	100.64	0.00	0.00	0.00	100.64
33	Paddy Land - Waste Land	0.00	0.40	0.00	2.24	1.12	0.00	5.15	8.91
34	Paddy converted to cultivable Waste land	11.25	29.98	102.40	88.20	18.12	35.36	43.29	328.60
35	Waste Land	60.50	21.68	12.80	9.60	22.88	16.32	16.48	160.26
36	Waste lands	71.75	52.06	115.20	100.04	42.12	51.68	64.92	497.77
37	Laterite Quarry	0.00	0.00	22.56	0.48	2.56	0.00	0.00	25.60
38	Rock	17.00	9.12	0.00	0.96	0.00	0.00	0.78	27.86
39	Mines	17.00	9.12	22.56	1.44	2.56	0.00	0.78	53.46
40	Built up land	28.25	49.00	48.48	13.44	5.60	11.68	22.62	179.07
41	Industrial Habitation	28.25	49.00	48.48	13.44	5.60	11.68	22.62	179.07
42	Water source	0.00	0.00	0.00	0.00	0.00	0.00	230.36	230.36
43	Water source (Pond)	0.00	0.00	0.00	0.00	0.00	11.60	0.00	11.60
44	Water source (lake)	0.00	0.00	0.00	0.00	4.80	0.00	0.00	4.80
45	Water source (River)	204.00	0.00	0.00	0.00	83.98	9.28	0.00	297.26
46	Water Bodies	204.00	0.00	0.00	0.00	88.78	20.88	230.36	544.02
	Total	2095.00	1920.00	2352.00	2620.00	2720.00	3231.00	2278.00	17216.00

Table 11.3

ALATHUR BLOCK

Sl. No	Land Use	Alathur	Erimayoor	Kavassery	Kizhakkanchery	Puthukode	Tharoor	Vadakkaschery	Kannampra	Total
1	Paddy - Virippu	10.50		17.25	41.00	18.50		0.75	11.00	99.00
2	Paddy - Mundakan	6.25	82.16							88.41
3	Paddy - Puncha	2.75								2.75
4	Paddy -Virippu + Mundakan	731.50	965.16	1237.25	1133.50	519.50	1031.50	1252.56	660.45	7531.42
5	Paddy -Virippu + Mundakan + Puncha				5.25					5.25
6	Paddy - Virippu + Vegetables			0.50						0.50
7	Paddy	751.00	1047.32	1255.00	1179.75	538.00	1031.50	1253.31	671.45	7727.33
8	Paddy land converted to Builtup land	1.63		16.00	1.00			4.25	0.88	23.76
9	Paddy land converted to Mixed Crops	35.50	39.15		81.25	3.25	25.25	1.63	28.75	214.78
10	Paddy land converted to Coconut	9.50	18.38	2.75	81.00	1.50	0.50	6.50	9.88	130.01
11	Paddy land converted to Tapioca				10.75				3.00	13.75
12	Paddy land converted to Banana				31.75	1.25		2.00	0.75	35.75
13	Paddy land converted to Arecanut				129.00		0.74	1.37	6.13	137.24
14	Paddy land converted to Rubber				7.50			0.25	0.75	8.50
15	Paddy land converted to Mixed Trees					1.25				1.25
16	Paddy land converted to waste land					17.75				17.75
17	Paddy Land Converted	46.63	57.53	18.75	342.25	25.00	26.49	16.00	50.14	582.79
18	Coconut	3.88	108.16	157.50	178.00	64.00	59.50	37.62	72.34	681.00
19	Arecanut			3.00	83.00			8.13	11.25	105.38
20	Banana		2.76	5.50	29.75		1.75		0.50	40.26
21	Pineapple				3.75					3.75
22	Vegetables			0.75	5.75					6.50
23	Rubber	122.75	58.39	318.75	4225.25	159.50	209.75	904.16	1171.11	7169.66
24	Tuber Crops	1.75		21.25	15.25	78.75		6.76	15.00	138.76
25	Mixed Crops	624.13	1808.65	424.00	852.00	584.25	911.00	1111.12	760.56	7075.71
26	Homestead	752.51	1977.96	930.75	5392.75	886.50	1182.00	2067.79	2030.76	15221.02

Sl. No	Land Use	Alathur	Erimayoor	Kavassery	Kizhakkanchery	Puthukode	Tharoor	Vadakkaschery	Kannampra	Total
27	Cashew Nut	16.00		7.75	1.25			32.50	2.00	59.50
28	Plantation Crops	16.00		7.75	1.25			32.50	2.00	59.50
29	Manglum							0.75		0.75
30	Mixed Trees	32.50	90.56	228.50	113.50	84.00	413.50	305.27	14.89	1282.72
31	Teak	7.00		19.75	14.75	71.25	80.00	4.75	12.80	210.30
32	Agroforestry	39.50	90.56	248.25	128.25	155.25	493.50	310.77	27.69	1493.77
33	Pulses				0.25					0.25
34	Field Crops				0.25					0.25
35	Coffee				87.50					87.50
36	Beverages				87.50					87.50
37	Pepper				31.25					31.25
38	Spices				31.25					31.25
39	Forest	162.63		62.50	3629.00		219.50		141.95	4215.58
40	Forests	162.63		62.50	3629.00		219.50		141.95	4215.58
41	Paddy Land - Waste land	7.00	37.57	4.25				3.50	6.13	58.45
42	Land	35.50	108.00	24.00	17.50	12.25	176.50	17.88	23.00	414.63
43	Waste Land	8.50		164.00	67.25	12.00	202.75	0.75	0.75	456.00
44	Waste Lands	51.00	145.57	192.25	84.75	24.25	379.25	22.13	29.88	929.08
45	Rocks	32.25	12.64	50.50	217.25		5.75	5.50	15.38	339.27
46	Mines	32.25	12.64	50.50	217.25		5.75	5.50	15.38	339.27
47	Builtup land	63.48	35.42	128.25	53.00		3.00	66.25	1.50	350.90
48	Industrial Habitation	63.48	35.42	128.25	53.00		3.00	66.25	1.50	350.90
49	Water sources	47.00		151.50	108.75		86.01	13.75	1.25	408.26
50	Water sources	47.00		151.50	108.75		86.01	13.75	1.25	408.26
51	Jasmine			0.50						0.50
52	Others			0.50						0.50
	Total	1962.00	3367.00	3046.00	11256.00	1629.00	3427.00	3778.00	2972.00	37117.00

Table 11.4

ATTAPPADY BLOCK

(Area in Ha.)

Sl. No.	Land Use	Agali	Showlayar	Putoor	Total
1	Paddy - Virippu	68.00	16.00	7.00	91.00
2	Paddy -Mundakan		5.00		5.00
3	Paddy - Puncha			3.00	3.00
4	Paddy -Virippu + Mundakan	23.00	23.00	3.00	49.00
5	Paddy - Virippu + Puncha			4.00	4.00
6	Paddy	91.00	44.00	17.00	152.00
7	Paddy land converted to Mixed Crops	199.00	23.00		222.00
8	Paddy land converted to Coconut	6.00			6.00
9	Paddy land converted to Banana	101.00	40.00	7.50	148.50
10	Paddy land converted to Arecanut	20.00	23.00		43.00
11	Paddy Converted	326.00	86.00	7.50	419.50
12	Coconut	151.00	93.00	123.00	367.00
13	Arecanut	138.00	25.00	6.00	169.00
14	Banana	134.00	327.00	44.25	505.25
15	Vegetables		11.00		11.00
16	Tuber Crops		3.00		3.00
17	Mixed Crops	4957.00	691.00	1641.00	7289.00
18	Homestead	5380.00	1150.00	1814.25	8344.25
19	Pulses		368.00	1.50	369.50
20	Groundnut	10.00	27.00		37.00
21	Sugarcane			12.00	12.00
22	Field Crops	10.00	395.00	13.50	418.50
23	Mango Tree		3.00		3.00
24	Rubber	197.00		21.00	218.00
25	Cashew	145.00	175.00	14.00	334.00
26	Plantation Crops	342.00	178.00	35.00	555.00
27	Mangium	15.00	5.00		20.00
28	Eucalyptus			8.50	8.50
29	Mixed Trees	884.00	74.00	234.00	1192.00

Sl. No.	Land Use	Agali	Showlayar	Putoor	Total
30	Teak	19.00		5.00	24.00
31	Agroforestry	918.00	79.00	247.50	1244.50
32	Maize		52.00		52.00
33	Cotton	77.00	26.00		103.00
34	Field Crops	77.00	78.00		155.00
35	Tea			240.00	240.00
36	Coffee	118.00		325.00	443.00
37	Coffee + Pepper	109.00			109.00
38	Beverage Crops	227.00		565.00	792.00
39	Pepper	4.00			4.00
40	Cardamom			160.00	160.00
41	Ginger			1.00	1.00
42	Spices Crops	4.00		161.00	165.00
43	Forest	5080.00	38404.00	9259.00	52743.00
44	Forests	5080.00	38404.00	9259.00	52743.00
45	Paddy land - Waste land		50.00		50.00
46	Paddy Cultivable Waste Land	1088.00	603.00	2195.25	3886.25
47	Waste Land	98.00	81.00	59.50	238.50
48	Waste Lands	1186.00	734.00	2254.75	4174.75
49	Rock		11.00		11.00
50	Mines		11.00		11.00
51	Built up land	28.00	154.00	33.50	215.50
52	Industrial Habitation	28.00	154.00	33.50	215.50
53	Water sources	231.00	31.00	629.00	891.00
54	Water bodies	231.00	31.00	629.00	891.00
55	Government Farm			32.00	32.00
56	Fodder		3.00	7.00	10.00
57	Others		3.00	39.00	42.00
	Total	13900.00	41347.00	15076.00	70323.00

Table 11.5

KOLLANGODE BLOCK

SL. No.	Land use	Kollangode	Koduvayoor	Pattacherry	Peruvembu	Muthalamba	Puthunagar	Vadavanoor	Total
1	Paddy - Virippu	11.50	1.25	0.00	0.00	337.74			350.49
2	Paddy - Virippu + Mundakan	1792.68	986.00	1504.33	1277.82	1409.32	419.75	1040.25	8430.15
3	Paddy - Virippu + Vegetables	3.76							3.76
4	Paddy	1807.94	987.25	1504.33	1277.82	1747.06	419.75	1040.25	8784.40
5	Paddy land converted to built up land	10.37	10.50	23.50	2.50		1.00	51.25	99.12
6	Paddy land converted to mixed crops	12.62		5.00	16.13			33.75	67.50
7	Paddy land converted to Coconut	3.23		4.50	3.38		2.25	18.00	31.36
8	Paddy land converted to Waste land	14.00		0.00					14.00
9	Paddy land converted to Arecanut	0.00	0.00	3.25		0.00	0.00	0.00	3.25
10	Paddy land converted to Mangium				0.75				
11	Paddy land converted to Mixed Trees				1.89				
12	Paddy land converted to Tapioca	0.00	4.75	0.00	1.13	0.00	0.00	0.00	5.88
13	Paddy Converted	40.22	15.25	36.25	25.78		3.25	103.00	223.75
14	Coconut	30.67	33.50	79.50	30.63	1202.88	4.00	13.75	1394.93
15	Banana	0.50	4.00	79.25	1.25	36.07			121.07
16	Tapioca				0.75				
17	Arecanut		2.50	2.75	2.50		0.50		8.25
18	Tuber Crops			1.50					
19	Mixed Crops	898.82	568.25	933.28	428.38	1924.69	87.50	266.25	5107.17
20	Homestead	929.99	608.25	1096.28	463.51	3163.64	92.00	280.00	6633.67
21	Cotton					1150.36			1150.36
22	Cardamom			1.50					
23	Sugarcane		7.50	9.25	29.61	54.45			100.81
24	Field Crops		7.50	10.75	29.61	1204.81			1252.67
25	Mango Tree	5.38		1.75		124.57	1.00		132.70
26	Rubber			11.51			0.50		12.01

(Area in Ha.)

SL. No.	Land use	Kollangode	Koduvayoor	Pattacherry	Peruvembu	Muthalamba	Puthunagar	Vadavanoor	Total
27	Cashew		1.75					4.75	6.50
28	Plantation Crops	5.38	1.75	7.13		124.57	1.50	4.75	145.08
29	Mixed Trees	341.46	224.25	113.63	122.28		171.25	36.00	1008.87
30	Teak	4.00	34.00	7.75	2.25	145.47	4.50		197.97
31	Agroforestry	345.46	258.25	121.38	124.53	145.47	175.75	36.00	1206.84
32	Ginger	0.50		29.25		11.83			41.58
33	Spices Crops	0.50	0.00	29.25		11.83			41.58
34	Forest	712.01							712.01
35	Forests	712.01							712.01
36	Paddy land - Waste land		17.25	1.50	6.75			10.50	36.00
37	Paddy land cultivable waste land	26.22	65.25	122.74	47.00		67.00	12.00	340.21
38	Waste Land	0.25	13.25	12.80	4.75	110.30	12.50	2.75	156.60
39	Marshy Land					8.38			8.38
40	Waste Lands	26.47	95.75	137.04	58.50	118.68	79.50	25.25	541.19
41	Rock	67.00		3.13		108.83			178.96
42	Mines	67.00	0.00	3.13		108.83			178.96
43	Built up land	50.62	86.75	7.50	14.25	247.58	149.75	176.75	733.20
44	Industrial Habitation	50.62	86.75	7.50	14.25	247.58	149.75	176.75	733.20
45	Water source	163.41	2.75	68.33	55.00		2.50	72.00	363.99
46	Water source (Ponds)					118.65			118.65
47	Dam					360.33			360.33
48	Water source (River)					104.99			104.99
49	Water Bodies	163.41	2.75	68.33	55.00	583.97	2.50	72.00	947.96
50	Fodder			2.50					
51	Others					3.55			3.55
52	Others			2.50		3.55			6.05
Total		4149.00	2061.00			7460.00	924.00	1738.00	16332.00

Table 11.6

KUZHALMANDAM BLOCK

(Area in Ha.)

SL. No.	Land Use	Kottayi	Kuthanoor	Kuzhalman dam	Mathoor	Perungottu kurissi	Thenkurishi	Kannadi	Total
1	Virippu	1.51	7.50			10.25	12.25		31.51
2	Mundakan			0.50					0.50
3	Virippu + Mundakan	805.50	1316.25	1506.92	1331.25	1159.75	1508.00	1115.00	8742.67
4	Virippu + Mundakan + Puncha						20.00		20.00
5	Paddy	807.01	1323.75	1507.42	1331.25	1170.00	1540.25	1115.00	8794.68
6	Paddy land converted to built up land	2.00	2.50	1.75	3.50		8.00	8.00	25.75
7	Paddy land converted to Mixed Crops	1.12	0.75	5.25	3.00			16.75	26.87
8	Paddy land converted to Coconut		18.25		27.75		1.75		29.50
9	Paddy land converted to Tapioca				5.00		4.00		22.25
10	Paddy land converted to Rubber								5.00
11	Paddy land converted to Mangium			0.88					0.88
12	Paddy Converted	3.12	21.50	7.88	39.25		13.75	24.75	110.25
13	Coconut	18.90	2.25	30.22	32.00	126.25	28.00	4.00	241.62
14	Areca nut	0.50			10.00			560.75	571.25
15	Banana		3.00		1.50	5.50			10.00
16	Vegetables					9.75			9.75
17	Tapioca	2.62		0.25	13.00	12.25			28.12
18	Tuber Crops		62.00						62.00
19	Mixed Crops	868.23	506.50	1069.21	441.00	655.00	889.75		4429.69
20	Plantation Crops	890.25	573.75	1099.68	497.50	808.75	917.75	564.75	5352.43
21	Sugarcane	1.25			4.75			2.00	8.00
22	Field Crops	1.25			4.75			2.00	8.00
23	Rubber	13.25	91.25	21.93	7.50	94.00	20.75		248.68

SL. No.	Land Use	Kottayi	Kuthanoor	Kuzhalman dam	Mathoor	Perungottu kurissi	Thenkurishi	Kannadi	Total
24	Cashew Nut	0.75	4.00						4.75
25	Plantation Crops	14.00	95.25	21.93	7.50	94.00	20.75		253.43
26	Mangium							3.25	3.25
27	Mixed Trees	176.00	660.00	296.28	454.00	236.50	206.00	76.75	2105.53
28	Teak	9.50		1.00	8.25	2.75	12.00	10.50	44.00
29	Agroforestry	185.50	660.00	297.28	462.25	239.25	218.00	90.50	2152.78
30	Ginger	0.25							0.25
31	Spices Crops	0.25							0.25
32	Forest			29.38		705.00	137.50		871.88
33	Protected Forest		693.75						693.75
34	Forests		693.75	29.38		705.00	137.50		1565.63
35	Paddy land - Waste land	2.00	2.50	2.69	6.25		10.50	71.00	94.94
36	Paddy converted to Cultivable Waste Land	15.00	23.25	13.13	44.75	79.00	56.00	17.25	248.38
37	Waste land	0.62	83.50	25.62	1.25	27.25	49.00	1.25	188.49
38	Waste Lands	17.62	109.25	41.44	52.25	106.25	115.50	89.50	531.81
39	Rock	2.63	63.00			7.50			73.13
40	Mines	2.63	63.00			7.50			73.13
41	Built up land	22.25	4.25	11.63	14.25		18.50	9.25	80.13
42	Industrial Habitation	22.25	4.25	11.63	14.25		18.50	9.25	80.13
43	Water Source	7.75	38.50					17.75	64.00
44	Water Source							13.00	13.00
45	Water Sources (River)	44.37		45.36	45.00		10.00	53.50	198.23
46	Water Bodies	52.12	38.50	45.36	45.00		10.00	84.25	275.23
47	Others					14.25			14.25
	Total	1996.00	3583.00	3062.00	2454.00	3145.00	2992.00	1980.00	19212.00

Table 11.7

MALAMPUZHA BLOCK

(Area in Ha.)

Sl. No.	Land Use	Puthupariyaram	Marutha Road	Malampuzha	Akattettara	Kodumpe	Puthushery	Total
1	Paddy - Virippu	912.32	0.00	90.25	394.88	55.50	589.00	2010.70
2	Paddy - Mundakan	545.60	0.00	0.00	0.00	0.00	232.00	777.60
3	Paddy - Virippu + Mundakan	0.00	604.75	316.97	0.00	1406.47	750.75	7237.54
4	Paddy - Virippu + Mundakan + Puncha	0.00	0.00	1.28	0.00	0.00	0.00	1.28
5	Paddy	1457.92	604.75	408.50	394.88	1461.97	1571.75	10027.12
6	Paddy land converted to Builtup land	46.08	43.25	5.25	0.00	0.00	43.50	153.03
7	Paddy land converted to Mixed Crops	0.00	38.75	2.00	0.00	9.00	135.75	225.13
8	Paddy land converted to Coconut	0.00	0.00	2.37	0.00	0.75	15.75	32.95
9	Paddy land converted to Tapioca	0.00	0.00	0.00	0.00	0.00	0.00	1.13
10	Paddy land converted to Sugercane	0.00	0.00	0.00	0.00	0.00	0.00	1.75
11	Paddy land converted to Banana	0.00	0.00	1.00	0.00	17.50	0.00	3.63
12	Paddy land converted to Arecanut	0.00	0.00	0.00	0.00	0.00	0.00	1.00
13	Paddy land converted to Ruber	0.00	0.00	0.00	0.00	0.00	2.00	2.00
14	Paddy land converted to Mixed Trees	0.00	0.00	0.00	0.00	0.00	0.00	1.89
15	Paddy land converted to Mangium	0.00	0.00	0.00	0.00	0.00	0.00	0.75
16	Paddy converted	46.08	82.00	10.62	0.00	27.25	197.00	423.26
17	Coconut	7.68	0.00	313.35	220.16	55.50	381.25	1100.45
18	Arecanut	5.12	0.00	9.75	0.00	0.00	0.00	17.37

Sl. No.	Land Use	Puthupariyaram	Marutha Road	Malampuzha	Akattettara	Kodumpe	Puthushery	Total
19	Banana	0.00	0.00	2.00	0.00	6.50	12.50	22.25
20	Vegetables	0.00	0.00	19.00	0.00		38.00	63.75
21	Tapioca	19.84	0.00	0.00	0.00		0.00	20.59
22	Tuber Crops	0.00	0.00	4.25	3.84		0.00	13.29
23	Mixed Crops	367.60	435.75	366.16	187.52	196.15	738.75	4152.19
24	Homestead	400.24	435.75	714.51	411.52	258.15	1170.50	5389.89
25	Groundnut + Sesamum					0.00		12.25
26	Groundnut	0.00	0.00	0.00	0.00	0.00	166.50	177.50
27	Sugarcane	0.00	0.00	0.00	0.00	0.00	34.25	92.86
28	Maize	0.00	0.00	0.00	0.00	0.00	39.50	39.50
29	Cotton					0.00	3.50	3.50
30	Field Crops	0.00	0.00	0.00	0.00	0.00	243.75	325.61
31	Mango Trees	0.00	0.00	10.00	0.00	0.00	14.00	24.00
32	Rubber	0.00	0.00	353.75	143.36	0.00	0.00	500.36
33	Cashew	5.12	0.00	5.50	50.56	0.00	0.00	61.18
34	Plantation Crops	5.12	0.00	369.25	193.92	0.00	14.00	585.54
35	Mangium	0.00	0.00	0.50	0.00	0.00	0.00	0.88
36	Accasia	0.00	0.00	51.30	0.00	0.00	0.00	51.30
37	Mixed Trees	340.16	6.50	90.75	118.80	136.38	367.50	1284.54
38	Teak	0.00	0.00	14.75	1.28		76.00	101.53
39	Agroforestry	340.16	6.50	157.30	120.08	136.38	443.50	1438.25
40	Ginger	0.00	0.00	4.50	0.00		0.00	4.50

Sl. No.	Land Use	Puthupariyaram	Marutha Road	Malampuzha	Akattattara	Kodumpe	Puthushery	Total
41	Spices Crops	0.00	0.00	4.50	0.00		0.00	4.50
42	Forest	0.00	0.00	14097.58	494.08		5907.00	20517.91
43	Forests	0.00	0.00	14097.58	494.08		5907.00	20517.91
44	Paddy land - Waste land	102.00	49.25	5.25	0.00	32.00	128.50	302.50
45	Paddy cultivable waste land	169.89	69.75	67.34	661.20	187.00	566.75	1786.48
46	Waste land	63.15	0.00	9.50	0.00	38.75	259.75	366.65
47	Waste lands	335.04	119.00	82.09	661.20	257.75	955.00	2455.63
48	Rock	0.00	0.00	161.88	10.24	3.00	0.00	200.12
49	Mines	0.00	0.00	161.88	10.24	3.00	0.00	200.12
50	Industrial Area	0.00	0.00	0.00	0.00		992.00	992.00
51	built up land	93.12	340.00	161.43	14.08	267.00	434.00	1113.01
52	Industrial Habitation	93.12	340.00	161.43	14.08	267.00	1426.00	2105.01
53	Water Sources	69.12	380.00	103.34	0.00	130.00	353.00	1046.46
54	Dam	0.00	0.00	2071.00	0.00		0.00	2071.00
55	Water Bodies	69.12	380.00	2174.34	0.00	130.00	353.00	3117.46
56	Government Farm	211.20	0.00	0.00	0.00		0.00	211.20
57	Jasmine	0.00	0.00	0.00	0.00		2.50	2.50
58	Others	211.20	0.00	0.00	0.00		2.50	213.70
	Total	2958.00	1968.00	18342.00	2300.00		12284.00	46804.00

Table 11.8

MANNARKKAD BLOCK

Sl. No.	Land Use	Alanalloor	Karimba	Kottoppa dam	Kumaram puthur	Kanjirappuzha	Thenkara	Mannarkadu	Thachana ttukara	Thachampara	Total
1	Paddy - Virippu	46.50		56.96		0.75		79.13	217.50		407.09
2	Paddy - Mundakan	102.50			52.75						174.75
3	Paddy - Virippu + Mundakan	193.50	129.50	803.84	152.00	76.75		268.75	375.00	158.72	2388.52
4	Paddy - Virippu + Mundakan + Puncha				13.50	92.00		130.50		19.20	335.15
5	Paddy land - Banana	19.00			158.00			2.50			179.50
6	Paddy Land - Tuber Crops	11.00			3.00						14.00
7	Paddy	372.50	129.50	860.80	379.25	169.50		480.88	592.50	177.92	3499.01
8	Paddy land converted to built up land					4.25		6.00	3.50		16.25
9	Paddy land converted to Mixed Crops	4.50	320.50	3.20	392.50	391.50		168.00	7.50		1401.39
10	Paddy land converted to Coconut	26.00	38.25		6.50	91.00		46.75	6.05	11.50	252.93
11	Paddy land converted to Tapioca		7.25			5.50		18.25			31.00
12	Paddy land converted to Banana	75.00	19.25			28.25		30.00	2.25		223.33
13	Paddy land converted to Cashew nut							1.50			1.50
14	Paddy land converted to Arecanut	350.00	42.75		14.00	35.25		13.50	8.75		473.87
15	Paddy land converted to Rubber		23.25	10.24	1.50	25.25		1.25			61.49
16	Paddy land converted to Mixed Trees				0.50						0.50
17	Paddy converted	455.50	451.25	13.44	415.00	581.00		285.25	28.05	11.50	2462.26
18	Coconut	388.00	67.50	198.72	135.50	118.50		94.37	148.13	246.18	1439.75
19	Areca nut	201.00	9.00	3.84	211.00	42.50		18.75	8.00	52.25	546.34
20	Banana	102.00	16.25	26.56	20.00	77.25		34.00	14.50	58.88	355.69
21	Vegetables	4.00			0.75				2.50		7.25
22	Tuber Crops	9.25		5.76				1.75	2.25	2.56	21.57
23	Mixed Crops	700.00	994.00	1189.52	471.00	1012.50		813.38	711.00	926.41	7751.76

Data not available

Sl. No.	Land Use	Alanalloor	Karimba	Kottoppa dam	Kumaram puthur	Kanjirapp uzha	Thenkara	Mannar kadu	Thachana ttukara	Thachampara	Total
24	Homesstead	1404.25	1086.75	1424.40	838.25	1250.75		962.25	886.38	1286.28	10122.36
25	Pulse		2.75								2.75
26	Field Crops		2.75								2.75
27	Rubber	1726.25	1759.25	2846.28	1195.25	1232.75		539.37	795.25	1337.78	12366.96
28	Cashew Nut	181.75		427.28	47.50	25.00		59.00	198.90		959.05
29	Plantation Crops	1908.00	1759.25	3273.56	1242.75	1257.75		598.37	994.15	1337.78	13326.01
30	Mangium				7.00				0.25		7.25
31	Mixed Trees	727.00		400.48	19.25	198.50		203.00	803.67	172.25	2663.15
32	Teak	32.25		311.04		0.75		6.00	2.75		352.79
33	Agroforestry	759.25		711.52	26.25	199.25		209.00	806.67	172.25	3023.19
34	Forest	766.00	927.00	1596.16	655.00	2022.25		3632.25	44.50	2373.23	12016.39
35	Rubber		2544.75								2544.75
36	Cashew			74.88							74.88
37	Forests	766.00	3471.75	1671.04	655.00	2022.25		3632.25	44.50	2373.23	14636.02
38	Paddy converted to cultivable waste land	15.25	3.00	26.24	53.00	7.50		48.75	64.50	2.56	238.80
39	Waste land	38.75	17.75		36.00	9.50		13.75	46.75	1.56	164.06
40	Waste Lands	54.00	20.75	26.24	89.00	17.00		62.50	111.25	4.12	402.86
41	Rock					9.75		3.75	10.75		26.00
42	Mines					9.75		3.75	10.75		26.00
43	Built up land	58.00				38.75		76.75	6.25		181.50
44	Industrial Habitation	58.00				38.75		76.75	6.25		181.50
45	Water Source	46.50			79.50	298.00		27.00	23.50	33.92	553.04
46	Water Bodies	46.50			79.50	298.00		27.00	23.50	33.92	553.04
	Total	5824.00	6922.00	7981.00	3725.00	5844.00		6338.00	3504.00	5397.00	48235.00

Data not available

Table 11.9

PALAKKAD BLOCK

(Area in Ha.)

Sl. No.	Land Use	Keralashery	Kongad	Mankara	Mannoor	Mundur	Parali	Pirayiri	Total
1	Paddy - Virippu	10.00	0.00	30.25	0.00	726.66	0.00	0.00	822.41
2	Paddy - Virippu + Mundakan	695.84	795.50	577.50	594.00	0.00	784.75	648.75	5502.81
3	Paddy - Virippu + Mundakan + Puncha	0.00	80.00						80.00
4	Paddy	705.84	875.50	607.75	594.00	726.66	784.75	648.75	6405.22
5	Paddy land converted to Banana	0.00	6.00	1.75	1.00	0.00	3.75	27.50	57.50
6	Paddy land converted to Mixed Crops	0.00	42.75	11.50	15.75	0.00	7.00	128.00	214.00
7	Paddy land converted to Coconut	13.00	4.00	6.25	4.00	0.00	9.13	24.75	61.88
8	Paddy land converted to Banana	0.00	8.75	2.00	0.75	0.00	3.25	0.00	14.75
9	Paddy land converted to Arecanut	8.30	0.00	0.00	0.00	0.00	0.50	0.00	8.80
10	Paddy land converted to Rubber	0.00	0.00	1.50	0.00	0.00	2.50	0.00	4.00
11	Paddy land converted to Mixed Trees	0.00	0.00	0.00	3.75	0.00	0.00	0.00	3.75
12	Paddy converted	21.30	61.50	23.00	25.25	0.00	26.13	180.25	364.68
13	Coconut	63.00	279.25	122.00	61.00	208.16	95.75	58.75	943.41
14	Areca nut	1.00	22.75	0.50	2.25	0.00	0.00	5.00	31.50
15	Banana	0.75	7.00	0.00	0.75	647.92	2.75	0.00	659.17
16	Vegetables	2.50	0.00	0.00	0.00	0.00	1.75	5.00	9.25
17	Tuber Crops	5.75	0.00	5.75	1.75	0.00	2.00	0.00	15.25
18	Mixed Crops	642.96	858.75	392.75	275.75	1100.96	606.00	578.75	4652.07
19	Homestead	715.96	1167.75	521.00	341.50	1957.04	708.25	647.50	6310.65
20	Pulses			1.00					1.00
21	Sugercane						2.50	0.00	2.50

Sl. No.	Land Use	Keralashery	Kongad	Mankara	Mannoor	Mundur	Parali	Pirayiri	Total
22	Field Crops			1.00			2.50	0.00	3.50
23	Rubber	469.88	922.00	94.00	152.75	19.20	154.00	15.00	1826.83
24	Cashew Nut	0.00	21.50	0.75	1.50	0.00	0.00	0.00	23.75
25	Plantation Crops	469.88	943.50	94.75	154.25	19.20	154.00	15.00	1850.58
26	Mixed Trees	347.77	245.50	356.25	673.48	537.82	739.37	28.75	3065.32
27	Teak	18.25	29.25	10.25	0.00	0.00	0.00	0.00	57.75
28	Agroforestry	366.02	274.75	366.50	673.48	537.82	739.37	28.75	3123.07
29	Forest	21.25	60.00	68.00			206.50		355.75
30	Grasslands			2.50					2.50
31	Forests	21.25	60.00	70.50			206.50		358.25
32	Paddy Land - Waste Land	0.00	0.00	40.25	0.00	0.00	0.00	0.00	72.25
33	Paddy converted to cultivable waste land	79.50	93.50	44.25	16.00	0.00	97.00	40.50	557.75
34	Waste Land	0.00	30.50	0.50	42.02	63.28	17.00	89.00	281.05
35	Waste Lands	79.50	124.00	85.00	58.02	63.28	114.00	129.50	911.05
36	Clay mines			1.25					1.25
37	Rock	7.25		6.25	0.00	0.00	12.75		29.25
38	Mines	7.25		7.50	0.00	0.00	12.75		30.50
39	Built up land	0.00	48.00	26.75	4.50	0.00	57.25	69.25	472.75
40	Industrial Habitation	0.00	48.00	26.75	4.50	0.00	57.25	69.25	472.75
41	Water Source		0.00	249.25		0.00	216.50	150.00	745.75
42	Water Bodies		0.00	249.25		0.00	216.50	150.00	745.75
43	Others						5.00		5.00
44	Others						5.00		5.00
	Total	2387.00	3555.00	2053.00	1851.00	3304.00	3027.00	1869.00	20588.00

Table 11.10

NENMARA BLOCK

Sl. No.	Land Use	Ayiloor	Melarkode	Neliiyampathi	Elavanchery	Nenmara	Vandazhi	Pallashana	Total
1	Paddy - Virippu				198.25	3.88			202.13
2	Paddy - Virippu + Mundakan	1541.48	993.00		1368.50	1255.26	943.50	1852.48	7010.72
3	Paddy - Virippu + Mundakan + Puncha					13.63			13.63
4	Paddy	1541.48	993.00		1566.75	1272.77	943.50	1852.48	7226.48
5	Paddy Land converted to built up land	4.88				26.88	6.75	4.88	36.64
6	Paddy land converted to Mixed Crops	45.87	10.00		89.75	5.63	24.00	8.32	159.57
7	Paddy land converted to Coconut	5.13	55.00		13.75	2.88	39.50	2.56	79.32
8	Paddy land converted to Banana	5.13				2.00	1.50		7.13
9	Paddy land converted to Arecanut	25.13					0.75		25.13
10	Paddy land converted to Vegetable					10.50			10.50
11	Paddy land converted to Rubber	18.13				3.00			21.13
12	Paddy converted	104.27	65.00		103.50	50.89	72.50	15.76	339.42
13	Coconut	20.75	331.75		98.25	144.44	175.00		595.19
14	Arecanut	57.75				12.25	16.25		70.00
15	Rubber						1741.50		
16	Banana	1.25	75.00		1.00	2.00			79.25
17	Vegetables	2.75			5.50	13.50			21.75
18	Tapioca	1.00		43.75					44.75
19	Tuber Crops					0.50	2.25		0.50
20	Mixed Crops	749.82	471.50	29.69	181.75	810.14	650.25	380.40	2623.30
21	Homestead	833.32	878.25	73.44	286.50	982.83	2585.25	380.40	3434.74
22	Pulses				1.25				1.25
23	Groundnuts				18.00				18.00
24	Field Crops				19.25				19.25
25	Rubber	725.25	287.00	89.07		240.88			1342.20
26	Cashew Nut		18.25				14.25		18.25
27	Plantation Crops	725.25	305.25	89.07		240.88	14.25		1360.45

Sl. No.	Land Use	Ayiloor	Melarkode	Nelliyampathi	Elavanchery	Nenmara	Vandazhi	Pallashana	Total
28	Mixed Trees	181.94	77.25		69.75	218.50	84.75	463.56	1011.00
29	Teak	7.87	26.25		31.00	7.00	0.25	1.28	73.40
30	Agroforestry	189.81	103.50		100.75	225.50	85.00	464.84	1084.40
31	Tea			814.08					814.08
32	Coffee			1712.50					1712.50
33	Coffee + Cardamom			501.60					501.60
34	Coffee + Tea			195.32					195.32
35	Coffee + Pepper			23.44					23.44
36	Coffee + Orange + Pepper			56.25					56.25
37	Orange + Vegetable			234.38					234.38
38	Coffee + Tea + Maize			107.82					107.82
39	Beverages Crops			3645.39					3645.39
40	Pepper						113.00		
41	Maize			1242.19					1242.19
42	Spices Crops			1242.19	0.00	0.00	113.00		1242.19
43	Forest	606.75	147.50	52541.38	902.00	3.13	1309.75		54200.76
44	Forests	606.75	147.50	52541.38	902.00	3.13	1309.75		54200.76
45	Paddy Land - Waste Land	0.50			1.75				2.25
46	Paddy cultivable waste land	16.00	49.50		0.75	111.63	45.25	49.28	227.16
47	Waste Land	10.50	10.00		76.25	104.58	11.75	170.24	371.57
48	Marshy Land					14.00			14.00
49	Waste Lands	27.00	59.50		78.75	230.21	57.00	219.52	614.98
50	Rock	16.37			4.75	140.16			161.28
51	Mines	16.37			4.75	140.16			161.28
52	Built up land	8.25		62.53	103.75	160.13	89.50		334.66
53	Industrial Habitation	8.25		62.53	103.75	160.13	89.50		334.66
54	Water soruce					377.50	400.25		377.50
55	Water soruce (River)	41.50			52.00				93.50
56	Water Bodies	41.50			52.00	377.50	400.25		471.00
	Total	4094.00	2552.00	57654.00	3218.00	3684.00		2933.00	74135.00

Table 11.11

OTTAPPALAM BLOCK

Sl. No.	Land Use	Ambalapara	Anaganadi	Chalavara	Lakadiperu	Nellaya	Thrikkadery	Vallappuzha	Vaniyamkulam	Total
1	Paddy - Virippu	3.50	0.00	0.50	12.77	2.75	11.63	8.00	29.75	46.52
2	Paddy - Mundakan	3.00	0.00	0.00	0.00				0.00	3.00
3	Paddy - Virippu + Mundakan	1127.85	549.12	557.75	928.34	775.25	401.58	480.25	890.00	4053.06
4	Paddy - Mundakan + Punched				2.13					2.13
5	Paddy - Virippu + Vegetables						1.50			
6	Paddy - Virippu + Mundakan + Punched	5.25								5.25
7	Paddy	1139.60	549.12	558.25	943.24	778.00	414.71	488.25	919.75	4109.96
8	Paddy land converted to built up land	2.00	0.00	14.00	0.00	1.00	7.75		2.50	18.50
9	Paddy land converted to Mixed crops	14.00	17.28	25.00	2.07	1.00	10.62	2.50	33.50	91.85
10	Paddy land converted to Coconut	16.00	0.00	23.50	1.01	1.00	0.75	0.75	8.00	48.51
11	Paddy land converted to Tapioca	0.00	0.00	1.25	0.00	1.00			0.00	1.25
12	Paddy land converted to Banana	13.00	0.00	8.75	0.76	0.50	1.50		7.50	30.01
13	Paddy land converted to Arecanut	4.00	0.00	0.00	0.00			1.00	1.25	5.25
14	Paddy land converted to Rubber	4.50	0.00	0.00	0.00	8.00			0.00	4.50
15	Paddy converted	53.50	17.28	72.50	3.84	12.50	20.62	4.25	52.75	199.87
16	Coconut	146.30	7.68	10.00	324.93	28.75	88.16	192.87	54.50	543.41
17	Arecanut	6.50	0.00	0.50	7.34	0.25		3.37	4.50	18.84
18	Banana	5.25	0.00	0.25	7.60		0.88	10.50	23.50	36.60
19	Vegetables	0.25	0.00	0.00	0.00			1.75	0.00	0.25
20	Tuber Crops	3.75	0.00	0.00	2.40		0.50			6.15

Sl. No.	Land Use	Ambalapara	Anaganadi	Chalavara	Lakadiperu	Nellaya	Thrikkad- eri	Vallappuz- ha	Vaniyamk- ulam	Total
21	Mixed Crops	1152.85	1014.94	1045.75	475.94	1364.00	816.43	487.26	1514.50	5203.98
22	Homestead	1314.90	1022.62	1056.50	818.21	1393.00	905.97	695.75	1597.00	5809.23
23	Rubber	539.05	85.36	323.50	205.81	36.50	128.00	53.50	466.25	1619.97
24	Cashew	22.25	6.08	60.50	30.65	6.25	7.50	4.00	24.00	143.48
25	Plantation Crops	561.30	91.44	384.00	236.46	42.75	135.50	57.50	490.25	1763.45
26	Mixed Trees	1438.15	183.04	456.25	738.48	285.50	990.86	865.75	141.50	2957.42
27	Teak	19.00	30.72	27.25	5.12	9.50	4.25	4.00	6.25	88.34
28	Agroforestry	1457.15	213.76	483.50	743.60	295.00	995.11	869.75	147.75	3045.76
29	Forest	119.00	0.00	150.25	0.00	73.75	74.00		0.00	269.25
30	Forests	119.00	0.00	150.25	0.00	73.75	74.00		0.00	269.25
31	Paddy Land - Waste Land	0.50	0.00	0.00	0.00		0.50	3.75	2.50	3.00
32	Paddy cultivable waste land	107.30	7.68	38.00	83.58	30.25	28.25	4.25	93.25	329.81
33	Waste Land	0.00	0.00	18.25	98.16	68.00	52.10	10.00	52.75	169.16
34	Waste Lands	107.80	7.68	56.25	181.74	98.25	80.85	18.00	148.50	501.97
35	Rock	216.15	176.10	6.00	0.00	8.75		15.75	0.50	398.75
36	Mines	216.15	176.10	6.00	0.00	8.75		15.75	0.50	398.75
37	Built up land	7.25	0.00	22.75	22.81	3.00	0.50	14.25	29.75	82.56
38	Industrial Habitation	7.25	0.00	22.75	22.81	3.00	0.50	14.25	29.75	82.56
39	Water source	31.35	0.00	0.00	129.10	36.00	0.74	0.50	143.50	303.95
40	Water Bodies	31.35	0.00	0.00	129.10	36.00	0.74	0.50	143.50	303.95
	Total	5008.00	2078.00	2790.00	3079.00	2741.00		2164.00	3552.00	16507.00

Table 11.12

PATTAMBI BLOCK

(Area in Ha.)

Sl. No.	Land Use	Koppam	Kulukkalloor	Muthuthala	Ongallur	Pattambi	Paruttoor	Thurveg appura	Vilayoor	Total
1	Virippu	20.25	4.00	46.00	4.25	137.00	19.25	96.11	0.75	338.36
2	Mundakan			49.00			2.75	52.75	71.50	176.00
3	Puncha						15.00	3.00		18.00
4	Virippu + Mundakan	502.50	510.35	396.75	527.96	109.25	488.75	245.25	296.25	4332.56
5	Virippu + Puncha								12.00	12.00
6	Virippu + Mundakan + Puncha							9.50		9.50
7	Paddy	522.75	514.35	491.75	532.21	246.25	525.75	406.61	380.50	4886.42
8	Paddy land converted to Builtup land	1.75			1.38	12.50	3.25	2.50	2.00	24.38
9	Paddy land converted to Mixed Crops	4.25	11.50	0.75	10.26	5.75	14.00	15.00	3.00	68.01
10	Paddy land converted to Coconut	3.25	0.75	0.75	33.61		2.75	4.75	0.50	48.11
11	Paddy land converted to Tapioca	2.75	3.50	0.50					1.00	8.75
12	Paddy land converted to Banana	5.75	7.75		1.50		9.75	1.88	3.75	30.88
13	Paddy land converted to Arecanut				5.25	0.00				6.25
14	Paddy land converted to Rubber	2.25								10.25
15	Paddy land converted to waste land						1.50			1.50
16	Paddy converted	20.00	23.50	2.00	52.00	18.25	31.25	24.13	10.25	198.13
17	Coconut	323.50	52.50	125.75	85.23	51.50	2.75	100.75	176.50	1140.10
18	Arecanut		39.50	13.50	11.13	6.00	3.50	6.75	16.25	100.25
19	Banana	10.00	18.50	3.00	0.88	4.25	6.50	3.50	10.50	67.63
20	Vegetables			0.50	2.88	0.75		0.50		6.38
21	Tuber Crops		4.00	4.75	0.75			1.75	6.75	18.00
22	Mixed Crops	526.75	460.80	428.75	1258.24	700.50	882.00	1113.29	525.50	7747.09

Sl. No.	Land Use	Koppam	Kulukkalloor	Muthuthala	Ongallur	Pattambi	Paruttoor	Thurveg appura	Vilayoor	Total
23	Plantation	860.25	575.30	576.25	1359.11	763.00	894.75	1226.54	735.50	9079.45
24	Pulses				1.25					1.25
25	Field Crops				1.25					1.25
26	Rubber	208.75	51.00	207.00	140.26	26.25	18.25	20.75	167.25	929.51
27	Cashew Nut	13.00	18.25	1.50		7.00			30.00	80.00
28	Plantation Crops	221.75	69.25	208.50	140.26	33.25	18.25	20.75	197.25	1009.51
29	Mangium		0.50							0.50
30	Mixed Trees	930.25	976.50	611.00	857.53	293.25	336.00	262.61	297.25	5715.64
31	Teak		1.50	1.50	4.50	1.00			2.75	24.75
32	Agricultural Forest	930.25	978.50	612.50	862.03	294.25	336.00	262.61	300.00	5740.89
33	Forest		29.00		114.00					216.75
34	Forests		29.00		114.00					216.75
35	Paddy Land - Waste Land		3.75		5.00					12.50
36	Paddy converted to cultivable waste land	9.50	15.75	45.75	32.01	54.63	21.25	41.50	23.00	277.89
37	Waste Land	15.25	1.00	26.70	10.50	10.00	12.50	12.75	12.50	179.20
38	Waste Lands	24.75	20.50	72.45	47.51	64.63	33.75	54.25	35.50	469.59
39	Rock		19.50		1.00	1.50				46.50
40	Mines		19.50		1.00	1.50				46.50
41	Built up land	5.25	16.50	31.55	10.13	96.63	13.50	4.00	38.75	233.56
42	Industrial Habitation	5.25	16.50	31.55	10.13	96.63	13.50	4.00	38.75	233.56
43	Water source		42.60		48.50	66.24	217.75	47.11	80.25	538.95
44	Water Source		42.60		48.50	66.24	217.75	47.11	80.25	538.95
	Total	2585.00	2289.00	1995.00	3168.00	1584.00	2071.00	2046.00	1778.00	22421.00

Table 11.13

SREEKRISHNAPURAM BLOCK

Sl. No.	Land Use	Kadambazhippuram	Pookkottukave	Vellinezhi	Cherpparasheriy	Karakkurissi	Srikrishnapuram	Karimpuzha	Total
1	Paddy - Virippu	19.75	4.75	18.13	13.50	6.25	4.50	1.09	67.97
2	Paddy - Mundakan		1.00		18.25	19.50			38.75
3	Paddy - Virippu + Mundakan	741.75	465.88	363.00	425.50	230.46	606.25	619.80	3452.64
4	Paddy - Virippu + Mundakan + Puncha	46.75			67.00	79.95		47.57	241.27
5	Paddy - Virippu + Vegetables								0.00
6	Paddy	808.25	471.63	381.13	524.25	336.16	610.75	668.46	3800.63
7	Paddy land converted to Builtup land	5.00	3.25	2.00		2.50			12.75
8	Paddy land converted to Mixed Crops	51.75	16.65	24.13	24.25	113.69	75.25		305.72
9	Paddy land converted to Coconut	23.25	3.50	3.25	4.00	26.88	23.50	174.33	258.71
10	Paddy land converted to Tapioca	0.50	6.75	3.80	11.00				22.05
11	Paddy land converted to Pineapple	2.25							2.25
12	Paddy land converted to Banana	6.25	18.75	6.38	9.75	68.58	3.00	101.94	214.65
13	Paddy land converted to Arecanut	49.25		0.75		9.62	4.00		63.62
14	Paddy land converted to Vegetable		0.50						0.50
15	Paddy land converted to Rubber	12.25	1.50	1.00	0.50			3.81	19.06
16	Paddy land converted to Waste Land							22.83	22.83
17	Paddy converted	150.50	50.90	41.31	49.50	221.27	105.75	302.92	922.15
18	Coconut	155.75	30.25	59.59	94.75	42.85	178.00	118.74	679.93
19	Arecanut	15.00	7.50	7.00	14.00		12.25	5.30	61.05
20	Banana	3.00	1.25		30.25	6.25	6.50	17.53	64.78
21	Vegetables	1.75			0.25				2.00
22	Tapioca				3.00			1.94	4.94
23	Tuber Crops	0.25			2.62		1.25		4.12
24	Mixed Crops	755.00	780.50	1118.12	1109.25	933.95	837.75	1244.29	6778.86
25	Homestead	930.75	819.50	1184.71	1254.12	983.05	1035.75	1387.80	7595.68
26	Pineapple	2.75							2.75

Sl. No.	Land Use	Kadambazhippuram	Pookkottukave	Vellinezhi	Cherpparashery	Karakkurissi	Srikrishnapuram	Karimpuzha	Total
27	Field Crops	2.75							2.75
28	Rubber	1018.25	266.25	565.76	100.25	934.78	666.10	1754.26	5305.65
29	Cashew	8.50	3.75	34.09	23.25	19.62	7.00	19.35	115.56
30	Plantation Crops	1026.75	270.00	599.85	123.50	954.40	673.10	1773.61	5421.21
31	Mangium			0.50			6.50		7.00
32	Mixed Trees	688.75	83.25	278.64	656.01	139.00	290.25	117.45	2253.35
33	Teak	12.50	17.25	15.38	3.00		19.25		67.38
34	Agroforestry	701.25	100.50	294.52	659.01	139.00	316.00	117.45	2327.73
35	Gooseberry							14.05	14.05
36	Medicinal Plants							9.55	9.55
37	Medicinal Plants							23.60	23.60
38	Forest	100.50	389.59	24.34			25.00	128.26	667.69
39	Forests	100.50	389.59	24.34			25.00	128.26	667.69
40	Paddy Land - Waste Land			4.00					4.00
41	Paddy cultivable waste land	56.50	43.13	48.38	30.00	18.00	75.00	131.09	402.10
42	Waste Land	47.00	52.50	37.88	44.31		5.50	20.08	207.27
43	Marshy Land			1.25					1.25
44	Waste Lands	103.50	95.63	91.51	74.31	18.00	80.50	151.17	614.62
45	Rock	47.75	1.75	20.25	4.25	1.75		16.52	92.27
46	Mines	47.75	1.75	20.25	4.25	1.75		16.52	92.27
47	Built up land	15.00	1.50	3.88	30.06	1.75	50.25	17.73	120.17
48	Industrial Habitation	15.00	1.50	3.88	30.06	1.75	50.25	17.73	120.17
49	Water source	84.00		44.50	41.00	44.62	58.90		273.02
50	Water Source							8.28	8.28
51	Water Source (River)							143.20	143.20
52	Water Bodies	84.00		44.50	41.00	44.62	58.90	151.48	424.50
	Total	3971.00	2201.00	2686.00	2760.00		2956.00	4739.00	19313.00

Table 11.14

CHITTOOR BLOCK

Sl. No.	Land Use	Eruthampathy	Kozhinjampara	Nallepilly	Elappulli	Polpully	Perumatti	Vadakarappathi	Total
1	Paddy - Virippu	195.75	15.75	24.75	24.25	0.00	9.25	428.75	674.25
2	Paddy - Mundakan	0.00	1.88	0.00	0.00	0.00	0.00	118.25	120.13
3	Paddy - Virippu + Mundakan	0.00	753.38	2495.45	2941.70	1345.55	2489.05	56.75	7298.96
4	Paddy - Virippu + Groundnut	0.00	5.50	0.00	0.00	0.00	0.00	0.00	5.50
5	Paddy - Virippu + Mundakan + Sugarcane	0.00	10.75	0.00			0.00	0.00	10.75
6	Paddy	195.75	787.26	2520.20	2965.95	1345.55	2498.30	603.75	8109.59
7	Paddy land converted to Builtup land	0.00	5.25	1.00	2.75	9.70	3.00	0.00	32.75
8	Paddy land converted to Mixed Crops	7.00	221.38	0.00	27.00	5.50	34.75	13.75	281.88
9	Paddy land converted to Coconut	6.75	61.25	2.75	4.75	6.70	19.25	100.50	195.00
10	Paddy land converted to Tapioca	20.75	0.00	0.00	0.00	0.00	0.00	0.00	20.75
11	Paddy land converted to Sugarcane	0.00	10.06	0.00	0.00	1.75	0.00	0.00	10.06
12	Paddy land converted to Banana	1.00	10.46		0.50	2.13	6.75	5.00	23.21
13	Paddy land converted to Arecanut	0.00	0.00	0.00	0.00	1.00	0.00	0.00	3.25
14	Paddy Land converted	35.50	308.40	3.75	35.00	26.78	63.75	119.25	566.90
15	Coconut	1007.25	1177.28	247.50	140.25	7.13	1359.80	1152.00	5023.33
16	Arecanut	0.00	4.50	12.75	0.00	0.00	2.75	12.50	35.25
17	Banana	20.00	24.75	14.00	5.50	1.00	36.75	64.50	239.25
18	Vegetables	40.50	13.75	0.00	6.75	0.00	41.80	588.75	684.80
19	Tuber Crops	3.25	37.80	0.00	4.25	0.95	21.10	47.50	111.15
20	Mixed Crops	1632.25	1332.34	124.00	1151.30	476.73	1059.55	391.00	5472.42
21	Homestead	2703.25	2590.42	398.25	1308.05	485.81	2521.75	2256.25	11566.20
22	Pulses	8.25	0.00	2.50	0.00	0.00	2.75	49.25	62.75
23	Groundnut + Maize	0.00	1.87	0.00	12.25	0.00	0.00	0.00	1.87
24	Groundnut	23.75	21.88	39.00	11.00	0.00	95.20	308.25	488.08
25	Cardamom	50.75	8.76	4.50	0.00	0.00	21.50	183.00	270.01

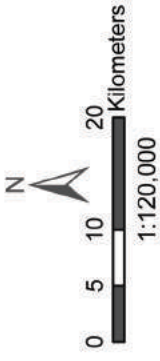
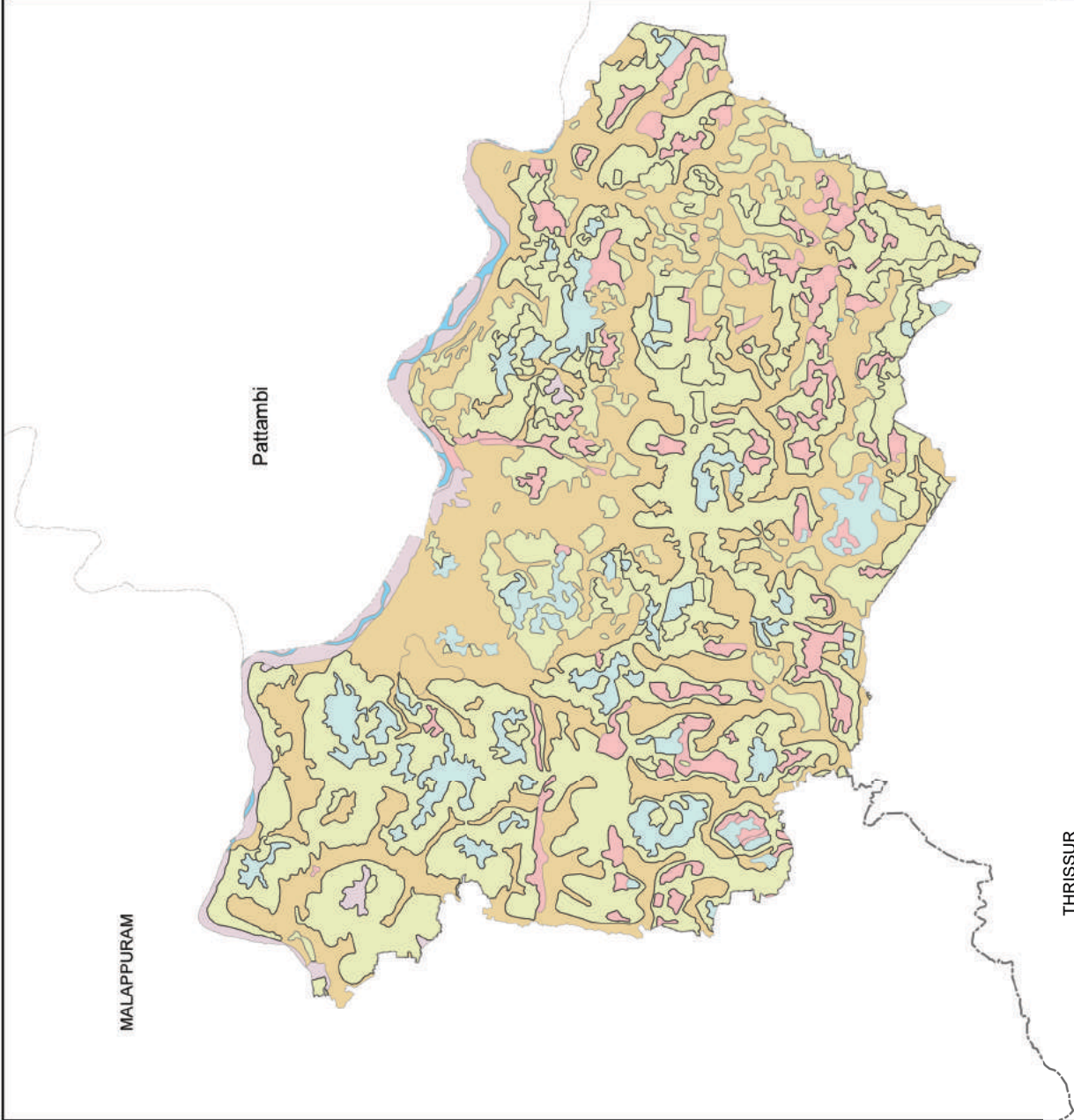
Sl. No.	Land Use	Eruthampathy	Kozhinjampara	Nallepilly	Elappulli	Polpully	Perumatti	Vadakarappathi	Total
26	Cotton	8.00	21.13	0.00	0.00	0.00	6.25	197.75	233.13
27	Sugarcane	52.00	216.37	74.00	29.00		94.70	528.50	974.82
28	Field Crops	142.75	270.01	120.00	52.25	0.00	220.40	1266.75	2030.66
29	Mango Tree	16.00	5.81	0.00	0.00	0.00	2.50	35.00	61.06
30	Rubber	0.00	0.00	0.00	3.25	0.00	0.00	0.00	11.51
31	Cashew Nuts	55.50	0.00	0.00			0.00	31.50	87.00
32	Plantation Crops	71.50	5.81	0.00	3.25	109.55	2.50	66.50	159.57
33	Mangium				0.00	0.38			
34	Mixed Trees	23.50	12.00	463.90	132.50	106.05	35.75	121.25	770.03
35	Teak	3.75	3.82	0.50	3.75	3.50	8.00	7.00	30.82
36	Agroforestry	27.25	15.82	464.40	136.25	109.93	43.75	128.25	800.85
37	Ginger	0.00	0.00	0.00	0.00		0.00	0.00	29.25
38	Chilly	0.00	0.00	1.50	0.00		0.00	0.00	1.50
39	Spices Crops	0.00	0.00	1.50			0.00	0.00	30.75
40	Forest				19.25	0.00			
41	Paddy Land - Waste Land	0.00	15.70	0.00	2.25	8.50	2.75	5.50	25.45
42	Paddy cultivable waste land	205.50	176.61	70.00	195.25	9.30	369.95	196.25	1141.05
43	Waste Land	42.00	12.00	81.40	26.25	3.25	26.00	103.75	277.95
44	Waste Lands	247.50	204.31	151.40	223.75	21.05	398.70	305.50	1444.45
45	Rock	18.25	58.50	0.00	28.00	0.00	0.00	0.00	79.88
46	Mines	18.25	58.50	0.00	28.00	0.00	0.00	0.00	79.88
47	Built up land	161.75	21.63	188.75	50.75	5.38	121.50	93.00	594.13
48	Industrial Habitation	161.75	21.63	188.75	50.75	5.38	121.50	93.00	594.13
49	Water source	89.50	119.72	136.25	84.50	1.50	208.35	0.00	622.15
50	Water Source	89.50	119.72	136.25	84.50	1.50	208.35	0.00	622.15
51	Marshy Land	0.00	1.50	0.00	0.00	0.00	0.00	0.00	1.50
52	Jasmine	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50
53	Fodder	0.00	0.62	0.00	0.00	0.00	0.00	111.75	114.87
54	Others	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50
55	Total	3693.00	4384.00	3987.00	4907.00	1996.00	6079.00	4951.00	26124.00

Table 11.15

MUNICIPALITIES

(Area in Ha.)

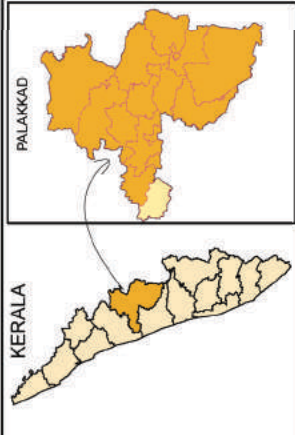
Sl. No.	Land Use	Showrnoor	Ottapalam	Chittoor	Palakkad	Total
1	Virippu	34.25	1.25		33.50	69.00
2	Mundakan	34.75	24.00			58.75
3	Puncha		0.75			0.75
4	Virippu + Mundakan	490.75	693.75	780.39	437.80	2402.69
5	Mundakan + Puncha		2.00			2.00
6	Virippu + Mundakan + Puncha	16.50	10.25			26.75
7	Paddy	576.25	732.00	780.39	471.30	2559.94
8	Paddy land converted to Builtup land	9.00	15.50	18.77	145.30	188.57
9	Paddy land converted to Mixed Crops	17.00	10.50	25.43	51.30	104.23
10	Paddy land converted to Coconut	5.50	0.50	3.30	7.80	17.10
11	Paddy land converted to Banana	2.50	1.25		0.20	3.95
12	Paddy land converted to Arecanut		0.50			0.50
13	Paddy converted	34.00	28.25	47.50	204.60	314.35
14	Coconut	52.50	93.25	17.49	13.10	176.34
15	Arecanut	1.75	2.25			4.00
16	Banana	6.25	7.75	0.44		14.44
17	Vegetables			3.82		3.82
18	Mixed Crops	1104.50	1122.25	410.04	360.30	2997.09
19	Plantation	1165.00	1225.50	431.79	373.40	3195.69
20	Sugarcane			4.05		4.05
21	Field Crops			4.05		4.05
22	Rubber	156.00	225.00			381.00
23	Cashew Nuts	0.50	0.50			1.00
24	Plantation Crops	156.50	225.50			382.00
25	Mixed Trees	663.07	349.75	27.30	43.60	1083.72
26	Teak	9.50	10.25	1.60		21.35
27	Agricultural Forest	672.57	360.00	28.90	43.60	1105.07
28	Forest	195.63	217.50			413.13
29	Forests	195.63	217.50			413.13
30	Paddy Land - Waste Land	25.50	7.25	14.94	132.60	180.29
31	Paddy converted to cultivable waste land	36.05	73.00	19.03	176.00	304.08
32	Waste Land	34.75	66.25	0.57	3.90	105.47
33	Marshy Land	11.25			0.40	11.65
34	Waste Lands	107.55	146.50	34.54	312.90	601.49
35	Rock	8.00	8.50	0.24		16.74
36	Mines	8.00	8.50	0.24		16.74
37	Built up land	136.00	226.75	97.99	1197.00	1657.74
38	Industrial Habitation	136.00	226.75	97.99	1197.00	1657.74
39	Water source	176.50	95.50	45.60	57.20	374.80
40	Water Source	176.50	95.50	45.60	57.20	374.80
	Total	3228.00	3266.00	1471.00	2660.00	10625.00



**LANDUSE
THRITHALA BLOCK
PALAKKAD DISTRICT**

LAND USE (Level 1)

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



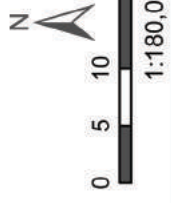
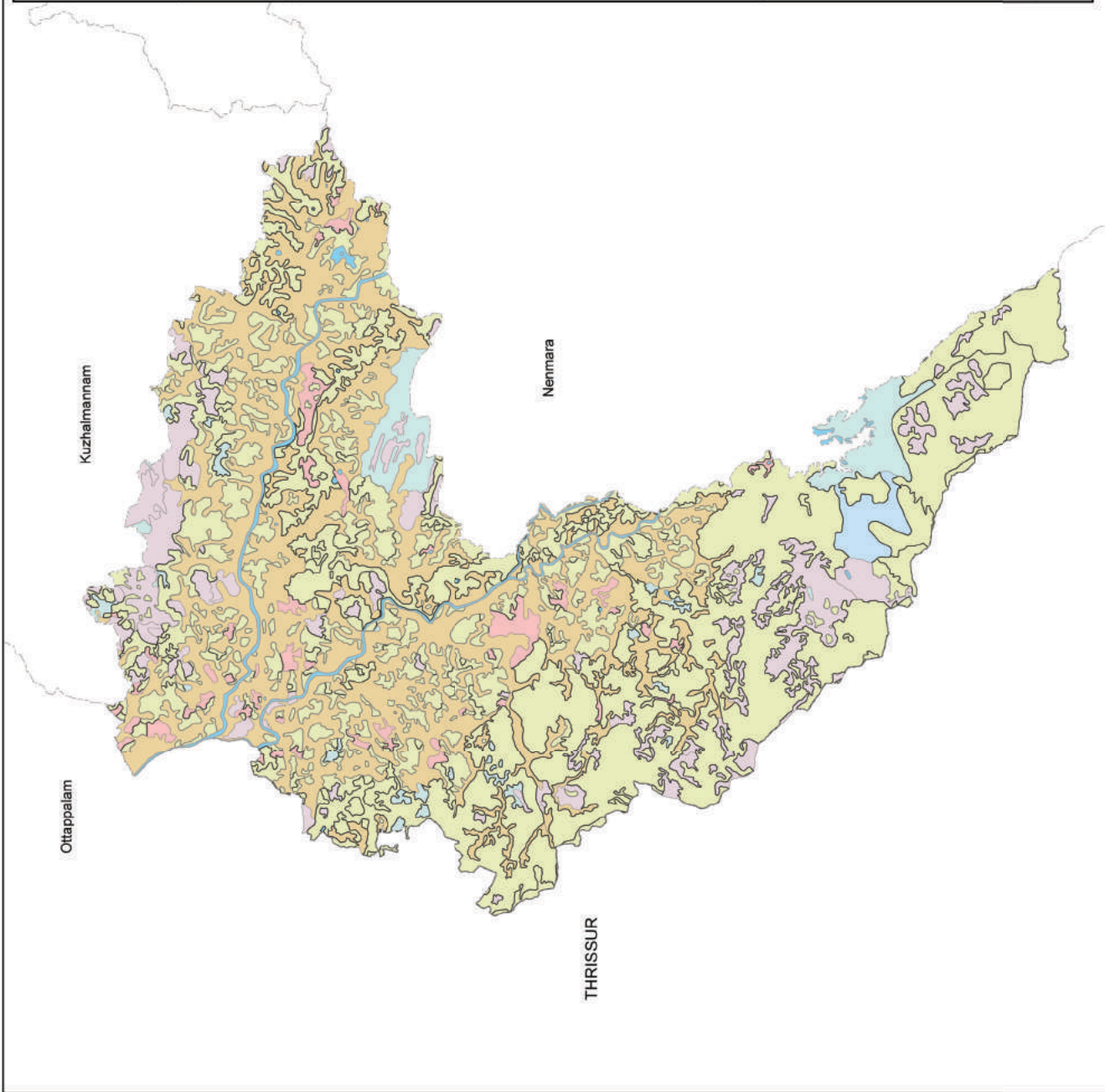
Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



MALAPPURAM

Pattambi

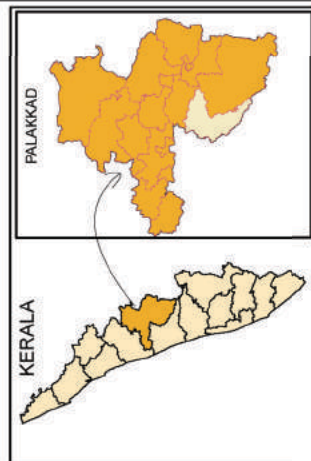
THRISSUR



**LAND USE
ALATHUR BLOCK
PALAKKAD DISTRICT**

LAND USE (Level 1)

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



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33










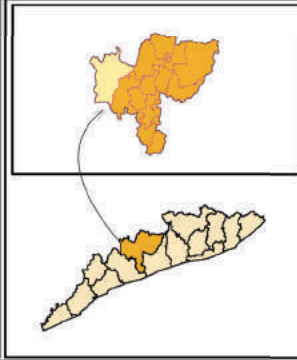


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Kilometers
1:225,000

**LANDUSE
ATTAPPADI BLOCK
PALAKKAD DISTRICT**

LAND USE (Level 1)

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



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

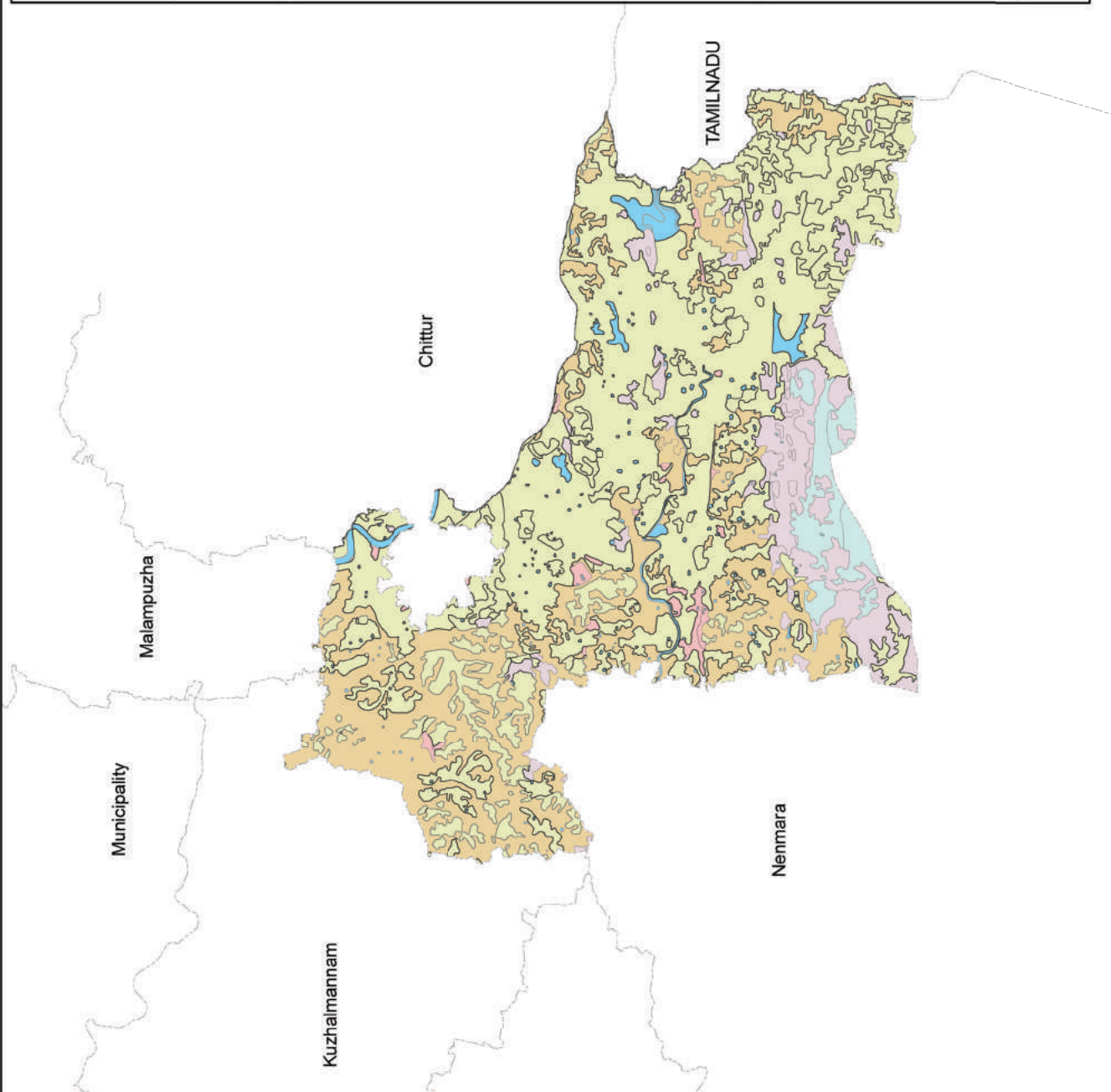
MALAPPURAM

TAMILNADU

Manmarkad

Malampuzha

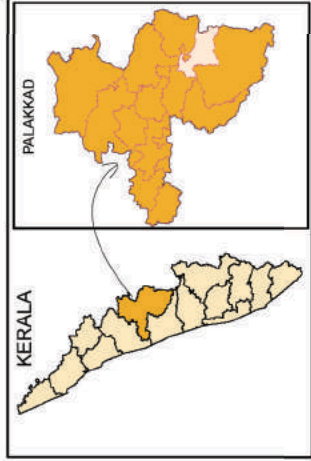
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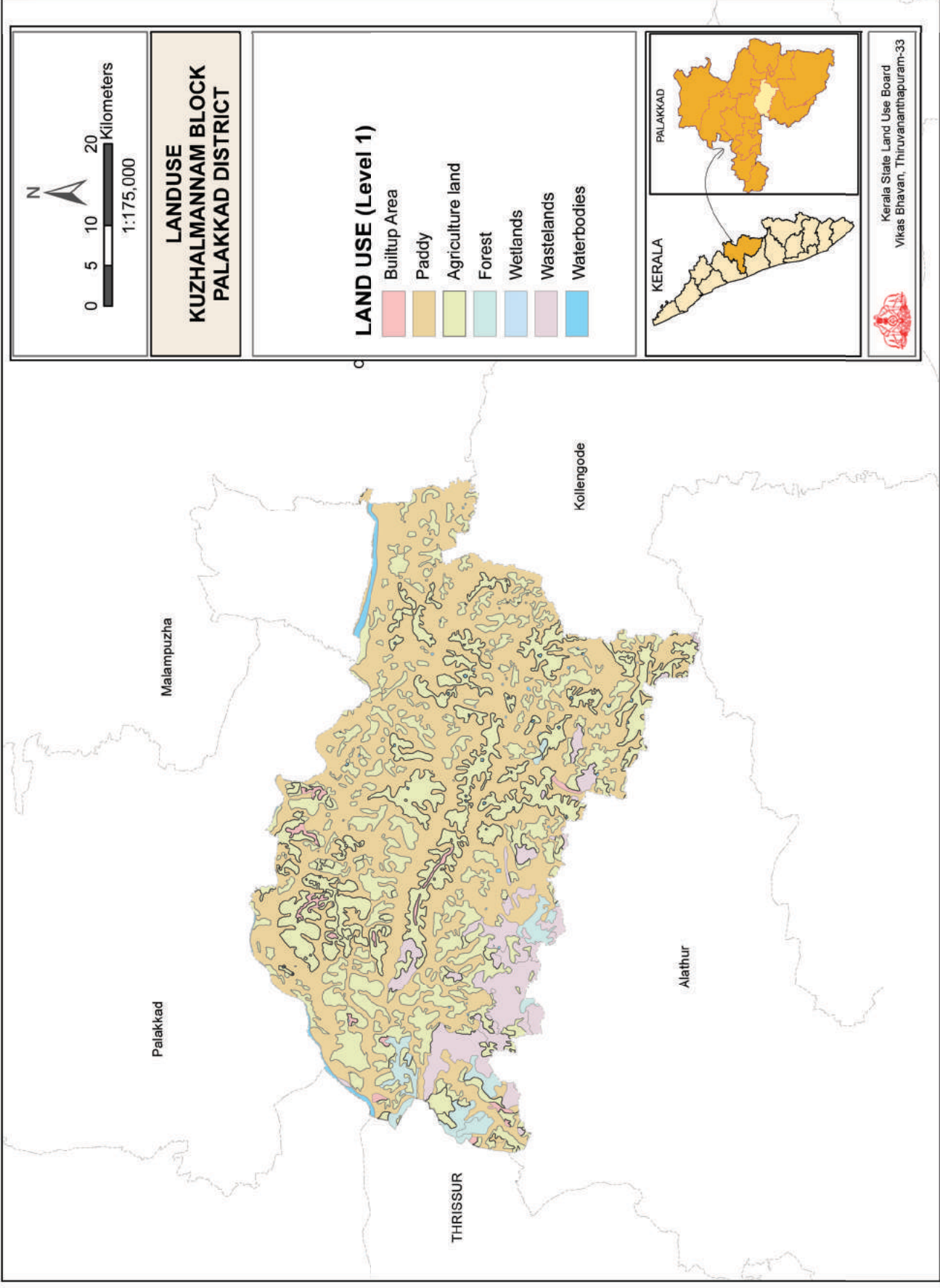
**LANDUSE
KOLLANGODE BLOCK
PALAKKAD DISTRICT**

LAND USE (Level 1)

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



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

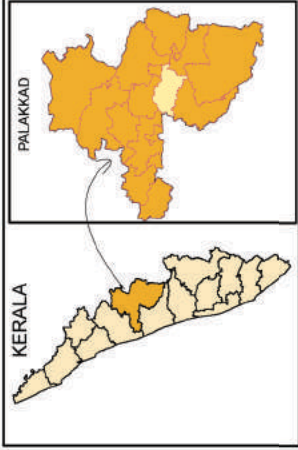


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**LAND USE
KUZHALMANNAM BLOCK
PALAKKAD DISTRICT**

LAND USE (Level 1)

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



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



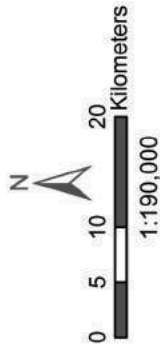
Malampuzha

Palakkad

THRISSUR

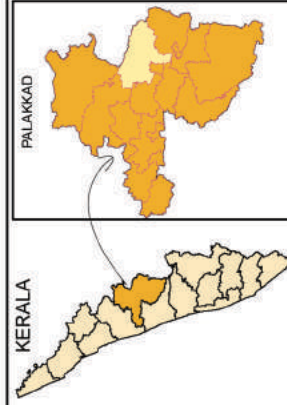
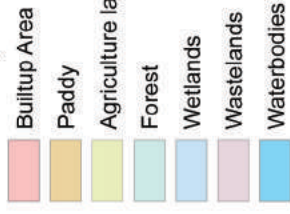
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Kollengode

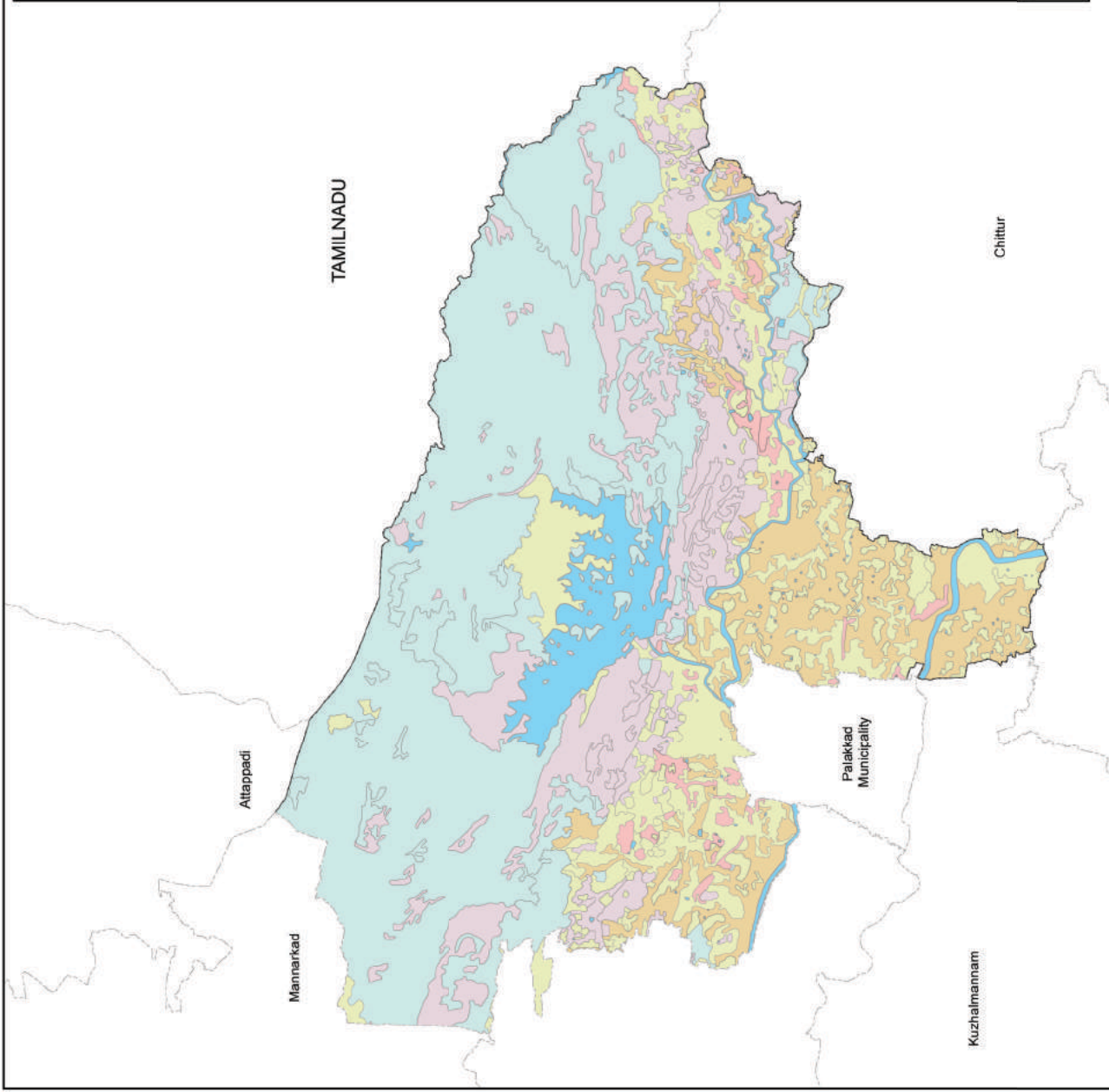


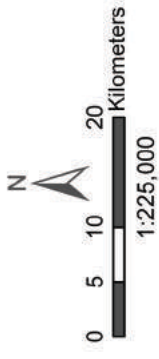
**LAND USE
MALAMPUZHA BLOCK
PALAKKAD DISTRICT**

LAND USE (Level 1)



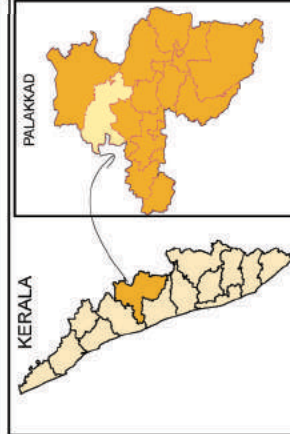
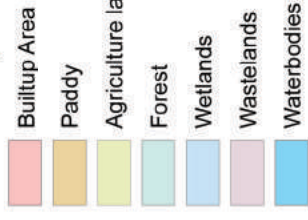
Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



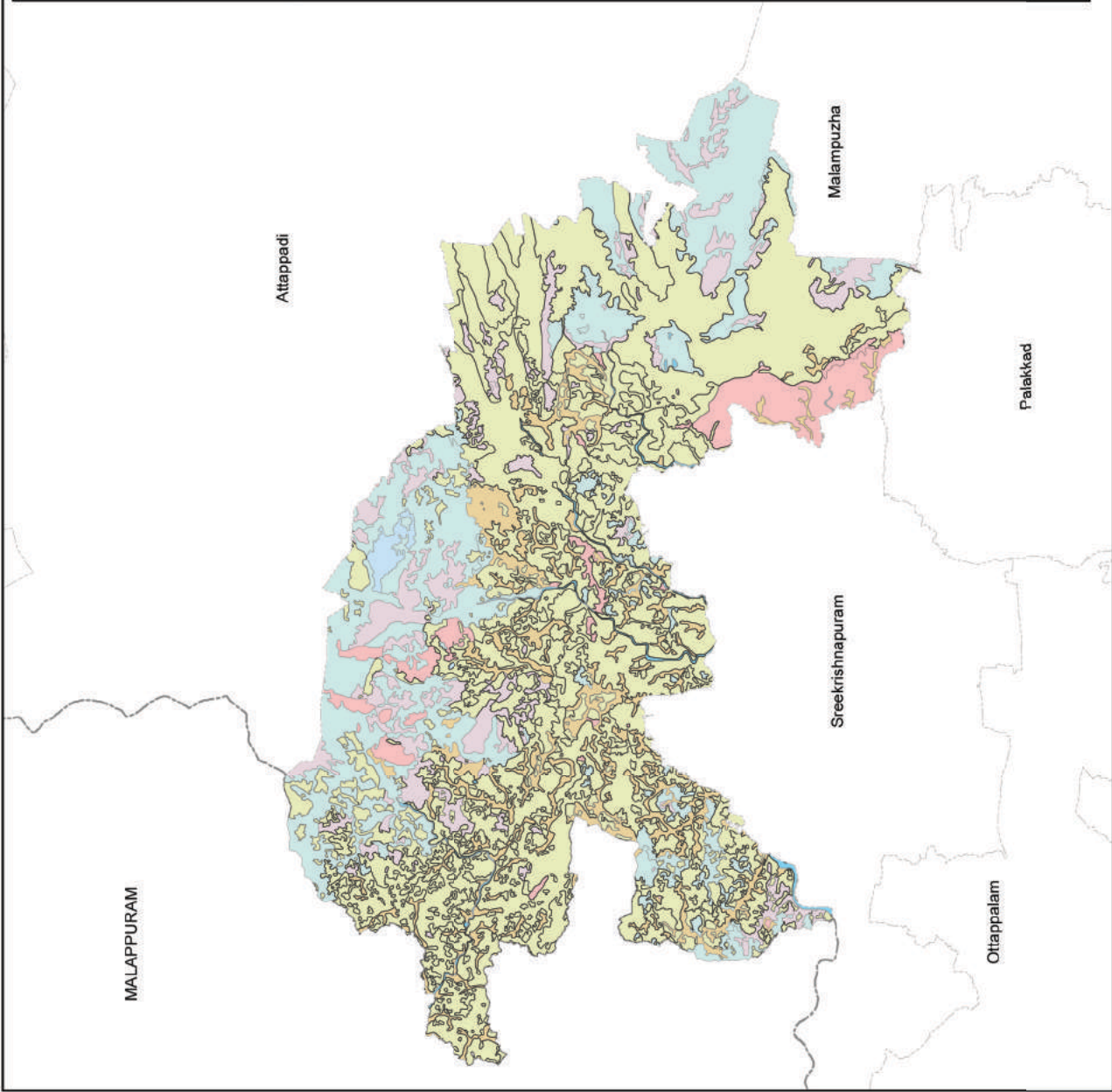


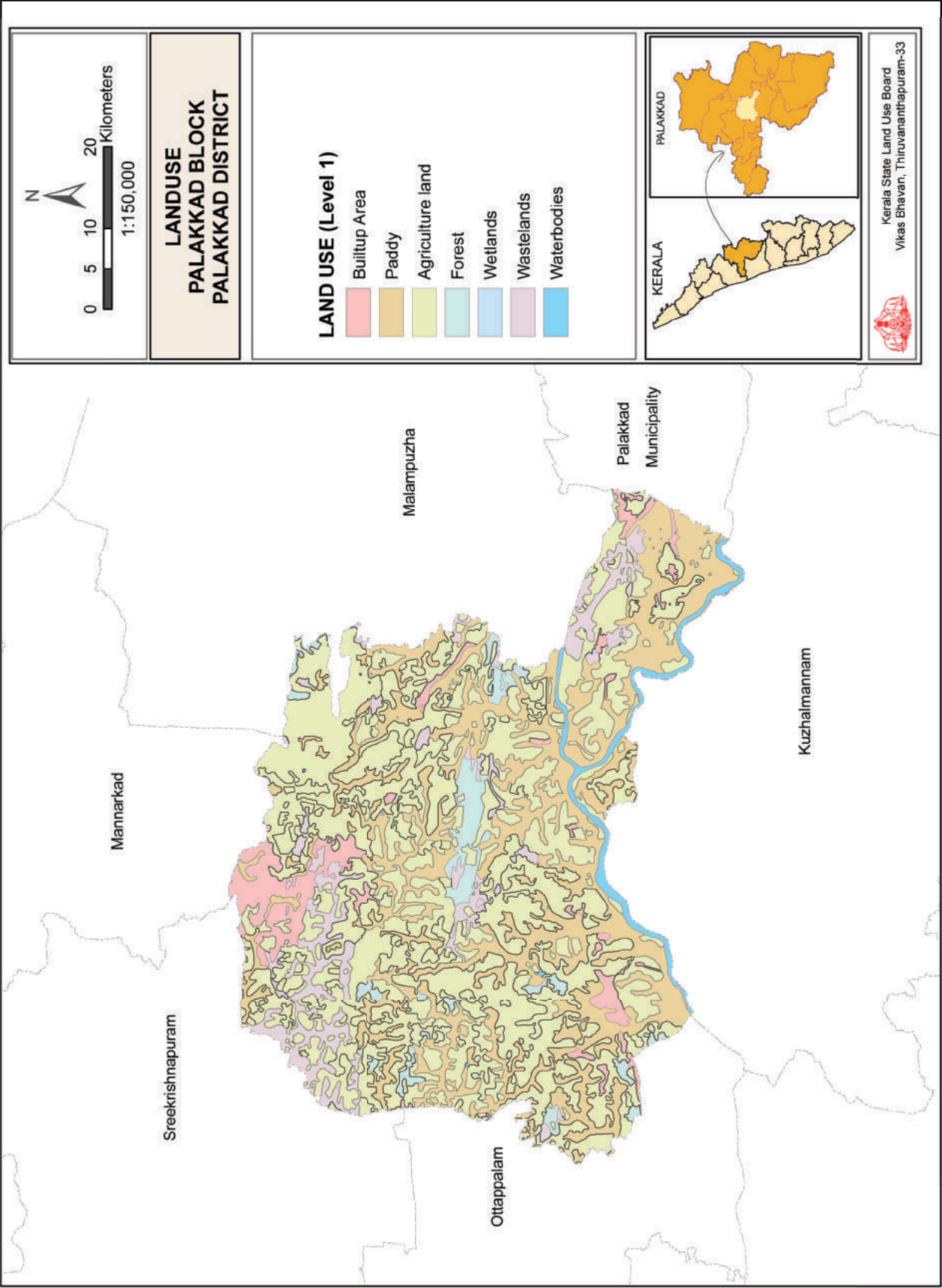
**LANDUSE
MANNARKAD BLOCK
PALAKKAD DISTRICT**

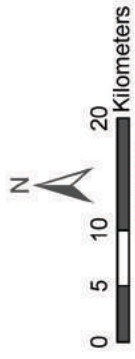
LAND USE (Level 1)



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

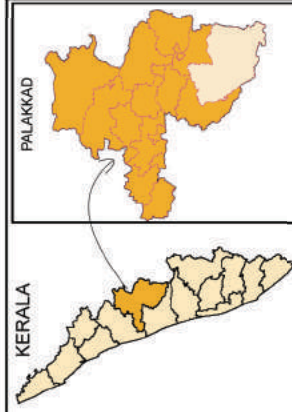
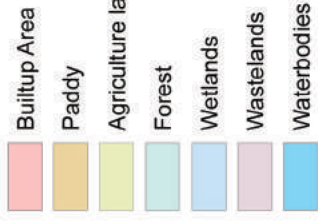





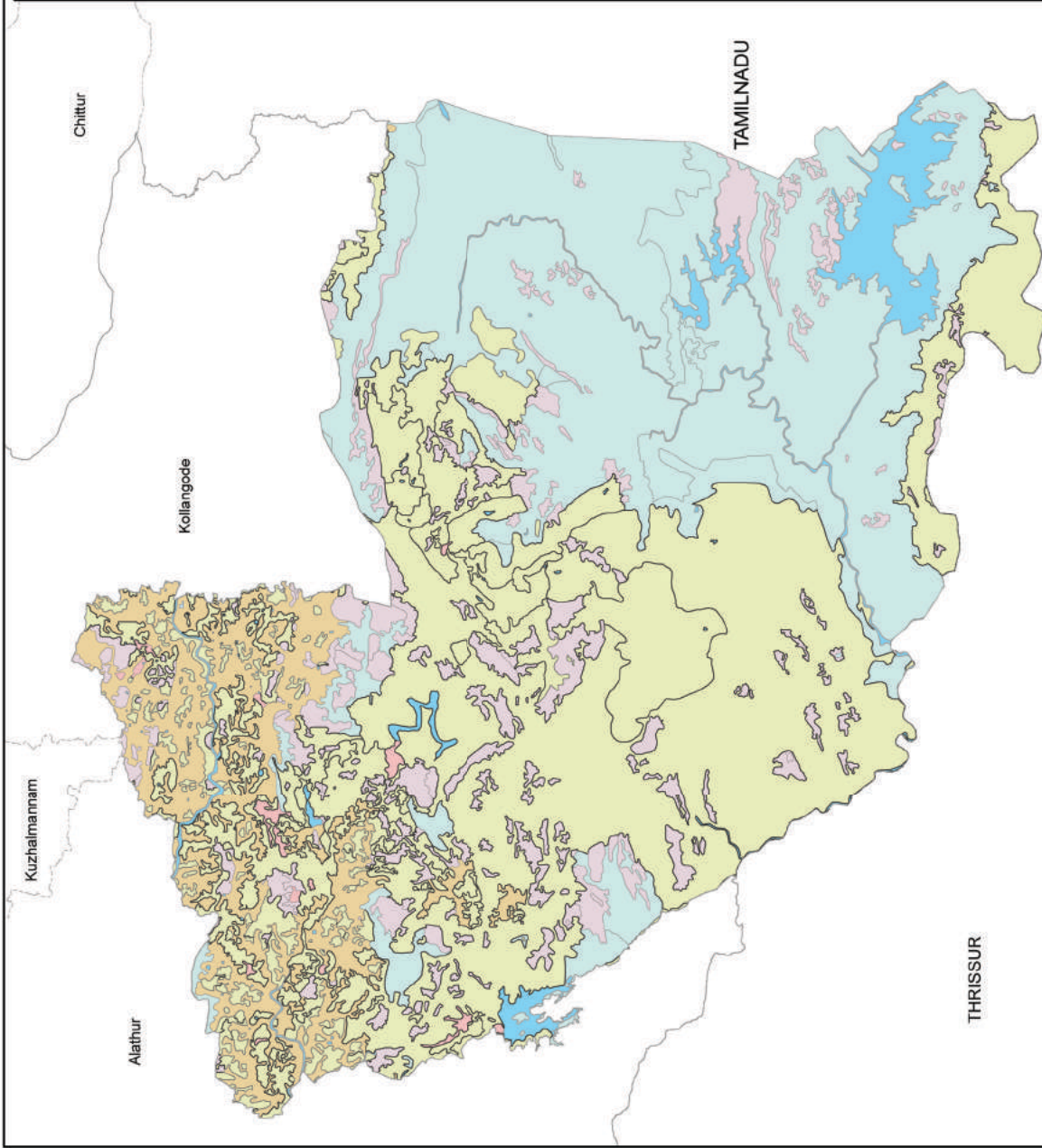


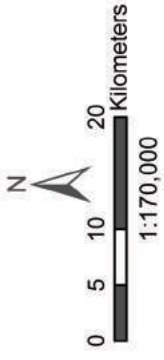
**LANDUSE
NENMARA BLOCK
PALAKKAD DISTRICT**

LAND USE (Level 1)



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

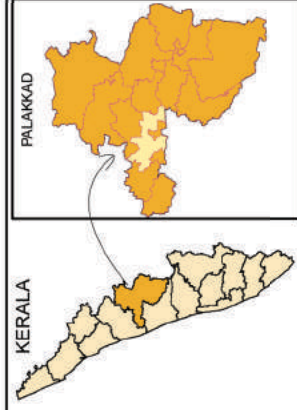




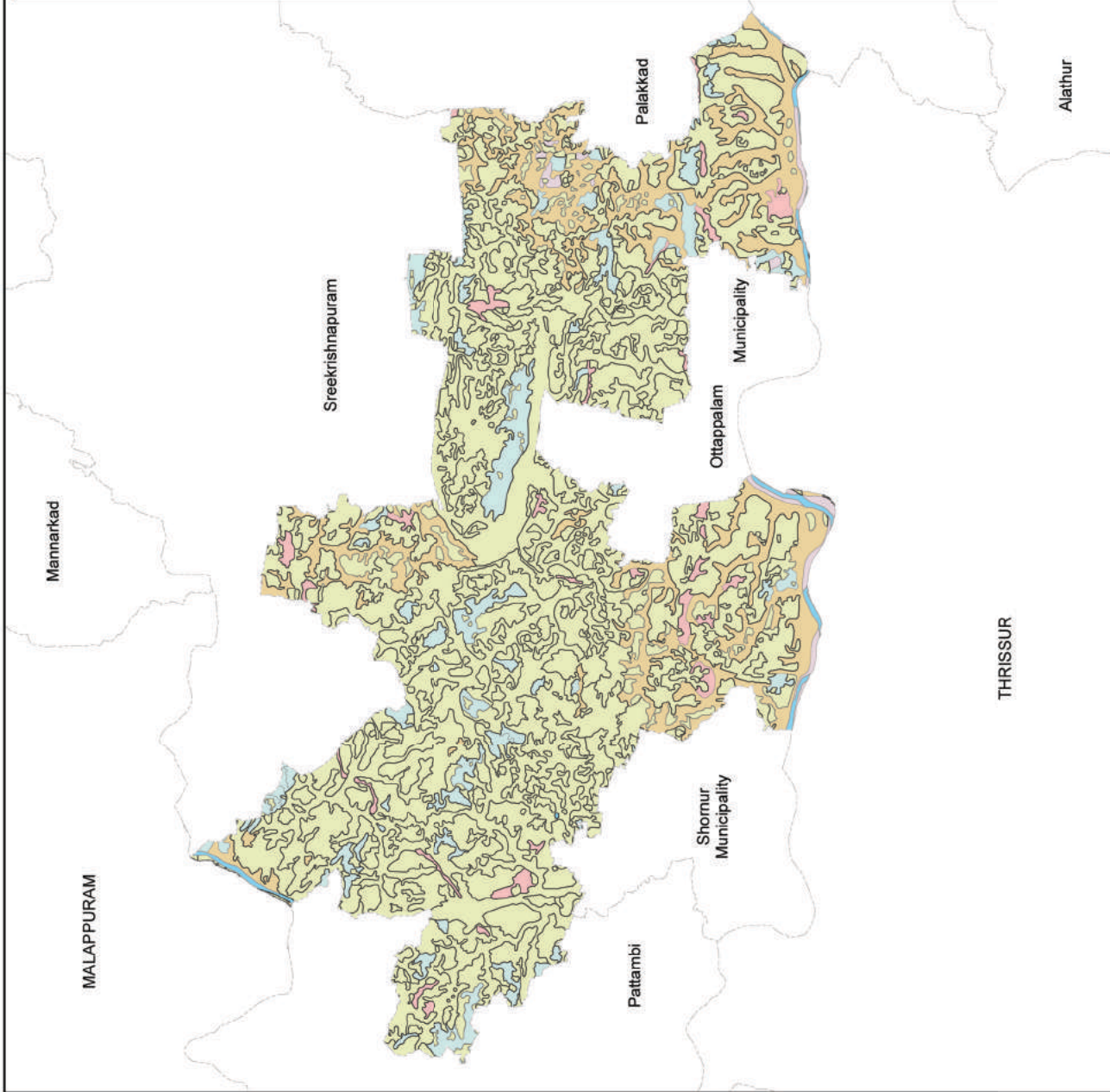
**LANDUSE
OTTAPPALAM BLOCK
PALAKKAD DISTRICT**

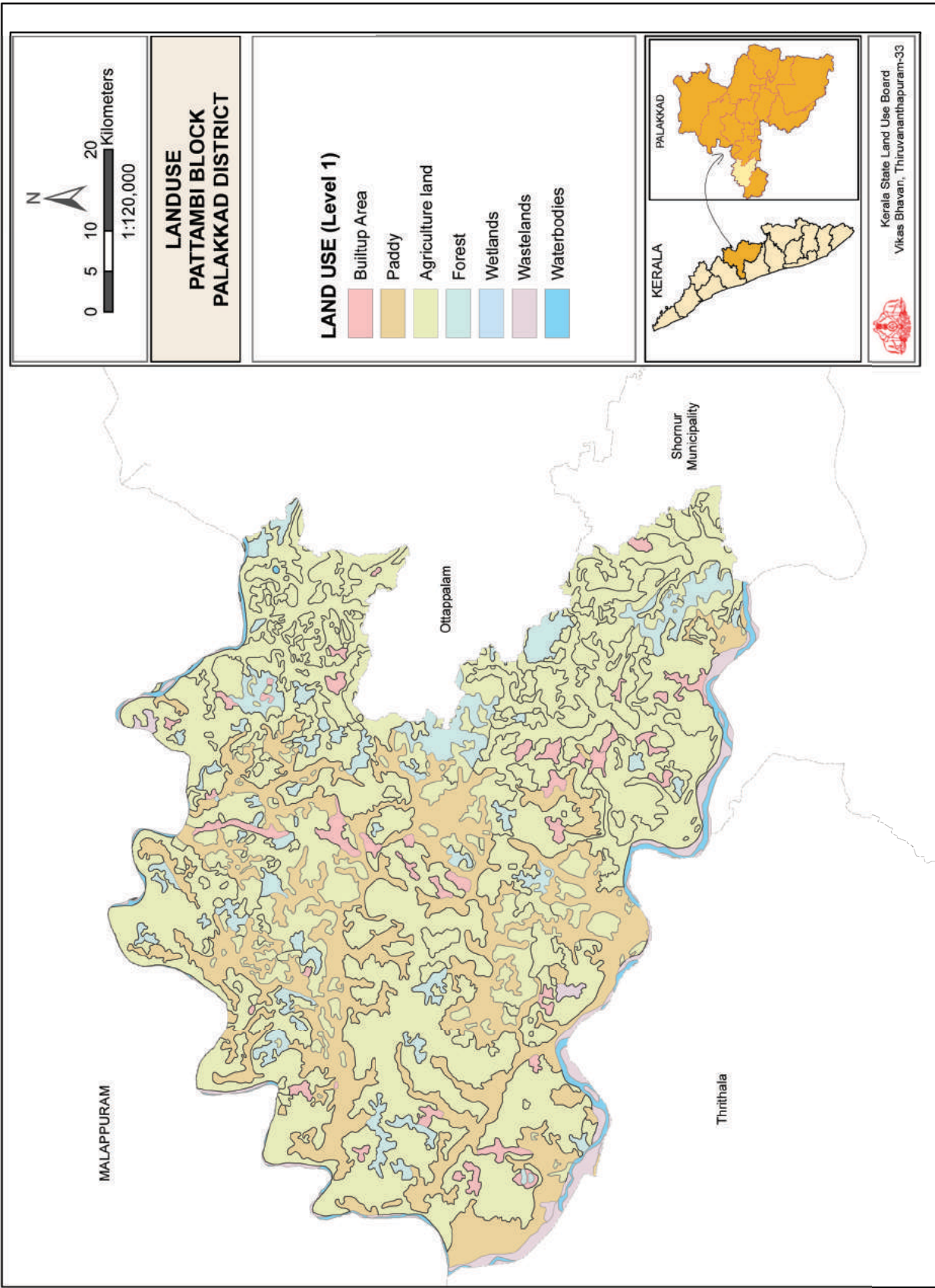
LAND USE (Level 1)

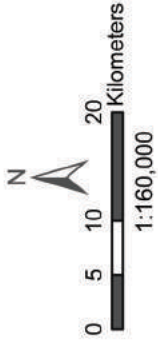
- Builtup Area
- Paddy
- Agriculture land
- Forest
- Wetlands
- Wastelands
- Waterbodies



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

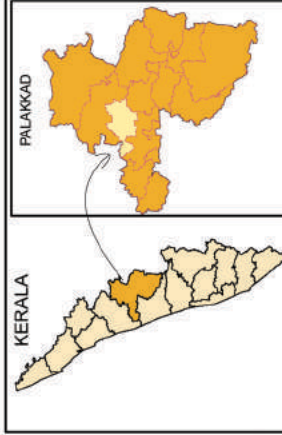
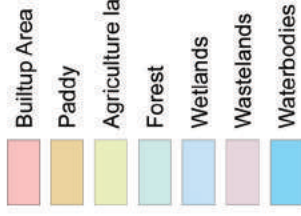




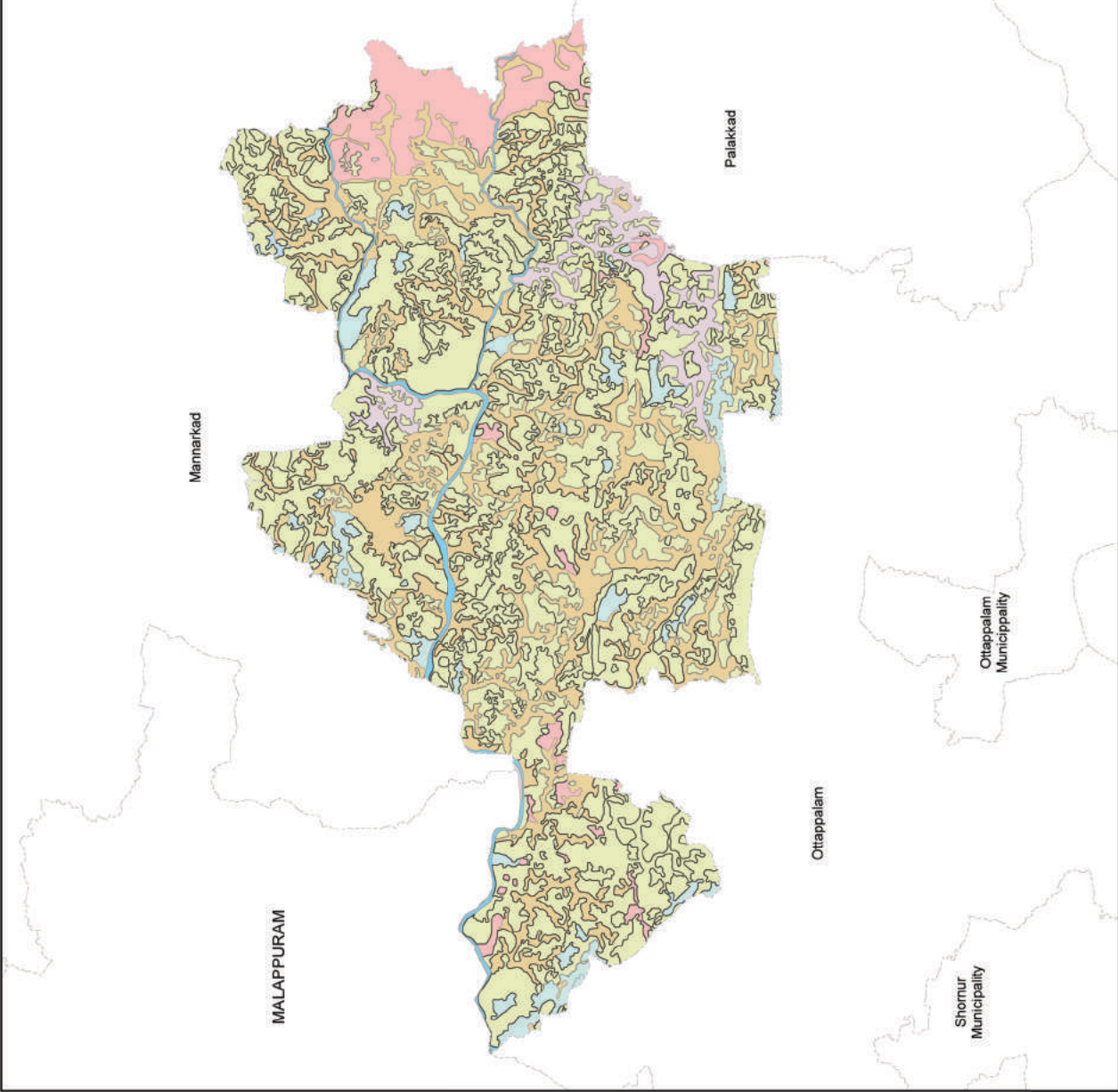


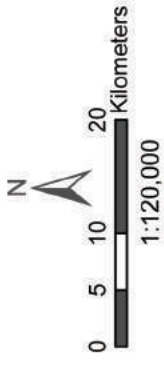
**LANDUSE
SREEKRISHNAPURAM BLOCK
PALAKKAD DISTRICT**

LAND USE (Level 1)



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

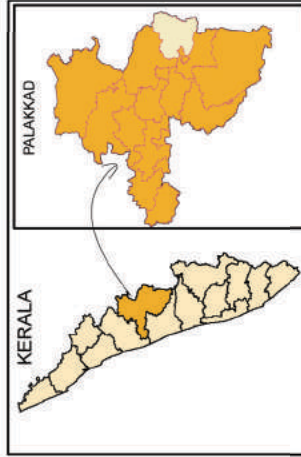




**LANDUSE
CHITTUR BLOCK
PALAKKAD DISTRICT**

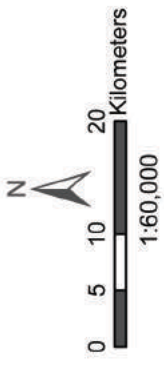
LAND USE (Level 1)

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










Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

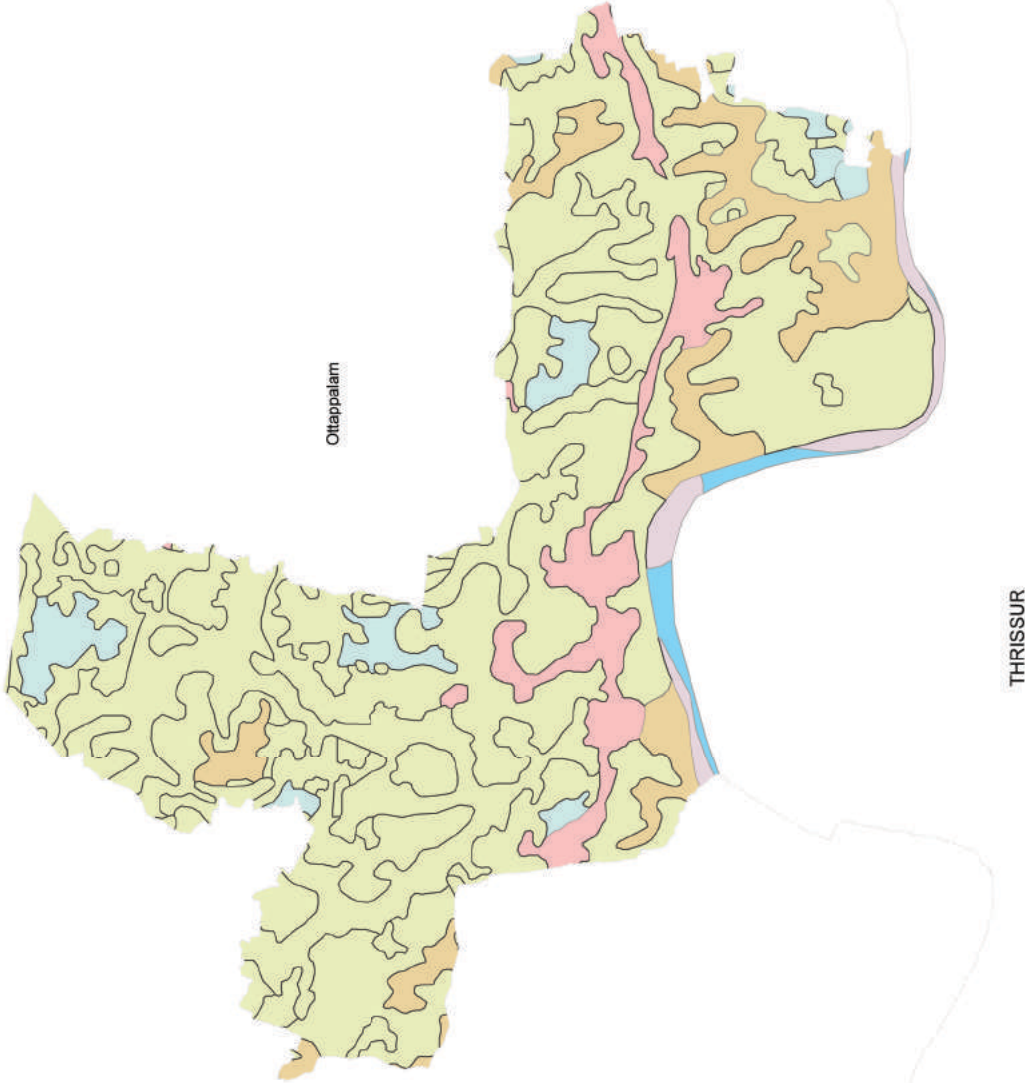
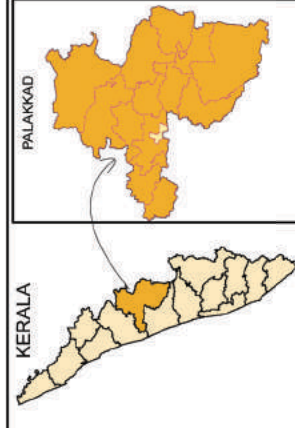




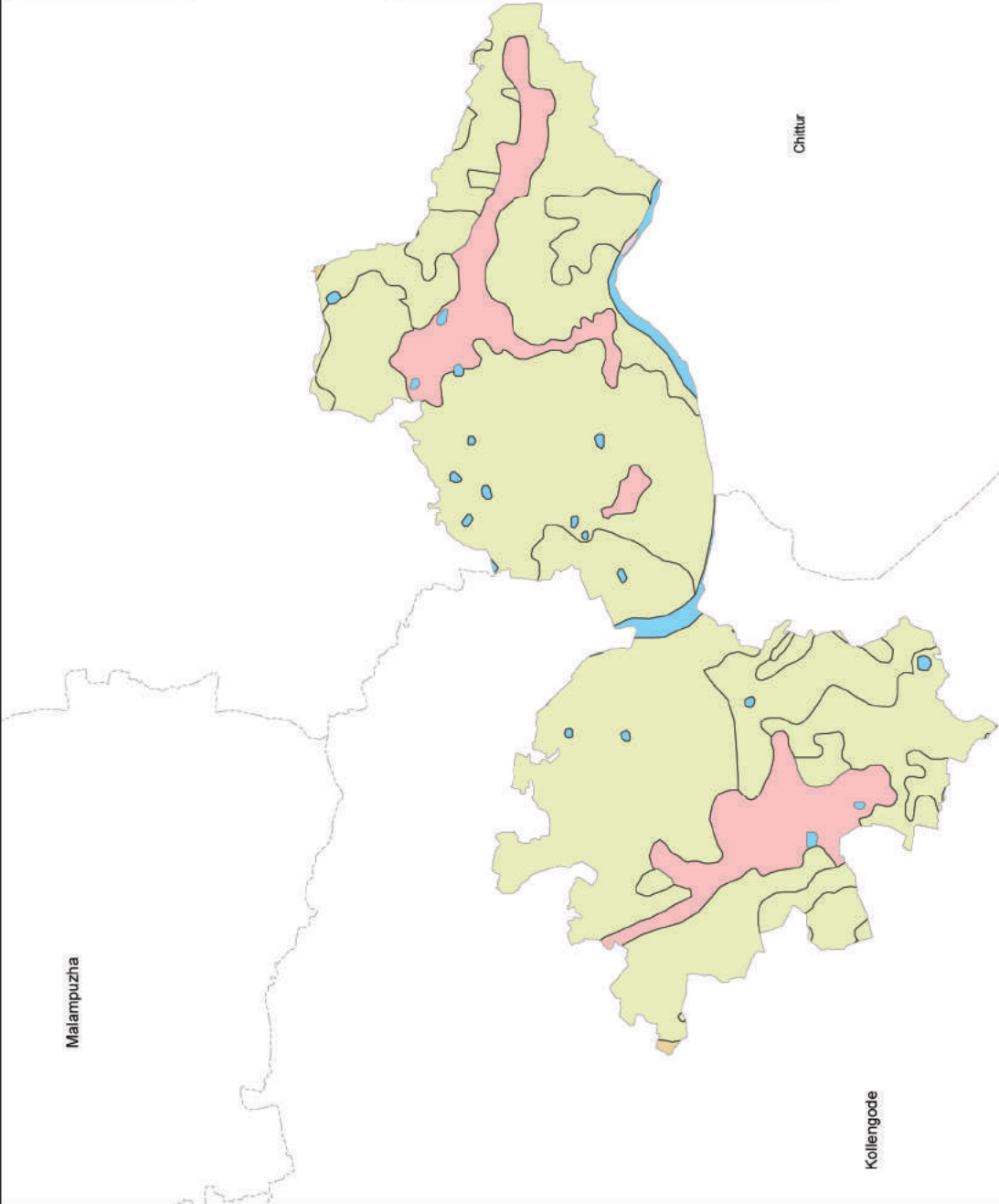
**LANDUSE
OTTAPPALAM MUNICIPALITY
PALAKKAD DISTRICT**

LAND USE (Level 1)

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



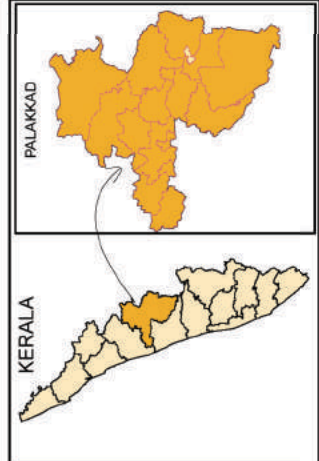
 Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33



**LANDUSE
CHITTUR_THATHAMANGALAM
MUNICIPALITY
PALAKKAD DISTRICT**

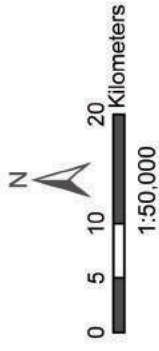
LAND USE (Level 1)

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



Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

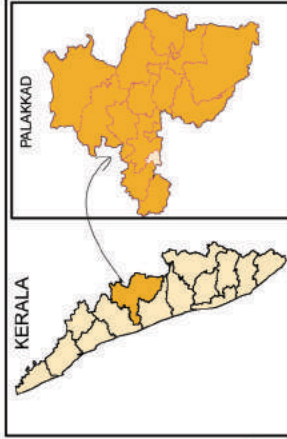




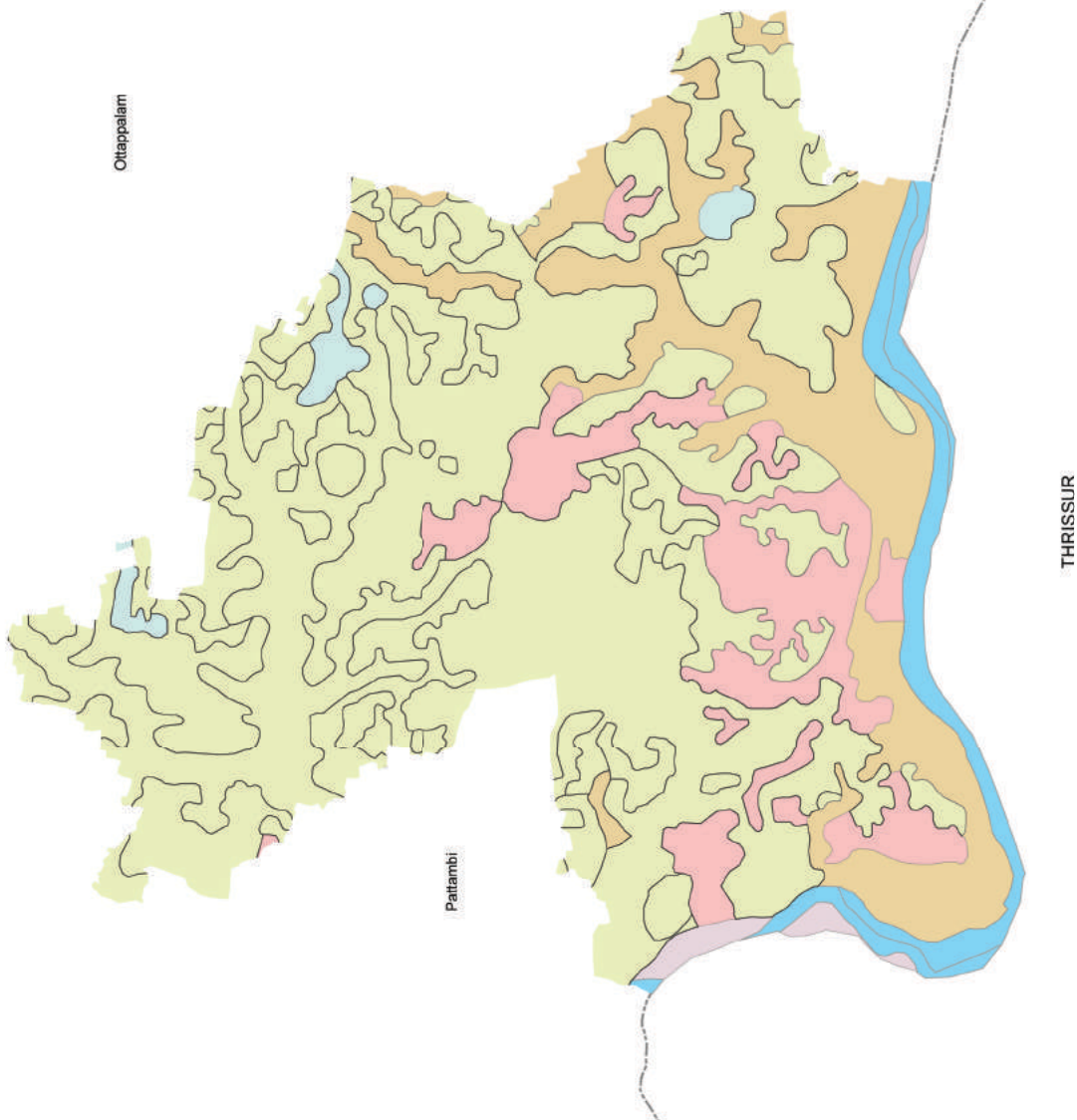
**LAND USE
SHORNUR MUNICIPALITY
PALAKKAD DISTRICT**

LAND USE (Level 1)

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



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
Amphibian (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	3.48
2	Tropical Moist Deciduous Forests	4.10
3	Tropical Dry Deciduous Forests	0.09
4	Mountain Sub Tropical Forests	0.18
5	Plantations	1.53
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.

Table : 13.2

RANGEWISE AREA OF FORESTS AS ON 31.03.2009 IN PALAKKAD

Division/Range	Area (Sq.km)
Olavakkode	80.14
Walayar	121.80
Ottappalam	33.55

Table : 13.3

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

Division	Reserve Forest/Proposed Forest	Vested Forest	Total
Nenmara	205.51	150.21	355.72
Palakkad	73.41	162.08	235.49
Mannarkkad	150.73	271.72	422.45
Parambikulam (WL)	274.14		274.14
Silent Valley (WL)	154.38	83.14	237.52
Peechi	2.02		2.02
Total	860.20	667.15	1527.35

Table : 13.4

FOREST COVER IN PALAKKAD

Geographic Area	Forest Cover				Percent to GA
	Very Dense	Moderate Dense	Open Forest	Total	
4480	276	693	606	1575	35.16

Source:Forest Statistics,Forest and Wild life Department

Table : 13.5

TRIBAL SETTLEMENTS

	Palakkad Dist.			Kerala
	Palakkad	Mannarkkad	Nenmara	
No. of divisions				31
No. of Settlements	26	13	8	723
Area (ha)	102.15	372.52	53.23	21531.99
No. of Tribal families possessing land	387	625	226	20713
No. of landless tribal families	26	-	87	2193
No. of non- tribal families possessing land in settlement	-	-	-	4486

Source: Forest Statistics, Forest and Wild life Department

Table : 13.6

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

Divisions	Teak	Teak and Softwood	Accacia Mangium	Accacia Auriculiformis	Eucalyptus	Cane	Bamboo	Rosewood	Mahagani	Sandalwood	Other Hardwood	Reeds	Cinnamon	Pepper	Medical Plants	Gravelia Robusta	Pine	Albezzia
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
EASTERN CIRCLE																		
Nenmara	1338.36																	
Palakkad	1850.76	49.68		64.45	41.92	65.88	155.3				12.63				84.52			
Mannarkkad	628.97									32								
WILD LIFE																		
Peechi	457.42	739.5		34			132.3								69			
Parambikulam	8569.51																	
Silent Valley	437.3																	

Divisions	Anjili	Kambakom	Elavu	Rubber	Balsa	Wattle	Matti	Cashew	Agave	Alnus	Sesbania	Casuarinaq	Misc	Mangroves	Fruit Bearing	Grand Total
1	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
EASTERN CIRCLE																
Nenmara																0
Palakkad							66.9	87.88				32.63	1066.19		5	1258.6
Mannarkkad									0.15							0.15
WILD LIFE																
Peechi							46.9	35					295.65			377.55
Parambikulam													215.77			215.77
Silent Valley																0

Source: Forest Statistics, Forest and Wild life Department

Table : 13.7

DETAILS OF DIVISION WISE ECO DEVELOPMENT COMMITTEES (EDC)

Sl. No	Name of EDC	Reg.No.	Management Area	Management Area				Range
				SC	ST	Others	Total	
SILENT VALLEY WILDLIFE DIVISION								
1	Silent Valley National Park	01/01/2006						SVNP
PARAMBIKULAM WILDLIFE DIVISION								
1	Sungam Colony	4/2001-02	8026.92					Sungam
2	Kadas Colony	1/2001-02	1720.54					Parambikulam
3	Vth Colony	2/2001-02	1720.54					Parambikulam
4	PAP Colony	3/2001-02	1720.54					Parambikulam
5	Poopara Colony	7/2001-02	3418.84					Karimala
6	Earthdam	5/2001-02	3418.84					Karimala
7	Kuriyarkutty Colony	6/2001-02	7176.08					Orukomban
PEECHI WILDLIFE DIVISION								
1	Chimmony EDC	01/02/2003	Not available					Chimmony
2	Peechi Reservoir Fishermen EDC	08/05/2006	Not available					Peechi

Source: Forest Statistics, Forests and Wild life Department

Table : 13.8

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 wayanad district under the management of Forest Development Agencies (FDA) are depicted in the following table...

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
EASTERN CIRCLE							
Nenmara FDA				Nenmara Division			
Thalikkakallu	Tribal	-	30	-	30	500.00	Alathur
Melarkkode	Fringe	19	-	38	57	116.00	Alathur
Paithala	Fringe	9	-	10	19	10.00	Alathur
Moorthykunnu	Fringe	11	16	154	181	50.00	Alathur
Vemballur	Fringe	50	-	162	212	50.00	Alathur
Kuthanur	Fringe	30	-	116	146	101.00	Alathur
Vimala (Not Functioning)	Fringe	-	-	-	-	-	Alathur
Choolanur	Fringe	29	-	36	65	50.00	Alathur
Niraganpara	Fringe	20	-	40	60	50.00	Alathur
Muringamala	Fringe	46	-	153	199	40.00	Kollengode
Kottamala	Fringe	71	-	179	250	50.00	Kollengode
Kachithodu	Tribal	30	-	-	30	1000.00	Kollengode
Thekkady (Not Functioning)	Fringe	-	-	-	-	-	Kollengode
Karadikkunnu	Fringe	42	32	25	99	33.50	Kollengode
Pulliyanthoni	Fringe	44	3	62	109	82.50	Kollengode
Seethargundu	Fringe	-	-	40	40	500.00	Kollengode
Vellaramkadavu (Not functioning)	Fringe	-	-	-	-	-	Kollengode

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
Elevanchery	Fringe	15	-	35	50	50.00	Kollengode
Ayilamudi	Fringe	30	-	15	45	50.00	Nelliyampathy
Mattayi	Fringe	45	13	62	120	120.00	Nelliyampathy
Pokkamada	Fringe	10	1	39	50	120.00	Nelliyampathy
Neyyiyampathy	Fringe	-	10	25	35	500.00	Nelliyampathy
Kalchady (Not functioning)	Tribal	-	-	-	-	-	Nelliyampathy
Mannarkkad FDA				Mannarkkad Division			
Melechavadiyur	Tribal	-	46	-	46	900.00	Attapady
Manikada	Fringe	10	6	141	157	150.00	Mannarkkad
Cherumala	Fringe	31	20	167	218	300.00	Mannarkkad
Achilatty	Fringe	27	21	72	120	200.00	Mannarkkad
Kacheriparambu	Fringe	27	15	393	438	300.00	Mannarkkad
Vettilachola	Tribal	-	71	-	71	900.00	Mannarkkad
Karuvara	Tribal	-	34	-	34	600.00	Attapady
Dhanyamooru	Tribal	-	59	-	59	900.00	Attapady
Kallamala	Tribal	-	48	-	48	950.00	Agali
Singapara	Tribal	-	24	-	24	1500.00	Agali
Uppukulam	Fringe	15	18	256	289	100.00	Mannarkkad
Moolakombu	Tribal	-	132	-	132	200.00	Attapady

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
Palakkad FDA				Palakkad Division			
Thudikkode	Fringe	47	25	83	110	213.00	Olavakkode
Dhoni (Not Functioning)	Fringe	-	-	-	-	-	Olavakkode
Elival (Newly formed)	Fringe	-	-	-	-	200.00	Olavakkode
Velencherry	Fringe	20	15	50	85	181.00	Walayar
Vadyarchalla	Fringe	27	19	26	72	101.00	Walayar
Nadupathy	Tribal	20	71	41	132	104.50	Walayar
Sasthanagar (Not functioning)	Fringe	-	-	-	-	-	Walayar
Chembaruthimala (Not functioning)	Fringe	-	-	-	-	-	Walayar
Chembana (Newly formed)	Fringe	-	-	-	-	300.00	Walayar
Kottekkad (Newly formed)	Fringe	-	-	-	-	300.00	Walayar
Anakkal (Newly formed)	Fringe	-	-	-	-	300.00	Walayar
Kullakadanmala	Fringe	40	132	19	191	52.00	Ottappalam
Kothermanakkad	Fringe	40	20	224	284	135.98	Ottappalam
Anganmala	Fringe	20	-	166	186	150.00	Ottappalam
Anganmala- Aruvakkode (Not functioning)	Fringe	-	-	-	-	-	Ottappalam
Anganmala- Malappuram(Not functioning)	Fringe	-	-	-	-	-	Ottappalam

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.

Palakkad District is called the 'rice bowl' of Kerala. Out of a total area of 438980 hectares, the net area sown was 212056 hectares during 1997-98 which formed 48.31 per cent of the total area. During 2000-01, the net area sown has come down to 46.51 per cent. Paddy is the prominent crop in the District. Area under the crop was 145687 hectares during 1990-91. After a gap of 10 years, the area covered under this crop has reduced to 118701 hectares. About 19 per cent reduction in area has been noticed during 1990-2001. The area under sugarcane which was 2981 hectares during 1990-91 has come down to 2653 hectares during 1998-99. In the case of Pepper, there is a tremendous increase in area covered. From 2754 hectares during 1990-91 its area has increased to 4733 hectares during 1998-99. Major portion of the cultivable land is used for raising food crops. All the food crops together accounted for 233260 hectares during 1990-91. It has reduced to 193647 hectares during 1998-99. Coconut, Groundnut, Cotton, Sugarcane and Cashew are some of major cash crops in the District.

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 (Ha)

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	Fallow other than current fallow	Current fallow
1	2	3	4	5	6	7	8	9	10
2009-2010	447584	136257	43157	3451	0	1546	27720	10064	11050
2008-2009	447584	136257	45223	3213		1747	29230	9688	10631
2007-2008	447584	136257	47237	2902		1822	26037	9131	17142

YEAR	Marshy Land	Still Water	Water logged Area	Social Forestry	Net Area Sown	Area sown more than once	Total Cropped Area
1	11	12	13	14	15	16	17
2009-2010	0	14979	0	364	198996	115375	314371
2008-2009		14027		364	197204	117483	314687
2007-2008		10115		154	196787	127761	324548

Table 14.3

DISTRICT WISE AREA OF CROPS

YEAR	Paddy			Total	Pulses including Tur							Total	Total food grains
	Autumn	Winter	Summer		Jower	Ragi	Other Cereals	Total cereals/milletts	Autumn	Winter	Summer		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
2009-2010	45200	49056	6266	100522	2516	292	214	103544	78	2874	34	2986	106530
2008-2009	45659	42388	8143	96190	2294	598	342	99424	197	1698	87	1982	101406
2007-2008	47083	46004	6086	99173	3065	260	289	102787	86	2296	92	2474	105261

Area in Ha.

YEAR	SPICES AND CONDIMENTS											Grand Total			
	SUGAR CROPS			Ginger	Turmeric	Cardamom	Arecanut	Tamarind	Vanilla	Cloves	Nutmeg		Cinnamon	Garlic	Total
	Sugar cane	Palmyrah	Total												
1	15	16	17	19	20	21	22	23	24	25	26	27	28	29	30
2009-2010	647	2319	2966	812	487	2754	10202	4389	37	21	239	16	0	24715	27681
2008-2009	772	2292	3064	1044	528	2754	8195	4449	203	8	203	19		23064	26128
2007-2008	772	2471	3243	1240	716	2754	7551	5068	77	8	127	18		24640	27883

Table 14.3 Continued.....

YEAR	Fresh Fruits							Dry Fruit		Total Fruits
	Jack	Mango	Banana	Plantain	Pineapple	Pappaya	Other fresh fruits	Total	Cashew	
1	31	32	33	34	35	36	37	38	39	40
2009-2010	5589	7701	10593	10384	123	806	1185	36381	3002	39383
2008-2009	5860	8479	11517	10819	102	1412	1184	39373	3740	43113
2007-2008	6205	8899	12940	9573	119	1377	1066	40179	3442	43621

YEAR	Tapioca			Total	Tubers				Total	
	Autumn	Winter	Summer		Elephant Foot Yam	Colocasia	Yam (Kachil)	Sweet Potato		Other Tubers
1	41	42	43	44	45	46	47	48	49	50
2009-2010	670	1204	969	2843	370	621	31	137	914	2073
2008-2009	509	1201	1490	3200	525	694	30	63	836	2148
2007-2008	855	1633	737	3225	442	800	30	115	942	2329

YEAR	Vegetables										Total Food Crops			
	Drum stick	Amarant hus	Bitter Gourd	Snake Gourd	Ladies Finger	Brinjal	Green Chillies	Little Gourd (koyal)	Ash Gourd (Kumbalam)	Pumpkin		Cucumber	Other Vegetables	Total
1	51	52	53	54	55	56	57	58	59	60	61	62	63	64
2009-2010	1944	148	453	217	488	173	330	95	193	234	103	3276	7654	186164
2008-2009	2102	159	598	340	427	231	410	92	205	279	147	2757	7747	183742
2007-2008	2126	117	544	285	465	195	242	78	156	236	111	3308	7863	190182

Table 14.3 Continued.....

YEAR	NON FOOD CROPS															Grand Total
	Oil Seeds					Fibre Drugs and Narcotics					Plantation Crops					
	Ground nut	Sesamum	Coconut	Others	Total	Cotton	Betel Leaves	Tobacco	Lemon Grass	Total	Tea	Coffee	Rubber	Cocoa	Total	
1	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
2009-2010	1339	63	57186	485	59073	1018	10	0	66	1094	852	4650	35559	127	41188	101355
2008-2009	1733	33	59076	644	61486	1152	5		5	1162	852	4650	34840	156	40498	103146
2007-2008	2910	76	60393	975	64354	1292	8		51	1351	852	4650	34285	65	39852	105557

YEAR	NON FOOD CROPS						Total non food crops	Total Cropped Area		
	Fodder Grass		Green Manure Crops		Other Crops and trees				Medicinal Plants	Total
	Fodder Grass	Green Manure Crops	Other Crops and trees	Medicinal Plants	Total					
1	81	82	83	84	85	86	87			
2009-2010	1258	3657	21138	799	26852	128207	314371			
2008-2009	1115	3249	22837	598	27799	130945	314687			
2007-2008	811	3092	24616	290	28809	134366	324548			

Table 14.4

BLOCK WISE AREA UNDER CROPS 2008-2009

SL. No	Block	Paddy			Sugarcane	Pepper	Ginger	Turmeric	Arecanut	Nutmeg	Jack
		Autumn	Winter	Summer							
1	2	3	4	5	6	7	8	9	10	11	12
1	Alathur	6802.48	6763.97	7.31		773.25	122.96	103.18	347.26	24.16	645.00
2	Attappady		9.30	11.98	31.88	1146.70	200.02	93.44	2399.36	32.22	505.17
3	Chittoor	5055.57	493.12	4782.72	627.82	22.15	82.08	7.85	115.18	20.37	108.2
4	Kollangode	4344.84	1354.30	2466.04	1.58	18.41	193.01	5.58	33.73	7.05	97.83
5	Kozhalmadam	8434.30	8340.04		2.31	94.98	145.19	99.27	43.41	0.2	306.02
6	Malampuzha	6235.57	5511.01	87.81	105.26	89.09	13.32	29.84	129.47	16.50	243.13
7	Mannarkkad	136.51	534.83	55.37		1009.00	16.53	64.10	2712.85	56.19	767.84
8	Nenmara	5297.89	5181.22			79.81	127.12	23.64	166.23	9.54	147.67
9	Ottappalam	1695.71	2695.70	1.43		274.78	11.99	13.60	97.35	1.22	416.57
10	Palakkad Block	3748.12	4010.53	59.52	3.22	226.82	71.19	35.36	170.94	2.13	386.51
11	Pattambi	1240.74	2361.07	15.77		600.37	15.04	13.50	381.20	5.91	795.14
12	Sreekrishnapuram	1194.51	1762.86	25.82		655.08	30.56	28.04	572.94	12.64	565.54
13	Thrithala	330.88	2436.42	105.69		451.24	8.6	4.62	950.46	11.63	534.05
	Municipalities	1141.42	933.92	523.36		219.02	6.56	5.61	74.93	3.65	341.41
	District Total	45658.5	42388.29	8142.82	772.07	5660.70	1044.17	527.63	8195.31	203.41	5860.08

Table 14.4 Continued.....

SL. No.	Block	Banana	Plantain	Pineapple	Pappaya	Cashew	Tapioca	Drumstick	Sesamum	Coconut	Betel Leaves	Cocoa
1	2	13	14	15	16	17	18	19	20	21	22	23
1	Alathur	501.56	486.06	12.52	160.31	251.05	543.89	374.28	3.52	4985.23		7.16
2	Attappady	2841.98	5869.55	1.35	94.00	1496.83	311.99	105.52	0.26	8052.14	0.08	81.18
3	Chittoor	388.79	936.23	0.21	94.09	25.55	377.78	115.88		7879.97		12.62
4	Kollangode	2.67	81.29	0.04	55.80	16.47	26.26	77.68		3369.94		9.43
5	Kozhalmadam	61.3	190.20	1.45	73.47	180.28	339.60	115.24	1.71	2289.74		1.24
6	Malampuzha	229.18	381.28	0.3	152.04	117.81	92.49	166.35		3791.32	0.26	7.69
7	Mannarkkad	2960.69	1158.32	14.89	144.06	452.04	680.21	227.82	0.39	7990.88	1.02	31.58
8	Nenmara	47.65	175.83	1.03	55.83	43.25	64.45	66.05		1883.61		0.70
9	Ottappalam	400.49	287.63	20.88	64.07	196.38	70.65	121.38	0.13	2183.46	0.07	0.33
10	Palakkad Block	465.65	322.63	6.48	99.03	228.54	85.23	153.36	0.07	2950.23		0.21
11	Pattambi	794.00	272.34	8.29	134.15	213.09	253.28	206.36	4.84	4882.02	0.78	0.36
12	Sreekrishnapuram	2524.29	308.68	23.61	94.73	211.20	262.99	111.46	2.98	3229.81	2.33	1.78
13	Thrithala	195.25	188.86	7.21	85.69	228.80	65.54	106.39	18.89	3827.87	0.64	0.72
	Municipalities	103.29	160.11	3.53	104.28	78.85	25.83	153.85		1759.73	0.15	0.86
	District Total	11516.79	10819.01	101.79	1411.55	3740.14	3200.19	2101.62	32.79	59075.95	5.33	155.86

Table 14.5

BLOCK WISE AREA UNDER CROPS 2009-2010

SL. No	Block	Paddy			Sugarcane	Pepper	Ginger	Turmeric	Arecanut	Nutmeg	Jack
		Autumn	Winter	Summer							
1	2	3	4	5	6	7	8	9	10	11	12
1	Alathur	6872.48	7114.63	6.21	0.05	867.77	116.76	113.83	1067.67	35.11	602.39
2	Attappady	0.50	8.03	20.54	29.14	1317.82	145.39	107.24	3153.20	38.37	602.59
3	Chittoor	3138.69	2658.79	4529	589.9	45.73	70.53	8.66	130.44	27.23	129.86
4	Kollangode	4692.01	3749.21	930.55		5.89	78.04	12.57	25.21	7.84	134.33
5	Kozhalmadam	8368.31	8461.89			111.57	124.89	94.44	49.81	0.48	306.07
6	Malampuzha	6623.62	6788.91	192.02	28.15	85.61	14.95	12.89	119.97	1.95	212.25
7	Mannarkkad	101.31	709.91	96.68		610.39	15.13	44.89	3020.57	78.61	639.46
8	Nenmara	5430.87	5458.07			189.17	121.73	22.25	219.95	12.31	146.41
9	Ottappalam	1863.83	2372.52	0.92		235.93	9.17	9.66	93.03	1.03	431.85
10	Palakkad Block	3864.26	4510.06	91.95		191.6	44.8	16.7	167.32	0.56	273.78
11	Pattambi	1500.97	2400.07	62.49		804.65	16.39	11.83	341.16	9.4	775.78
12	Sreekrishnapuram	1240.35	1987.72	101.48		615.75	19.91	22.1	728.42	5.65	505.01
13	Thrithala	330.94	1690.19	111.03		492.24	6.4	4.69	1020.01	9.95	563.15
	Municipalities	1171.73	1145.19	123.04		183.53	28.42	5.19	65.44	10.87	265.99
	District Total	45199.9	49055.19	6265.91	647.24	5757.65	812.51	486.94	10202.20	239.36	5588.92

Table 14.5 Continued.....

SL. No.	Block	Banana	Plantain	Pineapple	Pappaya	Cashew	Tapioca	Drumstick	Sesamum	Coconut	Betel Leaves	Cocoa
1	2	13	14	15	16	17	18	19	20	21	22	23
1	Alathur	558.48	746.26	13.06	102.17	258.07	578.9	352.26	1.56	5373.64	0.13	7.08
2	Attappady	4019.04	6067.48	31.79	46.54	1012.4	289.41	84.52	7.82	5400.56	0.08	68.38
3	Chittoor	314.82	715.78	0	83.32	22.86	346.78	128.76	4.66	7743.48	0	13.98
4	Kollangode	9.36	62.41	0.1	31.12	17.71	17.39	85.6	1.39	3248.8	0	4.06
5	Kozhalmadam	65.63	161.47	0.71	56.05	173.02	233.74	121.99	0	2276.05	0	2.55
6	Malampuzha	142.62	221.6	0.21	55.37	92.83	139.07	150.16	0	3971.35	0.05	4.36
7	Mannarkkad	2162.08	540.7	12.77	76.17	268.7	445.72	166.38	0	8207.07	2.1	22.9
8	Nenmara	42.50	213.59	0.69	35.24	43.49	56.97	56.96	0	2162.84	0	0.17
9	Ottappalam	560.13	218	4.48	36.86	241.86	27.08	112.25	3.78	2440.87	0.06	0.04
10	Palakkad Block	388.99	304.55	7.01	52.35	126.93	52.93	124.69	3.69	2558.33	0.04	0.95
11	Pattambi	777.3	306.48	10.21	98.23	224.58	344.79	223.88	10.5	4905.69	1.03	0.33
12	Sreekrishnapuram	1247.54	421.21	22.82	37.78	157	227.94	71.61	16.3	2935.36	2.73	0.66
13	Thrithala	220.51	250.67	4.18	62.78	227.28	60.65	99.89	5.65	4279.92	3.08	1.02
	Municipalities	83.80	154.04	14.72	32.23	135.19	21.74	164.62	7.68	1682.16	0.25	0.72
	District Total	10592.8	10384.24	122.75	806.21	3001.92	2843.11	1943.57	63.03	57186.12	9.55	127.2

Table 14.6

PRODUCTION OF IMPORTANT CROPS

YEAR	Rice				Total	Jowar	Ragi	Other Cereals	Sugar cane (canegur)	Black Pepper	Green Chillies	Pulses including Tur	Cured Ginger	Ground nut
	Autumn	Winter	Summer	Summer										
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
2009-2010	112866	136538	16827	266231	1283	236	167	5475	1121	74	2244	3779	991	
2008-2009	111561	105045	23537	240143	1170	484	267	6763	870	438	1489	4492	1282	
2007-2008	108300	118856	17088	244244	1563	210	226	2714	985	259	1859	5744	2153	
YEAR	Areca nut	Tamarind	Mango	Jack (Nos in million nuts)	Banana	Other Plantain	Pineapple	Tapioca	Sweet Potato	Pappaya	Drumstick	Sesamum	Coconut (million nuts)	
1	15	16	17	18	19	20	21	22	23	24	25	26	27	
2009-2010	11554	5415	73313	25	80068	95528	548	90428	1264	4791	3989	7	417	
2008-2009	10595	5490	80720	27	103260	133714	498	75446	581	9188	3782	9	450	
2007-2008	5231	6253	84718	31	93157	85469	527	72528	1061	9130	3863	15	422	
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	28	29	30	31	32	33	34	35	36	37	38	39		
2009-2010	1324	118		1485	1875	47930	104	330	1047	148	3			
2008-2009	1498	91		2101	1875	49680	84	333	1750	110	1			
2007-2008	1680	71		1806	2000	50720	48	274	1571	224	1			

Table 14.7

BLOCK WISE PRODUCTION OF IMPORTANT CROPS 2008-2009

Block	Rice			Canegur	Black pepper	Cured Ginger	Cured Turmeric	Arecanut	Jack(Million Nos.)	Banana
	Autumn		Summer							
	2	3	4							
1				5	6	7	8	9	10	11
Alathur	18596.46	17280.63	6.63		127.38	312.31	227.51	497.32	4.27	4579.90
Attappady		19.38	29.98	334.10	245.48	880.08	327.60	3269.55	2.57	35308.93
Chittoor	12820.56	1161.46	13722.19	5723.20	1.78	386.76	22.781	117.83	0.39	5307.93
Kollangode	11002.93	3205.86	7349.17	11.72	0.75	1071.59	17.14	30.30	0.43	21.56
Kozhalmadam	21278.72	23983.36		23.23	22.25	626.05	287.08	20.14	1.77	456.30
Malampuzha	13919.71	14240.34	289.84	644.50	8.55	63.94	83.43	162.45	0.34	1308.18
Mannarkkad	189.07	1123.87	107.38		141.69	49.55	127.36	4049.71	3.14	20712.37
Nenmara	14987.95	14399.18			10.28	645.64	77.65	226.26	0.59	505.77
Ottappalam	3149.39	5240.21	4.24		30.84	26.58	28.41	38.47	1.55	3300.51
Palakkad	8539.67	9288.35	78.75	25.79	37.76	287.39	103.74	210.52	1.79	4055.84
Pattambi	2254.39	4662.00	22.50		108.04	40.39	23.43	496.80	4.65	5462.07
Sreekrishnapuram	1560.66	3269.11	56.53		60.44	66.68	47.72	569.50	2.49	19740.46
Thrithala	593.66	5066.19	366.09		55.97	21.13	8.11	838.42	1.90	1533.33
Municipalities	2667.56	2104.70	1503.64		19.04	13.70	14.43	67.54	1.44	967.12
District Total	111560.78	105044.71	23537.00	6762.57	870.34	4491.85	1396.45	10594.87	27.39	103260.3

Production in Tonnes

Table 14.7 Continue.....

Block	Other Plantain	Pineapple	Tapioca	Pappaya	Drumstick	Sesamum	Coconut (Million nuts)	Nutmeg	Cocoa	Raw cashew	Betel Leaves
1	12	13	14	15	16	17	18	19	20	21	22
Alathur	1993.33	65.93	11312.91	1252.34	533.72	0.73	43.16	32.25	2.92	96.61	
Attappady	92439.54	5.34	9851.08	383.99	137.38		61.01	5.09	36.94	802.30	
Chittoor	14126.77	0.85	11975.62	663.33	467.11		66.58	7.25	4.85	12.31	
Kollangode	684.38	0.15	770.07	337.59	247.33		22.20	0.46	0.03	4.03	
Kozhaimandam	1273.00	7.65	5824.14	421.57	181.73	0.22	14.10	0.10	0.70	66.80	
Malampuzha	4023.64	1.88	2647.52	556.46	316.39		31.79	3.35	2.22	21.85	3.47
Mannarkkad	7419.04	72.90	17294.33	480.87	193.19	0.03	58.45	28.71	36.62	186.70	44.84
Nenmara	1390.63	5.67	1459.79	446.80	199.80		13.98	0.84	0.08	16.43	
Ottappalam	2201.23	81.43	1434.19	553.24	193.11		15.53			99.42	
Palakkad Block	3920.6	37.59	2196.80	789.66	512.98		20.38	0.75	0.04	116.45	
Pattambi	1119.04	24.53	4590.70	1141.75	218.94		40.38	3.81		87.06	5.26
Sreekrishnapuram	1662.55	141.51	4668.07	1001.58	194.27	0.45	23.51	2.94		110.94	49.74
Thrithala	832.68	40.25	963.43	678.15	171.71	7.10	23.28	3.74		99.90	5.71
Municipalities	627.30	12.24	457.20	481.06	214.63	0.02	16.06	1.17		29.08	1.37
District Total	133713.77	497.96	75445.91	9188.43	3782.35	8.58	450.48	90.51	84.43	1749.94	110.40

Table 14.8

BLOCK WISE PRODUCTION OF IMPORTANT CROPS 2009-2010

Block	Rice				Canegur	Black pepper	Cured Ginger	Cured Turmeric	Arecanut	Jack(Million Nos.)	Banana
	Autumn	Winter	Summer	Total							
1	2	3	4	5	6	7	8	9	10	11	12
Alathur	15685.87	20128.85	14.42	35829.15		141.38	464.47	286.73	1480.25	3.37	3880.24
Attappady	1.18	16.90	56.54	74.63	292.56	427.72	701.65	381.56	3514.65	2.97	35109.15
Chittoor	9036.25	7060.66	12491.37	28588.29	5061.34	3.21	318.86	25.62	129.34	0.50	3603.00
Kollangode	14427.06	10279.06	2481.55	27187.68		0.42	393.00	32.55	34.88	0.63	88.34
Kozhalmadam	21255.18	27358.11	0.00	48613.30		17.86	608.71	270.09	24.88	1.11	528.45
Malampuzha	17306.78	19380.06	466.65	37153.50	121.32	9.21	71.88	38.49	50.88	0.38	1975.52
Mannarkkad	145.78	1657.51	156.44	1959.74		104.33	63.83	151.68	3556.58	2.93	10982.92
Nenmara	15492.62	17148.02	0.00	32640.65		40.49	645.77	67.79	379.65	0.67	378.88
Ottappalam	3272.71	5475.50	0.47	8748.68		44.41	27.33	22.22	20.01	2.11	3987.49
Palakkad	8819.09	12661.21	172.59	21652.91		37.00	203.16	58.35	90.60	1.55	3148.21
Pattambi	2298.28	5046.01	139.90	7484.21		117.63	59.05	26.64	358.00	3.70	6301.49
Sreekrishnapuram	1991.60	3762.44	132.67	5886.72		105.09	56.18	44.37	806.80	2.42	7735.00
Thrithala	552.04	3703.02	346.56	4601.63		53.66	15.03	8.25	1060.89	1.97	1747.95
Municipalities	2581.33	2860.34	367.35	5809.03		18.14	149.62	15.13	47.08	1.06	603.76
District Total	112865.84	136537.76	16826.56	266230.17	5475.23	1120.60	3778.60	1429.52	11554.55	25.42	80070.40

Table 14.8 Continued.....

Block	Other Plantain	Pineapple	Tapioca	Pappaya	Drum stick	Sesamum	Coconut (Million nuts)	Nutmeg	Cocoa	Raw cashew	Betel Leaves
1	13	14	15	16	17	18	19	20	21	22	23
Alathur	3964.87	58.90	20650.52	864.25	736.92	0.15	43.37	44.23	3.10	100.01	0
Attappady	66602.72	178.94	12390.51	196.30	89.67		54.41	11.05	42.31	302.58	0
Chittoor	7082.64	0.00	9763.93	961.76	536.92	0.57	47.59	13.34	20.41	16.15	0
Kollangode	368.90	0.41	462.73	245.72	238.22		17.90	0.47	0.80	11.35	0
Kozhalmadam	615.68	2.28	5478.39	391.73	360.48		14.48	0.77	1.34	62.53	0
Malampuzha	2636.81	0.81	5385.20	330.94	389.36		23.46	0.38	3.81	13.52	0.55
Mannarkkad	3993.61	53.63	17188.3	172.14	140.25		56.62	29.08	32.23	67.99	65.1
Nenmara	1585.47	4.94	1509.70	320.64	227.15		19.52	3.73	0	25.83	0
Ottappalam	649.20	13.31	581.54	104.35	126.95	0.71	16.23	0	0.00	58.47	0.66
Palakkad Block	2968.44	30.08	1417.20	281.90	210.85	0.42	13.94	0.23	0	37.37	0
Pattambi	1898.03	36.86	9190.72	239.28	230.37		40.66	4.32	0	97.45	11.33
Sreekrishnapuram	1565.21	102.66	5014.68	261.47	105.48	2.69	24.47	0.96	0	92.28	32.76
Thrithala	980.12	22.15	1044.33	295.56	126.16		28.18	4.33	0	98.52	33.88
Municipalities	616.47	43.42	349.78	124.55	470.56	1.27	15.74	4.82	0.06	62.95	3.38
District Total	95528.24	548.45	90427.57	4790.65	3989.40	7.16	416.61	117.76	104.11	1047.05	147.66

Table 14.9

ESTIMATED AREA AND PRODUCTION OF RICE (SUMMER)

Area in hectares and Production in 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		
2009-2010	6263.44	16822.61			6263.44	16822.61	2.47	3.95			2.47	3.95	6266	16826.56
2008-2009	8139	23535	2	1	8141	23536	2	1			2	1	8143	23537
2007-2008	6067	17069			6067	17069	19	19			19	19	6086	17088

Table 14.10

ESTIMATED AREA AND PRODUCTION OF RICE(WINTER)

Area in hectares and Production in 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		
2009-2010	43270.71	124945.54	1362.69	3480.89	44633.40	128426.43	3013.54	5689.46	1408.25	2421.86	4421.79	8111.33	49055	136537.76
2008-2009	35297	91993	1650	3395	36947	95388	3560	6222	1881	3435	5441	9657	42388	105045
2007-2008	37960	103326	2095	4303	40055	107629	3121	6184	2828	5043	5949	11227	46004	118856

Table 14.11

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	Analyzed							
2009-2010	696	696	2.78	49.05	2783	136.53		45.32	1.62
2008-2009	690	690	2.47	42.38	2478	105.04	Not Applied	40.67	1.64
2007-2008	688	688	2.58	46.00	2584	118.85		47.68	1.84

Table 14.12

FINAL RESULT OF CROP ESTIMATION SURVEY ON DRIAGE RESULTS

YEAR	No of Driage Exp.		Total of Plot Yield Before Driage(gms)	Total of Plot Yield After Driage (gms)	Driage rate applied for estimating Yield
	Planned	Analyzed			
2009-2010	57	57	14250	13626	0.95
2008-2009	57	57	15750	14900	0.94

Table 14.13

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

YEAR	IRRIGATED					UN IRRIGATED					TOTAL				
	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	No of Experiments	Mean yield (kg/Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
2009-2010	541	2888	43270.7	50.61	124946	35	2554	1362.69	129.69	3480.89	576	2877	44633.4	49.23	128426
2008-2009	505	2606	35296.9	47.55	91993.2	40	2057	1650.37	97.09	3394.94	545	2582	36947.3	45.64	95388.1

Table 14.14

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

YEAR	IRRIGATED					UN IRRIGATED					TOTAL				
	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	No. of Experiments	Mean yield (kg/Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
2009-2010	80	1888	3013.54	98.54	5689.47	40	1720	1408.25	118.22	2421.87	120	1834	4421.79	76.99	8111.33
2008-2009	100	1748	3559.69	75.78	6222.16	45	1826	1881.34	125.49	3434.46	145	1775	5441.03	65.88	9656.62

Table 14.15

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

YEAR	IRRIGATED						UN IRRIGATED						TOTAL			
	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	No of Experiments	Mean yield (kg/ Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes	
2009-2010	621	2822	46284.25	47.75	130635	75	2130	2770.94	87.62	5902.75	696	2783	49055.19	45.32	136538	
2008-2009	605	2528	38856.58	43.20	98215.31	85	1934	3531.71	80.79	6829.40	690	2478	42388.29	40.67	105045	

Table 14.16

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

YEAR	IRRIGATED						UN IRRIGATED						TOTAL			
	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	No of Experiments	Mean yield (kg/ Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes	
2009-2010	576	2877	44633.4	49.23	128426.4	120	1834	4421.79	76.99	8111.33	696	2783	49055.19	45.32	136538	
2008-2009	545	2582	36947.26	45.641	95388.1	145	1775	5441.03	65.88	9656.61	690	2478	42388.29	40.67	105045	

Table 14.17

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

YEAR	IRRIGATED					UN IRRIGATED					TOTAL				
	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	No. of Experiments	Mean yield (kg/Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
2009-2010	251	2686	6263.44	76.14	16822.61	0			0		251	2686	6263.44	76.14	16822.61
2008-2009	265	2892	8138.54	122.30	23534.90	1	416	2.00	0.000	0.833	266	2891	8140.54	122.27	23535.73

Table 14.18

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

YEAR	IRRIGATED					UN IRRIGATED					TOTAL				
	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	No. of Experiments	Mean yield (kg/ Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
2009-2010	5	1599	2.47	298.99	3.95	0			0		5	1599	2.47	298.99	3.95
2008-2009	3	633	1.90	174.21	1.20	1	163	0.38	0.00	0.06	4	555	2.28	145.18	1.26

Table 14.19

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

YEAR	IRRIGATED					UN IRRIGATED					TOTAL				
	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	No of Experiments	Mean yield (kg/Ha) Rice	Area (Ha)	Sampling Error	Production of Rice in Tonnes
2009-2010	256	2685	6265.91	76.11	16826.56	0		0	0	0	256	2685	6265.91	76.11	16826.56
2008-2009	268	2891	8140.44	122.27	23536.10	2	376.00	2.38	0.00	0.89	270	2891	8142.82	122.23	23537.00

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 Manured(%)	Other Manured (%)	Both Chemically and other Manured (%)	Not Manured (%)	Treated with Pesticides (%)	Pesticides not used (%)
	Total	Improved	Local						
2009-2010	256	251	5	93.36	32.03	31.64	3.52	83.59	16.41
2008-2009	270	266	4	98.15	42.59	41.85	1.11	90.74	9.26

Source: Agricultural Statistic 2008, 2009, 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. Sesamum		-	4-5kg/ha
20. Mango ginger		-	1500kg/ha
21. Ginger		-	1500kg/ha
22. Turmeric		-	2000-2500kg/ha
23. Betel vine		-	20000to25000cuttings/ha
24. Okra		-	7-8.5kg/ha
25. Bitter gourd		-	5-6kg/ha
26. Coleus		-	75-100 kg/tubers/ha
27. Snake gourd		-	3-4kg/ha
28. Cucumber		-	0.5-0.75kg/ha
29. Watermelon		-	1-1.5kg/ha
30. Bottle gourd		-	3-4 kg/ha
31. Pumpkin		-	1-1.5 kg/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
Areca nut	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 |
|--|---------------|
- G. Cake yield as percentage of copra crushed
- | | |
|-----------|-----|
| Chekkus | 38% |
| Rottories | 36% |
| Expellers | 34% |
- H. Coconut to Fibre (per 1000 nuts)
- | |
|------------------------|
| 81.8kg – kerala |
| 68.3kg – Andhrapradesh |
| 90.0kg – Tamilnadu |
| 81.9kg – Karnataka |
| 56.9kg - Others |
- I. Composition of Coconut (Husked)

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

J. Composition of Standard Copra

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

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

K. Fatty Acid Composition of Coconut Oil

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

L. Coir pith per 10000 husk	2 tonnes
M. Charcoal yield from shell (per 3 tonnes of shell)	1 tonne
N. Processed coconut cream/1000 coconut	200kg cream
O. Coconut Vinegar (per 100 litres coconut water)	110 litre vinegar

Source:- Farm Guide.

PLANTATION CROPS

Plantation crops 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 economics 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 prices 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 Palakkad district is 7.91%

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 livelihood 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 0.07%

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. Tea is not planted in Palakkad district.

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. The share of Cardamom in Palakkad district is 0.02%.

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)		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
Out of which Auto Tyre Manufactures	47246	49358	263348	244230	597623	7.8

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.

Table : 16.1

VETERINARY PERSONNEL IN THE DEPARTMENT AS ON 31/3/2008

Officers in the cadre of additional Director and above	Officers in the Cadre of Joint Director	Officers in the Cadre of Deputy Director	Officers in the Cadre of Assistant Director	Veterinary Surgeon	Livestock Inspectors
0	1	3	28	97	203

Source: Animal Husbandry Statistics, AHD

Table : 16.2

Number of Cases treated under important categories of diseases in various Departmental institutions during 2007-2008

Mastitis	Bovine	4469
	Goat	861
	Others	17
Abortion	Bovine	998
	Goat	504
	Others	8
Worm Infections	Bovine	71625
	Goat	17961
	Others	5455
Coccidiosis	Bovine	2460
	Goat	1395
	Others	2321
Babesiosis	Bovine	1738
	Goat	84
	Others	0
Other diseases	Bovine	160674
	Goat	49989
	Others	46430

Total	Bovine	247464
	Goat	70794
	Others	54231
Total Number of Animals Treated		372489

Table : 16.3

**DIARY CO-OPERATIVE SOCIETIES IN THE DISTRICT AS ON
31-3-2008**

Primary Societies	308
Regional Unions	0
Total	308
Anand Mode (APCOS)	283
Traditional	25
Total	308

Table : 16.4

**BROILER PRODUCTION AND DISTRIBUTION IN PRIVATE SECTOR FOR
THE YEAR 2007-2008**

Total No of chicken sold	Total Meat Production (Kg)
450798	1102506

Table : 16.5

ESTIMATED POULTRY MEAT PRODUCTION (IN MT)

Meat Production	
Palakkad	845
State	15482

Table : 16.6

NUMBER OF SLAUGHTER HOUSES AND MEAT PRODUCTION

	No. of slaughter houses				Meat Production (MT)
	Authorised	Unauthorised	Temporary	Total	
Palakkad	0	47	9	56	4395
State	154	1997	1714	3865	102027

Source: Animal Husbandry Statistics, AHD

Table : 16.7

Statement of Outbreaks, Attacks, deaths etc. due to contagious diseases and number of animals protected/ vaccinated during the year 2007-2008

Foot and Mouth			Anthrax			Black Quarter			H.S		
Out break	Attack	Death	Protected/ Vaccinated	Out break	Attack	Death	Protected/ Vaccinated	Out break	Attack	Death	Protected/ Vaccinated
28	42	1	134726	2	3	4	6278	1	0	0	8525

Canine Distemper			Parvo Virus			Ranikhet			Fowl Pox		
Out break	Attack	Death	Protected/ Vaccinated	Out break	Attack	Death	Protected/ Vaccinated	Out break	Attack	Death	Protected/ Vaccinated
18	42	11	455	16	16	3	339	0	0	0	5273

Infectious Bursal Disease			Duck Plague			Others			Total		
Out break	Attack	Death	Protected/ Vaccinated	Out break	Attack	Death	Protected/ Vaccinated	Out break	Attack	Death	Protected/ Vaccinated
0	0	0	199	0	0	0	1410	0	0	0	448268

Source: Animal Husbandry Statistics, AHD

Table : 16.8

ANTI RABIES VACCINATIONS DONE IN THE DISTRICT DURING 2007-2008

Prophylactic in dogs	Post Exposure vaccinations					Number of deaths due to rabies				
	Cattle	Buffalo	Goat	Canine	Other Animals	Cattle	Buffalo	Goat	Canine	Other Animals
6187	647	16	393	1012	10	58	0	14	418	0

Table : 16.9

ESTIMATED NUMBER OF ANIMALS SLAUGHTERED CATEGORYWISE (AUTHORISED SECTOR ONLY) 2007-2008(IN NOS)

Adult	Cattle		Buffalo		Goat and sheep		Pig	
	Young	Total	Adult	Young	Adult	Young	Desi	Improved
2101	404	2505	2047	504	4209	627	3	6
							4836	9

Table : 16.10

ESTIMATED MEAT PRODUCTION –CATEGORYWISE (AUTHORISED SECTOR ONLY) IN MT DURING 2007-2008

Adult	Cattle		Buffalo		Goat and sheep		Pig		Total Meat Production
	Young	Total	Adult	Young	Adult	Young	Desi	Improved	
128	7	135	129	8	38	4	0	0	315
							42	0	0

Source: Animal Husbandry Statistics, AHD

Table : 16.11

**KERALA XVIII QUINQUENNIAL CENSUS 2007
CATTLE (EXOTIC AND CROSSBRED) MALE**

District	Under 1 year	1 to 2 and half years	Total	Used for Breeding	Used for Agriculture only	Used for Bullock cart	Others	Total	Total Males
Palakkad	12828	5937	18765	657	1502	303	430	2892	21657
Rural	12630	5761	18391	608	1460	278	414	2760	21151
Urban	198	176	374	49	42	25	16	132	506

Table : 16.12

CATTLE (EXOTIC AND CROSSBRED) FEMALE

District	Under 1 year	1 to 2 ½ years	Total	Females over 2 ½ years						Total Females	Total Exotic and Crossbred Cattles
				In milk	Dry	Not Yet Calved	Above 10 years	Total			
Palakkad	30196	46470	7666	67257	20615	7420	2527	97819	174485	196142	
Rural	29000	44083	73083	65252	19524	70890	2502	94367	167450	188601	
Urban	1196	2387	3583	2005	1091	331	25	3452	7035	7541	

Source: Report on Eighteenth quinquennial report, Dept of Animal husbandry

Table : 16.13

XVIII QUINQUENNIAL CENSUS 2007
TOTAL LIVESTOCK

District	Cattle	Buffaloes	Sheep	Goats	Pigs	Other live stocks	Total
Palakkad	2159095	6871	131	101829	1842	39	325807
Rural	206527	6520	119	97644	1651	37	312498
Urban	8568	351	12	4185	191	2	13309

Table : 16.14

STATEMENT SHOWING THE DISTRIBUTION OF LIVESTOCK IN PALAKKAD DISTRICT (1996 TO 2007)

	Livestock Number		Percentage Distribution	
	2000	2003	1996	2003
1996	2000	2003	2007	2003
565115	430373	402740	325807	11.57
			10.13	10.02
			10.02	9.08

Source: Report on Eighteenth quinquennial report, Dept of Animal husbandry

Table : 16.15

LIVE STOCK AND POULTRY-CATTLE INDIGENOUS-MALE

District	Under 1 year	1 to 3 years	Total	Male over 3 years				Total Males
				Used for Breeding	Used for Agriculture only	Used for Bullock cart	Others	
Palakkad	1632	1209	2841	56	665	281	68	3911
Rural	1547	1167	2714	56	664	280	63	3777
Urban	85	42	127	0	1	1	5	134

Table : 16.16

LIVE STOCK AND POULTRY-CATTLE INDIGENOUS-FEMALE

District	Under 1 year	1 to 3 years	Total	Females over 3 years						Total Females	Total Indigenous Cattle	Total Cattle
				In Milk	Dry	Not Yet Calved	Above 10 years	Total				
Palakkad	2831	3002	5833	6729	1929	360	171	9209	15042	18953	215095	
Rural	2651	2808	5429	6341	1849	350	150	8690	14149	17926	206527	
Urban	180	194	374	388	100	10	21	519	893	1027	8568	

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.17

LIVE STOCK AND POULTRY-BUFFALOES-MALE

District	Under 1 year	1 to 3 years	Total	Male over 3 years					Total Males
				Used for Breeding	Used for Agriculture only	Used for Bullock cart	Others	Total	
Palakkad	1243	1728	2971	100	322	125	183	730	3701
Rural	1214	1654	2868	61	307	123	183	674	3542
Urban	29	74	103	39	15	2	0	56	159

Table : 16.18

LIVE STOCK AND POULTRY-BUFFALOES-FEMALE

District	Under 1 year	1 to 3 years	Total	Females over 3 years					Total Females	Total Buffaloes
				In Milk	Dry	Not Yet Calved	Above 10 years	Total		
Palakkad	608	778	1386	1379	281	71	53	1784	3170	6871
Rural	560	719	1279	1319	263	68	49	1699	2978	6520
Urban	48	59	107	60	18	3	4	85	192	351

Source:Report on 18th Quinquennial , Dept of Animal Husbandry

Table : 16.19

LIVE STOCK-SHEEP

District	Male			Female			Total sheep
	Under 6 months	6 months and above	Total	Under 6 months	6 months and above	Total	
	Palakkad	24	33	57	20	54	
Rural	20	29	49	20	50	70	119
Urban	4	4	8	0	4	4	12

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.20

LIVE STOCK AND POULTRY-GOATS

District	Male			Female				Total Goats
	Under 1 year	1 year and above	Total	Under 1 year	1 year and above			
					In milk	Dry	Not calved	
Palakkad	17689	13855	31544	25297	28472	13206	3310	70285
Rural	16956	13170	30126	24189	27397	12662	3270	67518
Urban	733	685	1418	1108	1075	544	40	2767
								101829
								97644
								4185

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.21

LIVE STOCK-HORSES

District	Males				Females			Total Horses
	Below 3 years	3 years and above		Below 3 years	3 years and above	Total		
		Used for Cart	Used for sport				Total	
Palakkad	0	1	0	1	1	2	3	
Rural	0	1	0	1	0	0	1	
Urban	0	0	0	0	1	2	2	

Source:Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.22

LIVE STOCK AND POULTRY-PIGS-EXOTIC CROSSBRED

District	Male			Female			Total Exotic pigs
	Below 6 months	6 months and above	Total	6 months and above	Below 6 months	Total	
Rural	252	265	517	267	518	785	1302
Urban	41	100	141	5	45	50	191

Source:Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.23

LIVE STOCK AND POULTRY-PIGS-INDIGENOUS

District	Male			Female			Total Indigenous Pigs	Total Pigs
	Below 6 months	6 months and above	Total	Below 6 months	6 months and above	Total		
Palakkad	34	94	128	90	131	221	349	1842
Rural	34	94	128	90	131	221	349	1651
Urban	0	0	0	0	0	0	0	191

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.24

LIVE STOCK AND POULTRY-FOWLS

District	Cocks			Hens			Total
	Improved	Desi	Total	Improved	Desi	Total	
Palakkad	34931	143027	177958	65229	811219	876448	1054406
Rural	33629	131516	165145	63774	728629	792403	657548
Urban	1302	11511	12813	1455	82590	84045	96858

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.25

LIVE STOCK-ELEPHANT

District	Male	Female	Total
Palakkad	9	16	25
Rural	8	15	23
Urban	1	1	2

Table : 16.26

LIVE STOCK-RABBITS

District	Male	Female	Total
Palakkad	3419	5942	9361
Rural	3133	5270	8403
Urban	286	672	958

Table : 16.27

LIVE STOCK-DOGS

District	Male	Female	Total
Palakkad	45251	18882	64133
Rural	41441	17343	58784
Urban	3810	1539	5349

Table : 16.28

LIVE STOCK AND POULTRY-FOWLS

District	Male	Female	Total
Palakkad	45251	18882	64133
Rural	41441	17343	58784
Urban	3810	1539	5349

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.29

FOWLS
CHICKEN BELOW 5 MONTHS

District	For Eggs			For meat			Total Fowls
	Improved	Desi	Total	Improved	Desi	Total	
Palakkad	29387	234408	263795	10518	30557	41075	1359276
Rural	28647	213596	242243	10356	30040	10396	1240187
Urban	740	20812	21552	162	517	679	119089

Table : 16.30

LIVE STOCK AND POULTRY-DUCKS

District	Duckling below 6 months						Total Ducks
	For Eggs			For Meat			
	Improved	Desi	Total	Improved	Desi	Total	
Palakkad	1012	1475	2487	611	807	1418	38469
Rural	1009	1372	2381	611	807	1418	37417
Urban	3	103	106	0	0	0	1052

Table : 16.31

LIVE STOCK AND POULTRY- DUCKS

District	Drakes			Ducks		
	Improved	Desi	Total	Improved	Desi	Total
Palakkad	1039	5523	6562	7899	20103	28002
Rural	1002	5225	6227	7807	19584	27391
Urban	37	298	335	92	519	611

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.32

**COMPARATIVE STATEMENT OF DISTRIBUTION AND VARIATION OF
GOATS IN DIFFERENT DISTRICTS**

District	2003		2007		% Variation over the previous year
	Number	%	Number	%	
Palakkad	125890	10.38	101829	5.89	-19.11

Table : 16.33

**COMPARATIVE STATEMENT OF DISTRIBUTION AND VARIATION OF PIGS IN
DIFFERENT DISTRICTS**

District	2003		2007		% Variation over the previous year
	Number	%	Number	%	
Palakkad	1507	1.97	1842	3.12	22.23

Table : 16.34

**NUMBER AND PERCENTAGE DISTRIBUTION OF INDIGENOUS AND
CROSSBRED CATTLE IN 2007 AND THE PREVIOUS YEAR**

2000			2003			2007		
Indigenous	Crossbred	% distribution of CB	Indigenous	Crossbred	% distribution of CB	Indigenous	Crossbred	% distribution of CB
80728	192253	70.43	51693	212070	80.4	18953	196142	91.2

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.35

**VARIATION OF INDIGENOUS AND CROSSBRED CATTLE OVER 2003
CENSUS**

	2003			2007			% variation over 2003 census		
	Indigenous	Crossbred	Total	Indigenous	Crossbred	Total	Indigenous	Crossbred	Total
Palakkad	51693	212070	263763	18953	196142	215095	-63.34	-7.51	18.45
State	387183	1735274	2122457	118872	1621245	1740117	-69.3	-6.75	18.01

Table : 16.36

**CONCENTRATION OF CATTLE POPULATION IN THE RURAL AND URBAN
AREA OF THE STATE ACCORDING TO 2007 CENSUS**

District	Number			% rural-urban distribution		% districtwise distribution		
	Rural	Urban	Total	Rural	Urban	Rural	Urban	Total
Palakkad	206527	8568	215095	96.02	3.98	12.59	8.64	12.36
State	1640961	99156	1740117	94.3	5.7	100	100	100

Table : 16.37

**SEXWISE DISTRIBUTION OF CATTLE IN THE PALAKKAD DISTRICT AS PER
2007 CENSUS**

District	Number			Percentage of sex distribution of cattle				
	Male	Female	Total	Districtwise			Sexwise	
Palakkad	255680	189527	215095	15.63	12.02	12.36	11.89	88.11

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

Table : 16.38

CONCENTRATION OF BUFFALOES IN RURAL AND URBAN AREAS IN PALAKKAD DISTRICT

District	Number		%of rural urban			% of districtwise distribution		
	Rural	Urban	Total	Rural	Urban	Rural	Urban	Total
Palakkad	6520	351	6871	94389	5.11	12.03	8.91	11.82

Table : 16.39

DENSITY OF POULTRY, FOWLS AND DUCKS AS PER 2007 CENSUS

District	Area in sq.km	Fowls		Ducks		Total Poultry	
		Number	Density in Sq.km	Number	Density in Sq.km	Number	Density in Sq.km
Palakkad	2131	1359276	303.41	38469	8.59	1425088	318.1

Table : 16.40

DENSITY OF LIVESTOCK AND POULTRY POPULATION DURING 2007

District	Area in sq.km	Cattle		Buffaloes		Goats		Total livestock		Total Poultry	
		Population	Density per sq.km	Population	Density per sq.km	Population	Density per sq.km	Population	Density per sq.km	Population	Density per sq.km
Palakkad	4480	215095	48.01	6871	1.53	101829	22.73	325807	72.72	1425088	318.1

Source: Report on 18th Quinquennial, Dept of Animal Husbandry

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 lakh 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.

Table : 17.1

FRESH WATER RESOURCES IN PALAKKAD DISTRICT

Year	Panchayat Ponds		Holy ponds and streams		Village ponds and other water holds		Irrigation tanks	
	No	Area (Ha)	No	Area (Ha)	No	Area (Ha)	No	Area (Ha)
2009	629	176.84	334	145.59	6	32.25	60	759.18
2008	629	176.84	334	145.59	6	32.25	60	759.18

Source: Inland Fisheries Statistics, Dept of Fisheries

Table : 17.2

DISTRIBUTION OF FISHERMEN POPULATION IN PALAKKAD

2005-2006				2006-2007			
Male	Female	Children	Total	Male	Female	Children	Total
934	918	943	2795	940	924	949	2813

2007-2008				2008-2009 (Estimated)			
Male	Female	Children	Total	Male	Female	Children	Total
949	932	958	2839	957	941	967	2865

Table : 17.3

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

Number of Seed farms/Hatcheries			Total	Seed Production capacity (in lakhs)			Total
Fish	Shrimp	Scampi		Fish	Shrimp	Scampi	
6	0	0	6	205	0	0	205

Table : 17.4

LIST OF FISHING VILLAGES (INLAND) AND INLAND FISHERMEN POPULATION

Name of village	Fishermen Population			
	2005-2006	2006-2007	2007-2008	2008-2009
Muthalamada	993	1000	1009	1018
Palakkad	1802	1813	1830	1847
Total	2795	2813	2839	2865

Source: Inland Fisheries Statistics, Dept of Fisheries

Table : 17.5

DISTRICT WISE SPECIES WISE INLAND FISH LANDINGS IN PALAKKAD

2007-2008		2006-2007	
Name of Fish	Number	Name of Fish	Number
Prawn	0	Prawn	0
Etroplus	0	Etroplus	0
Murrels	149	Murrels	147
Mulletts	83	Mulletts	82
Cat Fish	47	Cat Fish	46
Jew fish	0	Jew fish	0
Tilapia	326	Tilapia	321
Labeo fimbriatus	1439	Labeo fimbriatus	1415
Barbus	70	Barbus	69
Mrigal	1243	Mrigal	1223
Crabs	3	Crabs	3
Common Carps	2243	Common Carps	2207
Catla	1797	Catla	1766
Gourami	0	Gourami	0
Chamos	4	Chamos	4
Eels	3	Eels	3
Labeo Rohitha	1660	Labeo Rohitha	1634
Mussel	0	Mussel	0
Edible Oyster	0	Edible Oyster	0
Miscellaneous	82	Miscellaneous	80
TOTAL	9149	TOTAL	9000

Source: Inland Fisheries Statistics, Dept of Fisheries

Table : 17.6

**DISTRICT WISE SPECIES WISE VALUES OF INLAND FISHES IN
PALAKKAD**

(Value Rs in 000's)

2006-2007		2007-2008	
Name of Fish	Number	Name of Fish	Number
Prawn	0	Prawn	0
Etroplus	0	Etroplus	0
Murrels	6909	Murrels	7450
Mullets	7790	Mullets	7885
Cat Fish	2116	Cat Fish	2209
Jew fish	0	Jew fish	0
Tilapia	10914	Tilapia	11410
Labeo fimbriatus	56600	Labeo fimbriatus	57560
Barbus	1863	Barbus	1960
Mrigal	50143	Mrigal	52206
Crabs	915	Crabs	915
Common Carps	99315	Common Carps	100935
Catla	77704	Catla	80865
Gourami	0	Gourami	0
Chamos	232	Chamos	240
Eels	108	Eels	108
Labeo Rohitha	71896	Labeo Rohitha	74700
Mussel	0	Mussel	0
Edible Oyster	0	Edible Oyster	0
Miscellaneous	3760	Miscellaneous	3936
TOTAL	390265	TOTAL	402379

Source: Inland Fisheries Statistics, Dept of Fisheries

Table : 17.7

CONTRIBUTION OF FISHING TO NDP ESTIMATES AT CURRENT PRICES

2005-2006(base year 2004-05)	Palakkad	2005-2006(base year 1999-2000)	Palakkad
Net Domestic Product * (Rs.in lakhs)	901719	Net Domestic Product * (Rs.in lakhs)	713210
Fishing* (Rs. In lakhs)	2887	Fishing* (Rs. In lakhs)	2264
Percentage of fishing to Net Domestic Product	0.32	Percentage of fishing to Net Domestic Product	0.32
Population (In' 0000)*	2729	Population (In' 0000)*	2718
Per Capita income (In Rs.)*	33042	Per Capita income (In Rs.)*	28905
Contribution of Fishing to per capita income	105.73	Contribution of Fishing to per capita income	627.24

CONTRIBUTION OF FISHING TO NDP ESTIMATES AT CURRENT PRICES

2006-2007(base year 2004-05)	Palakkad	2006-2007(base year 1999-2000)	Palakkad
Net Domestic Product * (Rs.in lakhs)	1036520	Net Domestic Product * (Rs.in lakhs)	804703
Fishing* (Rs. In lakhs)	3056	Fishing* (Rs. In lakhs)	3175
Percentage of fishing to Net Domestic Product	0.29	Percentage of fishing to Net Domestic Product	0.39
Population (In' 0000)*	2752	Population (In' 0000)*	2729
Per Capita income (In Rs.)*	37664	Per Capita income (In Rs.)*	29487
Contribution of Fishing to per capita income	109.23	Contribution of Fishing to per capita income	115

Source: Inland Fisheries Statistics, Dept of Fisheries.

Table : 17.8

WORKING OF FFDA IN PALAKKAD

Year	No.of members during the year	Total Area Surveyed (Ha)	Area brought under fish culture (Ha)	No. of beneficiaries	Distribution of fish Seed (No)	Harvested area (Ha)	Harvested Quantity (in tonne)	No.of farmers trained
2008-2009	77	282.00	38.00	66	124405	38.00	101.00	650
2007-2008	50	44.00	18.28	50	16601	13.00	83.00	67
2006-2007	96	78.98	27.06	82	25855	40.00	112.00	149

Source: Inland Fisheries Statistics, Dept of Fisheries.

Table : 17.9

PERCENTAGE OF ACTIVE FISHERMEN TO THE FISHERMEN POPULATION (INLAND)

2005-2006			2006-2007			2007-2008			2008-2009		
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	Total Number of Fishermen	Total Number of Active Fishermen	Percentage of Active Fishermen
2795	542	19.39	2813	542	19.27	2839	454	15.99	2865	488	17.03

Source: Inland Fisheries Statistics, Dept of Fisheries

Table : 17.10

CHECK DAMS IN PALAKKAD DISTRICT

Year	Name of the Check Dam	Area in Hect.	Location		Type of construction	Ownership
			Block	Panchayath		
2009	Tharampilly	2.00	Ottapalam	Vaniyamkulam	Concrete	Panchayath
	Puliyanthodu	5.00	Mannarkkad	Alanalloor	Concrete	PWD
	Menonpady kulathodu	5.00	Sreekrishnapuram	Cherpulassery	Concrete	Panchayath
	Kacherikunnu	4.00	Sreekrishnapuram	Cherpulassery	Concrete	Panchayath
	Puzhacheck Dam	1.00	Mannarkkad	Alanalloor	Concrete	Public
	Parali	3.20	Attappady	Parali	Concrete	Panchayath
	Moozhyapala	2.00	Attappady	Pirayieri	Concrete	Panchayath
	Puthur	2.00	Attappady	Pirayieri	Concrete	Panchayath
	Kolarkulam	0.20	Kuzhalmannam	Kottai	Concrete	Public
	Kariyanjkode	0.75	Kuzhalmannam	Kottai	Concrete	Public
	Mollerithodi	0.80	Kuzhalmannam	Kottai	Concrete	Public
	Kanjoorpallinelli	1.00	Kuzhalmannam	Kottai	Concrete	Public
	Kanjiramchira	5.00	Kuzhalmannam	Kuzhalmannam	Concrete	Public
	Thekkumchira	8.00	Kollengode	Kollengode	Concrete	Panchayath
	Gayathri	10.00	Kollengode	Kollengode	Concrete	Panchayath
	Vazhapuzha	2.00	Kollengode	Kollengode	Concrete	Panchayath
	Thamarappadam	2.00	Kollengode	Kollengode	Concrete	Panchayath
	Anamara	8.00	Kollengode	Kollengode	Concrete	Panchayath
	Mallamchira	3.00	Kollengode	Muthalamada	Concrete	Irrigation
	Ayiloor	5.00	Nenmara	Ayiloor	Concrete	Panchayath
	Karappara	4.00	Nenmara	Neliyampathy	Concrete	AVT
	Seethakundu	4.00	Nenmara	Neliyampathy	Concrete	Pobson (PVT)
	Karadiyodu	0.20	Mannarkkad	Kottoppadam	Concrete	Public
	Pulikkalady	0.10	Mannarkkad	Kottoppadam	Concrete	Public
	Kankara	0.50	Mannarkkad	Kottoppadam	Concrete	Public
	Kanneri	1.50	Mannarkkad	Kottoppadam	Concrete	Public
	No 1 Bund	2.00	Mannarkkad	Kottoppadam	Concrete	Public
	Meenchadi	3.50	Mannarkkad	Kumaramputhur	Concrete	Panchayath
	Ariyoor	4.00	Mannarkkad	Kumaramputhur	Concrete	Public
	Madanchen	1.00	Mannarkkad	Kottoppadam	Concrete	Public
	Chettikkad	1.00	Mannarkkad	Kumaramputhur	Concrete	Public
	Meeraflora	13.00	Nenmara	Neliyampathy	Concrete	PVT
	Rajakkodu	5.50	Nenmara	Neliyampathy	Concrete	PVT
	Govt. Check Dam	4.50	Nenmara	Neliyampathy	Concrete	Forest Dept.
	Chandramala	5.00	Nenmara	Neliyampathy	Concrete	Forest Dept.
	Avinji	4.00	Alathur	Vandazhy	Concrete	Irrigation
	Mangalam Check Dam	12.00	Alathur	Vandazhy	Concrete	Irrigation
	Kallanchira	1.50	Malampuzha	Puthupariyaram	Granite	Panchayath
	Arimani	0.45	Malampuzha	Puthupariyaram	Granite	Panchayath
	Mannacodu	1.00	Malampuzha	Puthupariyaram	Granite	Panchayath
	Thandanthodu	0.40	Malampuzha	Puthupariyaram	Granite	Panchayath
	Workad	0.10	Malampuzha	Puthupariyaram	Granite	Panchayath
	Total	139.20				

Year	Name of the Check Dam	Area in Hect.	Location		Type of construction	Ownership
			Block	Panchayath		
2008	Tharampilly	2.00	Ottapalam	Vaniyamkulam	Concrete	Panchayath
	Puliyanthodu	5.00	Mannarkkad	Alanalloor	Concrete	PWD
	Menonpady kulathodu	5.00	Sreekrishnapuram	Cherpulassery	Concrete	Panchayath
	Kacherikunnu	4.00	Sreekrishnapuram	Cherpulassery	Concrete	Panchayath
	Puzhacheck Dam	1.00	Mannarkkad	Alanalloor	Concrete	Public
	Parali	3.20	Attappady	Parali	Concrete	Panchayath
	Moozhypala	2.00	Attappady	Pirayieri	Concrete	Panchayath
	Puthur	2.00	Attappady	Pirayieri	Concrete	Panchayath
	Kolarkulam	0.20	Kuzhalmannam	Kottai	Concrete	Public
	Kariyanjkode	0.75	Kuzhalmannam	Kottai	Concrete	Public
	Mollerithodi	0.80	Kuzhalmannam	Kottai	Concrete	Public
	Kanjoorpallinelli	1.00	Kuzhalmannam	Kottai	Concrete	Public
	Kanjiramchira	5.00	Kuzhalmannam	Kuzhalmannam	Concrete	Public
	Thekkumchira	8.00	Kollengode	Kollengode	Concrete	Panchayath
	Gayathri	10.00	Kollengode	Kollengode	Concrete	Panchayath
	Vazhapuzha	2.00	Kollengode	Kollengode	Concrete	Panchayath
	Thamarappadam	2.00	Kollengode	Kollengode	Concrete	Panchayath
	Anamara	8.00	Kollengode	Kollengode	Concrete	Panchayath
	Mallamchira	3.00	Kollengode	Muthalamada	Concrete	Irrigation
	Ayiloor	5.00	Nenmara	Ayiloor	Concrete	Panchayath
	Karappara	4.00	Nenmara	Nelliyampathy	Concrete	AVT
	Seethakundu	4.00	Nenmara	Nelliyampathy	Concrete	Pobson (PVT)
	Karadiyodu	0.20	Mannarkkad	Kottoppadam	Concrete	Public
	Pulikkalady	0.10	Mannarkkad	Kottoppadam	Concrete	Public
	Kankara	0.50	Mannarkkad	Kottoppadam	Concrete	Public
	Kanneri	1.50	Mannarkkad	Kottoppadam	Concrete	Public
	No 1 Bund	2.00	Mannarkkad	Kottoppadam	Concrete	Public
	Meenchadi	3.50	Mannarkkad	Kumaramputhur	Concrete	Panchayath
	Ariyoor	4.00	Mannarkkad	Kumaramputhur	Concrete	Public
	Madanchen	1.00	Mannarkkad	Kottoppadam	Concrete	Public
	Chettikkad	1.00	Mannarkkad	Kumaramputhur	Concrete	Public
	Meeraflora	13.00	Nenmara	Nelliyampathy	Concrete	PVT
	Rajakkodu	5.50	Nenmara	Nelliyampathy	Concrete	PVT
	Govt. Check Dam	4.50	Nenmara	Nelliyampathy	Concrete	Forest Dept.
	Chandramala	5.00	Nenmara	Nelliyampathy	Concrete	Forest Dept.
	Avinji	4.00	Alathur	Vandazhy	Concrete	Irrigation
	Mangalam Check Dam	12.00	Alathur	Vandazhy	Concrete	Irrigation
	Kallanchira	1.50	Malampuzha	Puthupariyaram	Granite	Panchayath
	Arimani	0.45	Malampuzha	Puthupariyaram	Granite	Panchayath
	Mannacodu	1.00	Malampuzha	Puthupariyaram	Granite	Panchayath
	Thandanthodu	0.40	Malampuzha	Puthupariyaram	Granite	Panchayath
	Workad	0.10	Malampuzha	Puthupariyaram	Granite	Panchayath
	Total	139.20				

Source: Fisheries Statistics, Dept of Fisheries

WETLAND

Wetland is an area of ground that is saturated with water either permanently or seasonally. Wetlands are categorized by their characteristic vegetation, which is adapted to these unique soil conditions. The water found in wetland can be saltwater, fresh water, or brackish, wetland includes swamps marshes and bogs flood plains shallow ponds and littoral zone of large water bodies.

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

The study of wetlands has recently been termed as 'palndology' is same publications. Wetlands also are known internationally and in law water or coastal / marine ecosystems. Environmental degradation is more prominent within wetland systems than any other ecosystem on Earth.

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

Wetlands have also been described as ecotones, providing a transition between dry land and waterbodies Mitsch and Gosselink write that wetlands exist the interface between truly terrestrial ecosystem and aquatic systems making them inherently different from each other, yet highly dependent on both.

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

Wetland hydrology is associated with the spatial and dispersion, flow, and physio chemical attributes of surface and ground water in its reservoirs. Based on hydrology wetlands can be categorized as reveries (associated with streams) lacustrine (associated with lakes and reservoirs) and palustrine(isolated). Satinity has a very strong influence on wetland water chemistry. In non-reverine wetlands natural salinity is regulated by interaction between ground and surface water, which may be influenced by human activity.

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

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

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

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

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

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

Besides these rivers Kerala is bestowed with a number of lakes and backwater lagoon which add to the beauty of the land. The important wetlands of Kerala are Ashtamudi Lake, Vembanadu Lake and Sasthankotta Lake. In the state of Kerala 1762 wetlands have been delineated. In addition, 2592, wetlands smaller than 2.25 hectares have also been identified. Total wetlands area estimated to 160590 hectares. The major wetland types are River/ stream (65162 ha) Lagoons (38442 ha) Reservoirs (26167 ha) and waterlogged (20305 ha). Analysis of wetland status in terms of open water and aquatic vegetation showed that around 88 and 83% of wetland area is under open water category during post monsoon and pre monsoon respectively. Aquatic vegetation (floating/ emergent) occupies around 8 and 6 % of wetland area during post and pre monsoon respectively.

“Wetlands are lands transitional between terrestrial and an aquatic system where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have one or more of the three attributes: (i) atleast periodically, the land supports predominantly hydrophytes; (ii) the substrate is noonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year”.

This definition, given by Cowardin et al. (1979), is widely accepted by wetland scientists of the United States and is also used in India (Mitsch and Gosselink, 1989). Wetlands include the swamps, bogs, marshes, mires, fens and other wet ecosystems found throughout the world under different names.

The Asian Wetland Bureau (1991) broadly defines the wetlands of South and West Asia as: “Estuaries and deltas, salt marshes, mangroves and mudflats, coastal lagoons, freshwater lakes and marshes, oasis, salt marshes, seasonal flood plain wetlands, swamp forests, rivers and streams, man-managed systems such as rice fields, fish ponds and reservoir”.

Another simple definition is that the wetlands are areas where, for part of the year at least, water stands naturally from 2.5 cm to around 300 cm.

The wetlands can be broadly classified into inland fresh and saline as well as coastal fresh and saline areas. The coastal wetland ecosystems are often classified as tidal salt marshes, tidal freshwater marshes and mangrove wetlands; the inland

wetland ecosystems, as inland fresh water marshes, peatlands, deepwater swamps and riparian wetlands. Examples of artificial wetlands are those of wild-life sanctuaries of Bharathpur and Kaziranga in India and the extensive man-managed rice fields in different parts of Asia.

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

There is a case to be made for wetland science as a unique multidiscipline, with support in ecology, chemistry, hydrology and engineering. Wetland management, as the applied side of wetlands science, also requires an understanding of the scientific aspects of wetlands, balanced with legal, institutional, and economic realities, to ensure protection of these valuable ecosystems (Mitsch and Gosselink, 1989).

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

The Palakkad district is blessed with many small and medium rivers. Bharathapuzha (Nila), with her tributaries, sprawls across the entire district.

Bharathapuzha

It is also known as Ponnaniyar. The catchment area of Bharathapuzha is Anamalai hills of the Western Ghats. This river flows through Palakkad, Malappuram and Thrissur districts and debouches into the Arabian Sea at Ponnani. This is the second largest river in Kerala. The length of Bharathapuzha is 374.40 km and its catchment area is 6186 sq.km.

Its main tributaries are Gayatrippuzha, Kannadippuzha, Kalpathyppuzha, Thuthappuzha, Kollengode, Kannadi, Bhavani and Shiruvani. The irrigation projects of Bharathapuzha are Mangalam Project, Pothundi Project, Gayathri Project, Malampuzha Project, Valayar Project, Cheerakuzhi Project, Chitoor Project and Kanjirapuzha Project. The tourist importance Malampuzha is at Malampuzha Dam 12 km from Palakkad.

Gayatrippuzha

This river originates from Anamala hills and joins Bharathapuzha at Mayannur after traversing through Kollengode, Nenmara, Alathur, Wadakkanchery and

Pazhayannur. This tributary has five main subtributaries; Mangalam river, Ayalurpuzha, Vandazhippuzha, Meenkarappuzha and Chulliyar.

Kannadippuzha

It is also known as Chitturpuzha or Amaravathippuzha. This river also starts from the Anamala hills and flows through Thathamangalam and Chittur. The Kannadippuzha joins the Bharathapuzha River at Parli. The Palar, Aliyar and Uppar streams combine to this river.

Kalpathyppuzha

Also known as Korayar and this river originate from Chenthamarakulam in the hills, north of Walayar. Kalpathypuzha is formed by four streams, viz., Korayar, Varattar, Walayar and Malampuzha.

Thuthappuzha

Thuthappuzha, which is also known as Pилanthol River, originates from the Silent Valley hills and joins the main river about two km off Pallipuram railway station. The important streams which feed this tributary are Kunthippuzha, Kanjirappuzha, Ambankadavu and Thuppanadippuzha.

Bhavani

The Bhavani River, one of the east flowing rivers in the State, originates from Silent Valley in Kerala and makes a circuitous course through the Attappady valley and returns to the shadow of Nilgiri Mountains. It debouches in the right bank of Kaveri., The catchment area of the Bhavani river within Kerala is 220 sq. miles yielding an annual run off of 27,000 million cubic feet of water. The important tributary of this river are Shiruvani, Varagar, Kuntha, Kunnur and Moyar. The length of the river is 216 km.

DAMS

Palakkad district is blessed with irrigation facilities. Dams have been constructed across almost all the important tributaries of the Bharathapuzha to provide irrigation facilities to the district. Six out of the ten completed irrigation projects of Kerala are in Palakkad district. They are Walayar, Malampuzha, Cheerakuzhi, Gayathri (Meenkara, Chulliar), Malnagalam and Pothundy. The total ayacut of all these completed projects is 77,306 hectares. In addition to this, the construction of two major irrigation projects, viz., Chitturpuzha and Kanhirapuzha are in progress. The total ayacut of these projects is 54,200 hectares.

The largest is Malampuzha dam. Malampuzha Dam irrigates over 20,000 hectares of farming land while Chittur Irrigation Project covers over 18,000 hectares and Kanhirapuzha project covers over 10,000 hectares. The largest in volume capacity is the Parambikulam Dam built in Udumalaipettai.

The Palakkad district is called the “Granery of Kerala”. Agriculture is the main occupation and paddy is the important crop. About 23% of the total area of this district was under paddy in 1970’s; but it has been reduced to nearly 15% now. The total area under paddy in 1970’s was 101803.53 ha which has been reduced to about 68294 ha. About 8% of the total area has already converted within 30 years. It is evident from this figure that paddy conversion is taking place in an alarming level and will continue at a high rate. About 10559 ha of paddy land is converted for raising annual crops such as banana, tuber crops, vegetables, ginger, beetle, etc. The total paddy area converted for perennial crops is about 15981 ha. The perennial crops include coconut, arecanut, rubber, mango tree, cashew nut etc. The total area converted built up activities include about 6247 ha and the total area left uncultivated include 722 ha.

The data pertaining to paddy converted to different land uses is provided in the table below.

Land use	Total(ha)
Paddy Converted to Annual Crops	10558.61
Paddy Converted to Perennial Crops	15981.44
Paddy Converted to Built-up Land	6247.33
Paddy Converted to Cultivable Waste Land/Fallow	722.07
Total(ha)	33509.45

PRESENT PADDY SCENARIO

Paddy is cultivated as a single crop, double crop and triple crop within the district. However the area under double crop is more extensive amounting to 98 percent of the paddy cultivated areas whereas only a single crop is raised in less than 1 percent of the total paddy cultivated area. The figure gives an idea about the area under various classes. Triple crop is raised only in 1.15percent of the total paddy cultivated area. The pancha crop is raised in areas where the irrigation facilities are quite well developed.

Type	Area (in hectares)	Percentage Area
Virippu (Single Crop)	1.36	0.002
Puncha (Single Crop)	337.84	0.5
Mundakan	82.80	0.12
Viruppu and Mundakan (Double Crop)	67080.96	98.22
Mundakan and Puncha (Double Crop)	2.57	0.04
Viruppu, Mundakan and Puncha (Triple Crop)	788.55	1.15
Total	68294.08	100.00

CONVERSION OF PADDY

Around 33509 hectares, which were previously under paddy cultivation, has been converted to other land use over a period of thirty years. Majority of the paddy fields were converted for the cultivation of mixed crops (7087.96 ha) and mixed trees (4562.08 ha). The increasing population pressure has led to the conversion of paddy fields into built up land. Around 6210.13 hectares of land under paddy were converted into built up areas within the district. Details regarding the land use to which the paddy lands were converted are provided in the below table.

Landuse	Total(ha)
Paddy Converted to Banana	3470.65
Paddy Converted to Mixed Crops	7087.96
Paddy Converted to Coconut	3832.58
Paddy Converted to Coconut + Arecanut	2423.24
Paddy Converted to Coconut+Rubber	886.92
Paddy Converted to Rubber	4276.62
Paddy Converted to Mixed Trees	4562.08
Paddy Converted to Garden Land	37.19
Paddy Converted to Built-up-up Land	6210.13
Paddy Converted to Cultivable Waste Land/Fallow	722.07
Total (ha)	33509.45

21 per cent of the paddy fields being converted to mixed crops followed by built up land (19 %), mixed trees (14%), rubber (13%), and banana (10%). The area converted for raising banana is about 347.65 ha. The agricultural farmers of the district found that banana cultivation is more economical to paddy and banana is cultivated as inter crop also. The area converted for coconut plantations is about 3833 ha and for coconut and arecanut are about 2423 ha. Coconut and arecanut are cultivated both on the paddy fields and also on the areas bordering paddy fields. The farmers behind the cash crops find it economical to cultivate rubber instead of rice in the paddy fields and the total area converted for rubber is about 4277 hectares. The area under coconut and rubber is about 887 hectares.

Table 18.1

WETLAND DETAILS

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Alathur	Alathur	Other Landuse	1075.41
		Paddy Converted to Built-up Land	20.29
		Paddy Converted to Coconut	11.19
		Paddy Converted to Mixed Crops	73.20
		Virippu+Mundakan	813.22
		Water Body	21.39
		2014.71	
	Erimayur	Other Landuse	1279.52
		Paddy Converted to Banana	22.15
		Paddy Converted to Built-up Land	10.01
		Paddy Converted to Coconut	9.16
		Paddy Converted to Mixed Crops	17.12
		Paddy Converted to Mixed Trees	53.20
		Virippu+Mundakan	1843.98
		Water Body	67.60
	3302.75		
	Kannambra	Other Landuse	1974.12
		Paddy Converted to Banana	54.40
		Paddy Converted to Built-up Land	114.90
		Paddy Converted to Coconut	38.00
		Paddy Converted to Mixed Crops	79.46
		Paddy Converted to Mixed Trees	41.87
		Paddy Converted to Rubber	328.11
		Virippu+Mundakan	566.11
		Water Body	14.47
	3211.43		
	Kavassery	Other Landuse	1522.23
		Paddy Converted to Banana	60.61
		Paddy Converted to Built-up Land	166.79
		Paddy Converted to Coconut	63.70
		Paddy Converted to Mixed Crops	98.90
		Paddy Converted to Mixed Trees	74.51
		Paddy Converted to Rubber	91.42
		Virippu+Mundakan	911.05
	Water Body	95.86	
	3085.08		
	Kizhakkanchery	Other Landuse	8666.65
		Paddy Converted to Banana	8.66
		Paddy Converted to Built-up Land	61.39
		Paddy Converted to Coconut	107.55

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Attappadi	Puthukode	Paddy Converted to Cultivable Waste	8.70
		Paddy Converted to Mixed Crops	15.32
		Paddy Converted to Mixed Trees	127.50
		Paddy Converted to Rubber	350.48
		Reservoir	33.68
		Virippu+Mundakan	1424.72
		Water Body	46.33
			10850.99
		Other Landuse	869.01
		Paddy Converted to Banana	13.70
		Paddy Converted to Built-up Land	156.35
		Paddy Converted to Coconut	36.95
		Paddy Converted to Mixed Crops	23.75
		Paddy Converted to Mixed Trees	13.29
	Paddy Converted to Rubber	144.43	
	Virippu+Mundakan	366.74	
	Water Body	2.51	
		1626.72	
	Tharur	Other Landuse	1507.23
		Paddy Converted to Banana	1.55
		Paddy Converted to Built-up Land	180.04
		Paddy Converted to Coconut	33.93
		Paddy Converted to Cultivable Waste Land/Fallow	68.54
		Paddy Converted to Mixed Crops	163.39
		Paddy Converted to Mixed Trees	315.97
		Paddy Converted to Rubber	202.72
		Virippu+Mundakan	780.63
		Water Body	113.50
			3367.51
	Vadakkanchery	Other Landuse	2009.98
		Paddy Converted to Banana	27.41
		Paddy Converted to Built-up Land	121.71
		Paddy Converted to Coconut	20.06
		Paddy Converted to Mixed Crops	11.37
		Paddy Converted to Mixed Trees	3.99
		Paddy Converted to Rubber	299.11
		Virippu+Mundakan	1105.14
		Water Body	32.79
			3631.55
		31090.74	
	Agali	Other Landuse	15654.59
		Paddy Converted to Mixed Crops	8.39
		Virippu+Mundakan	5.39
Water Body		128.73	
	15797.10		

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Chittur	Pudur	Other Landuse	37318.01
		Paddy Converted to Mixed Crops	28.05
		Virippu+Mundakan	24.95
		Water Body	398.58
			37769.58
	Sholayur	Other Landuse	19463.79
		Water Body	67.58
			19531.38
	Elappally	Other Landuse	2112.84
		Paddy Converted to Banana	5.39
		Paddy Converted to Built-up Land	124.30
		Paddy Converted to Coconut	58.98
		Paddy Converted to Mixed Crops	700.56
		Paddy Converted to Mixed Trees	53.33
		Paddy Converted to Rubber	4.94
		Virippu+Mundakan	1674.23
		Water Body	44.10
			4778.67
	Erthampathy	Other Landuse	3082.26
		Paddy Converted to Banana	25.42
		Paddy Converted to Built-up Land	3.09
		Paddy Converted to Coconut	52.99
		Paddy Converted to Mixed Crops	160.37
		Paddy Converted to Mixed Trees	55.68
		Paddy Converted to Rubber	1.94
		Virippu+Mundakan	258.23
		Water Body	57.41
		3697.39	
	Kozhinjampara	Other Landuse	3015.86
		Paddy Converted to Banana	141.51
		Paddy Converted to Built-up Land	29.14
		Paddy Converted to Coconut	102.56
		Paddy Converted to Cultivable Waste Land/Fallow	4.70
Paddy Converted to Mixed Crops		435.09	
Paddy Converted to Mixed Trees		5.51	
Paddy Converted to Rubber		4.12	
Virippu+Mundakan		694.12	
Water Body		205.76	
	4638.36		
Nallepalli	Other Landuse	1660.04	
	Paddy Converted to Banana	36.42	
	Paddy Converted to Built-up Land	27.87	
	Paddy Converted to Coconut	91.50	

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Kollengode	Perumatty	Paddy Converted to Cultivable Waste Land/Fallow	17.70
		Paddy Converted to Mixed Crops	88.96
		Paddy Converted to Mixed Trees	0.32
		Paddy Converted to Rubber	22.64
		Virippu+Mundakan	1758.47
		Water Body	137.16
			3841.08
		Other Landuse	3066.69
		Paddy Converted to Banana	61.34
		Paddy Converted to Built-up Land	109.94
		Paddy Converted to Coconut	240.68
		Paddy Converted to Coconut + Arecanut	9.05
		Paddy Converted to Cultivable Waste	42.25
		Paddy Converted to Mixed Crops	87.84
		Paddy Converted to Mixed Trees	340.51
		Paddy Converted to Rubber	25.65
		Reservoir	78.96
	Virippu+Mundakan	1803.98	
	Water Body	3.43	
		5870.32	
	Polppully	Other Landuse	688.88
		Paddy Converted to Built-up Land	0.38
		Paddy Converted to Mixed Crops	2.33
		Paddy Converted to Rubber	15.72
		Virippu+Mundakan	1241.39
		Water Body	26.04
		1974.75	
	Vadakarapathy	Other Landuse	4008.76
		Paddy Converted to Banana	105.08
		Paddy Converted to Coconut	5.63
		Paddy Converted to Mixed Trees	0.25
		Virippu+Mundakan	698.20
		Water Body	72.73
	4971.77		
	29772.33		
Kollengode	Koduvayur	Other Landuse	987.24
		Paddy Converted to Built-up Land	4.64
		Virippu+Mundakan	1282.72
		Water Body	0.99
	2275.59		

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
	Kollengode	Other Landuse	1705.18
		Paddy Converted to Banana	6.70
		Paddy Converted to Built-up Land	14.66
		Paddy Converted to Coconut	87.73
		Paddy Converted to Coconut + Arecanut	41.27
		Paddy Converted to Cultivable Waste Land/Fallow	197.90
		Paddy Converted to Mixed Crops	86.87
		Paddy Converted to Rubber	67.62
		Virippu+Mundakan	1448.61
		Water Body	6.62
			3663.18
	Muthalamada	Other Landuse	5282.87
		Paddy Converted to Banana	20.80
		Paddy Converted to Built-up Land	25.25
		Paddy Converted to Coconut	112.00
		Paddy Converted to Coconut + Arecanut	19.76
		Paddy Converted to Cultivable Waste Land/Fallow	17.14
		Paddy Converted to Mixed Crops	97.05
		Paddy Converted to Mixed Trees	174.98
		Paddy Converted to Rubber	173.57
		Reservoir	275.80
		Virippu+Mundakan	1322.46
		Water Body	51.68
			7573.35
	Pattencherry	Other Landuse	1483.70
		Paddy Converted to Banana	4.15
		Paddy Converted to Built-up Land	25.06
		Paddy Converted to Coconut	75.92
		Paddy Converted to Cultivable Waste Land/Fallow	6.68
		Paddy Converted to Mixed Crops	66.67
		Paddy Converted to Mixed Trees	50.25
		Paddy Converted to Rubber	44.98
		Reservoir	1.39
		Virippu+Mundakan	1529.52
		Water Body	1.30
			3289.61
	Peruvambu	Other Landuse	661.64
		Paddy Converted to Coconut	0.01
		Paddy Converted to Mixed Crops	9.82
		Virippu+Mundakan	1191.25
		Water Body	48.51
			1911.23
	Puthunagaram	Other Landuse	465.58
		Paddy Converted to Built-up Land	17.89

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Kuzhalmannam	Vadavannur	Virippu+Mundakan	393.64
			877.11
		Other Landuse	651.32
		Paddy Converted to Banana	8.44
		Paddy Converted to Built-up Land	11.01
		Paddy Converted to Mixed Crops	14.59
		Virippu+Mundakan	1002.86
		Water Body	39.81
		1728.02	
		21318.09	
	Kannadi	Other Landuse	510.21
		Paddy Converted to Coconut	34.78
		Paddy Converted to Cultivable Waste Land/Fallow	3.46
		Paddy Converted to Mixed Crops	22.70
		Paddy Converted to Mixed Trees	6.62
		Virippu+Mundakan	1721.51
		Water Body	9.79
			2309.07
	Kottayi	Other Landuse	971.62
		Paddy Converted to Banana	101.47
		Paddy Converted to Coconut	37.47
		Paddy Converted to Mixed Crops	111.19
		Virippu+Mundakan	782.02
		2003.77	
	Kuthannoor	Other Landuse	1893.89
		Paddy Converted to Mixed Crops	8.20
		Paddy Converted to Mixed Trees	291.59
		Paddy Converted to Rubber	25.90
		Virippu+Mundakan	1294.79
		3514.37	
	Kuzhalmannam	Other Landuse	1167.69
		Paddy Converted to Built-up Land	40.04
		Paddy Converted to Coconut	17.10
Paddy Converted to Mixed Crops		7.33	
Paddy Converted to Mixed Trees		27.05	
Virippu+Mundakan		1884.02	
	3143.23		
Mathur	Other Landuse	939.18	
	Paddy Converted to Banana	20.60	
	Paddy Converted to Built-up Land	42.09	
	Paddy Converted to Coconut	10.61	
	Paddy Converted to Mixed Crops	21.24	
	Virippu+Mundakan	1442.61	
	Water Body	7.75	
	2484.08		

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)	
Malampuzha	Peringottukuriissi	Other Landuse	1610.23	
		Paddy Converted to Banana	48.62	
		Paddy Converted to Built-up Land	198.19	
		Paddy Converted to Coconut	30.45	
		Paddy Converted to Coconut + Arecanut	20.29	
		Paddy Converted to Coconut+Rubber	31.60	
		Paddy Converted to Mixed Crops	178.94	
		Paddy Converted to Mixed Trees	153.17	
		Paddy Converted to Rubber	61.98	
		Virippu+Mundakan	711.28	
		Water Body	46.10	
			3090.83	
		Thenkurissi	Other Landuse	1116.41
	Paddy Converted to Built-up Land		28.65	
	Virippu+Mundakan		1889.61	
			3034.66	
	Akathethara	Other Landuse	1156.12	
		Paddy Converted to Banana	38.37	
		Paddy Converted to Built-up Land	404.81	
		Paddy Converted to Cultivable Waste	27.22	
		Paddy Converted to Mixed Crops	32.64	
		Paddy Converted to Mixed Trees	109.62	
		Virippu+Mundakan	132.09	
		Water Body	19.67	
			1920.54	
		Kodumbu	Other Landuse	688.92
			Paddy Converted to Banana	16.13
			Paddy Converted to Built-up Land	133.42
			Paddy Converted to Coconut	40.36
	Paddy Converted to Coconut + Arecanut		2.61	
	Paddy Converted to Cultivable Waste		1.01	
	Paddy Converted to Mixed Crops		31.96	
	Paddy Converted to Rubber		36.42	
	Virippu+Mundakan		1246.95	
	Water Body		128.22	
		2325.98		
	Malampuzha	Other Landuse	17012.57	
		Paddy Converted to Banana	187.27	
		Paddy Converted to Built-up Land	125.33	

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
		Paddy Converted to Coconut	54.83
		Paddy Converted to Coconut + Arecanut	1.23
		Paddy Converted to Cultivable Waste	9.46
		Paddy Converted to Mixed Crops	63.45
		Paddy Converted to Mixed Trees	124.08
		Paddy Converted to Rubber	36.92
		Reservoir	1756.30
		Virippu+Mundakan	170.34
		Water Body	137.66
			19679.43
	Marutharoad	Other Landuse	687.44
		Paddy Converted to Banana	33.69
		Paddy Converted to Built-up Land	211.58
		Paddy Converted to Coconut	5.78
		Virippu+Mundakan	619.13
		Water Body	7.27
			1564.89
	Puthupariyaram	Other Landuse	1750.54
		Paddy Converted to Banana	76.84
		Paddy Converted to Built-up Land	303.06
		Paddy Converted to Coconut	28.36
		Paddy Converted to Coconut + Arecanut	41.63
		Paddy Converted to Cultivable Waste Land/Fallow	0.01
		Paddy Converted to Mixed Crops	28.52
		Paddy Converted to Mixed Trees	58.96
		Paddy Converted to Rubber	30.60
		Virippu+Mundakan	542.68
		Water Body	68.12
			2929.30
	Puthussery	Other Landuse	7557.72
		Paddy Converted to Banana	211.56
		Paddy Converted to Built-up Land	244.47
		Paddy Converted to Coconut	308.99
		Paddy Converted to Coconut + Arecanut	66.54
		Paddy Converted to Cultivable Waste Land/Fallow	42.02
		Paddy Converted to Mixed Crops	395.84
		Paddy Converted to Mixed Trees	394.14
		Paddy Converted to Rubber	18.17
		Reservoir	55.47
		Virippu+Mundakan	1767.39
		Water Body	265.42
			11327.74
			39747.88

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Mannarkad	Alanallur	Other Landuse	4824.57
		Paddy Converted to Banana	204.59
		Paddy Converted to Built-up Land	89.47
		Paddy Converted to Coconut	56.63
		Paddy Converted to Coconut + Arecanut	73.93
		Paddy Converted to Coconut+Rubber	74.13
		Paddy Converted to Mixed Crops	30.12
		Paddy Converted to Mixed Trees	112.91
		Paddy Converted to Rubber	249.53
		Virippu+Mundakan	171.59
		Water Body	57.41
			5944.86
		Kanjirapuzha	Other Landuse
	Paddy Converted to Banana		29.46
	Paddy Converted to Coconut		45.28
	Paddy Converted to Coconut + Arecanut		268.46
	Paddy Converted to Coconut+Rubber		9.81
	Paddy Converted to Mixed Trees		3.26
	Paddy Converted to Rubber		270.55
	Punja		14.37
	Reservoir		304.35
	Virippu+Mundakan		167.25
	Water Body		31.71
			5381.80
	Karimba		Other Landuse
		Paddy Converted to Banana	12.13
		Paddy Converted to Coconut	4.19
		Paddy Converted to Coconut + Arecanut	279.25
		Paddy Converted to Coconut+Rubber	36.67
		Paddy Converted to Mixed Crops	68.34
		Paddy Converted to Mixed Trees	191.59
		Paddy Converted to Rubber	205.89
		Virippu+Mundakan	189.16
		Water Body	10.78
		5816.07	
	Kottopadam	Other Landuse	6207.45
		Paddy Converted to Banana	160.76
		Paddy Converted to Built-up Land	32.27
		Paddy Converted to Coconut	76.50
		Paddy Converted to Coconut + Arecanut	185.17

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
		Paddy Converted to Mixed Crops	205.84
		Paddy Converted to Mixed Trees	318.51
		Paddy Converted to Rubber	11.45
		Virippu+Mundakan	467.99
		Water Body	19.28
			7685.22
	Kumaramputhur	Other Landuse	2670.17
		Paddy Converted to Banana	44.93
		Paddy Converted to Built-up Land	20.64
		Paddy Converted to Coconut	48.33
		Paddy Converted to Coconut + Arecanut	123.12
		Paddy Converted to Mixed Crops	80.72
		Paddy Converted to Mixed Trees	63.19
		Paddy Converted to Rubber	78.09
		Virippu+Mundakan	326.48
		Water Body	71.32
			3526.98
	Mannarkad	Other Landuse	874.24
		Paddy Converted to Banana	2.68
		Paddy Converted to Built-up Land	28.53
		Paddy Converted to Coconut	25.33
		Paddy Converted to Coconut + Arecanut	73.41
		Paddy Converted to Coconut+Rubber	16.71
		Paddy Converted to Mixed Crops	12.04
		Paddy Converted to Mixed Trees	0.70
		Paddy Converted to Rubber	23.53
		Virippu+Mundakan	89.38
		Water Body	30.28
			1176.83
	Thachampara	Other Landuse	4665.67
		Paddy Converted to Coconut	32.72
		Paddy Converted to Coconut + Arecanut	47.88
		Paddy Converted to Coconut+Rubber	56.37
		Paddy Converted to Mixed Crops	4.96
		Paddy Converted to Mixed Trees	51.95
		Paddy Converted to Rubber	120.67
		Reservoir	19.29
		Virippu+Mundakan	72.83
		Water Body	15.42
			5087.77
	Thachanattukara	Other Landuse	2865.96
		Paddy Converted to Banana	118.87
		Paddy Converted to Built-up Land	60.73
		Paddy Converted to Coconut	24.06
		Paddy Converted to Coconut + Arecanut	31.61
		Paddy Converted to Coconut+Rubber	20.31
		Paddy Converted to Mixed Crops	46.74
		Paddy Converted to Rubber	43.37

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)	
Municipality	Thenkara	Virippu+Mundakan	290.33	
		Water Body	57.32	
			3559.30	
		Other Landuse	4032.44	
		Paddy Converted to Banana	15.25	
		Paddy Converted to Built-up Land	71.89	
		Paddy Converted to Coconut	256.51	
		Paddy Converted to Coconut + Arecanut	189.66	
		Paddy Converted to Coconut+Rubber	122.07	
		Paddy Converted to Mixed Trees	36.60	
		Paddy Converted to Rubber	218.77	
		Punja	0.99	
		Virippu+Mundakan	589.87	
		Virippu+Mundakan+Punja	106.64	
	Water Body	40.47		
		5681.17		
		43860.00		
	Nenmara		Other Landuse	6344.83
			Paddy Converted to Banana	93.08
			Paddy Converted to Built-up Land	868.72
			Paddy Converted to Coconut	101.80
			Paddy Converted to Coconut + Arecanut	9.05
			Paddy Converted to Coconut+Rubber	7.79
			Paddy Converted to Cultivable Waste	36.71
			Paddy Converted to Mixed Crops	120.84
			Paddy Converted to Mixed Trees	7.56
			Paddy Converted to Rubber	16.53
Virippu+Mundakan		2472.17		
Water Body		452.67		
		10531.75		
Ayiloor		Other Landuse	2267.72	
		Paddy Converted to Banana	107.03	
		Paddy Converted to Built-up Land	127.39	
		Paddy Converted to Coconut	256.16	
		Paddy Converted to Coconut+Rubber	121.92	
		Paddy Converted to Cultivable Waste	3.48	
		Paddy Converted to Mixed Crops	592.12	
	Paddy Converted to Mixed Trees	311.55		
	Paddy Converted to Rubber	34.93		
	Virippu+Mundakan	285.84		
	4108.14			
Elevanchery	Other Landuse	1755.58		
	Paddy Converted to Built-up Land	29.47		
	Paddy Converted to Coconut	6.60		
	Paddy Converted to Cultivable Waste	2.50		
	Paddy Converted to Mixed Crops	1.57		
	Paddy Converted to Rubber	5.97		
	Virippu+Mundakan	1528.58		
	Water Body	7.36		
	3337.63			

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
	Melarkkode	Other Landuse	1134.55
		Paddy Converted to Built-up Land	57.56
		Paddy Converted to Coconut	15.53
		Paddy Converted to Coconut+Rubber	57.98
		Paddy Converted to Mixed Crops	135.12
		Paddy Converted to Mixed Trees	32.24
		Paddy Converted to Rubber	34.83
		Virippu+Mundakan	1087.98
		Water Body	21.80
		2577.60	
	Nelliampathy	Other Landuse	54090.97
		Paddy Converted to Built-up Land	1.51
		Paddy Converted to Coconut + Arecanut	1.96
		Paddy Converted to Mixed Crops	0.57
		Paddy Converted to Mixed Trees	12.49
		Virippu+Mundakan	45.47
		Water Body	45.47
		56530.50	
	Nenmara	Other Landuse	1331.51
		Paddy Converted to Banana	115.33
		Paddy Converted to Built-up Land	224.81
		Paddy Converted to Coconut	50.92
		Paddy Converted to Coconut + Arecanut	123.66
		Paddy Converted to Cultivable Waste Land/Fallow	104.70
		Paddy Converted to Mixed Crops	447.65
		Paddy Converted to Mixed Trees	349.33
		Paddy Converted to Rubber	215.35
		Reservoir	135.11
		Virippu+Mundakan	383.82
		3482.18	
	Pallassana	Other Landuse	1027.81
		Paddy Converted to Built-up Land	7.56
		Paddy Converted to Coconut	16.18
		Paddy Converted to Mixed Crops	105.35
		Paddy Converted to Mixed Trees	14.33
		Virippu+Mundakan	1669.53
		Water Body	88.13
		2928.89	
	Vandazhi	Other Landuse	4303.17
		Paddy Converted to Built-up Land	47.89
		Paddy Converted to Coconut	54.60
		Paddy Converted to Coconut+Rubber	203.79
		Paddy Converted to Mixed Crops	82.32
		Paddy Converted to Mixed Trees	84.27
		Paddy Converted to Rubber	35.27
		Reservoir	264.63

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)	
Ottappalam		Virippu+Mundakan	835.56	
		Water Body	39.34	
			5950.83	
			78915.76	
	Ambalapara	Paddy Converted to Banana	74.43	
		Paddy Converted to Built-up Land	12.31	
		Paddy Converted to Coconut	37.59	
		Paddy Converted to Coconut + Arecanut	30.50	
		Paddy Converted to Coconut+Rubber	15.90	
		Paddy Converted to Cultivable Waste Land/Fallow	5.65	
		Paddy Converted to Mixed Crops	67.53	
		Paddy Converted to Mixed Trees	2.75	
		Paddy Converted to Rubber	53.19	
		Punja	1.13	
		Virippu+Mundakan	901.55	
		Water Body	32.13	
			5100.84	
		Anaganadi	Other Landuse	1453.41
			Paddy Converted to Banana	2.82
			Paddy Converted to Built-up Land	19.40
			Paddy Converted to Coconut	20.59
	Paddy Converted to Coconut + Arecanut		2.59	
	Paddy Converted to Cultivable Waste Land/Fallow		1.88	
	Paddy Converted to Mixed Crops		9.14	
	Paddy Converted to Rubber		26.38	
	Virippu+Mundakan		461.97	
	Water Body		2.58	
		2000.76		
	Chalavara	Other Landuse	2308.70	
		Paddy Converted to Banana	5.67	
		Paddy Converted to Built-up Land	26.34	
		Paddy Converted to Coconut	7.08	
		Paddy Converted to Coconut + Arecanut	2.17	
		Paddy Converted to Cultivable Waste Land/Fallow	1.48	
		Paddy Converted to Mixed Crops	35.42	
		Paddy Converted to Rubber	6.86	
		Virippu+Mundakan	733.71	
		Water Body	4.75	
		3132.17		
	Lakkidi Peroor	Other Landuse	1969.66	
		Paddy Converted to Banana	21.49	
		Paddy Converted to Built-up Land	11.54	
		Paddy Converted to Coconut	88.77	

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
		Paddy Converted to Coconut + Arecanut	39.09
		Paddy Converted to Mixed Crops	80.34
		Paddy Converted to Rubber	15.15
		Punja	17.98
		Virippu+Mundakan	686.06
		Water Body	102.10
		3032.17	
	Nellaya	Other Landuse	1730.72
		Paddy Converted to Banana	29.39
		Paddy Converted to Built-up Land	31.87
		Paddy Converted to Coconut	22.44
		Paddy Converted to Mixed Crops	22.40
		Paddy Converted to Rubber	13.93
		Virippu+Mundakan	494.50
		Virippu+Mundakan+Punja	116.63
		Water Body	59.51
		2521.39	
	Thrikkaderi	Other Landuse	2289.80
		Paddy Converted to Banana	25.43
		Paddy Converted to Built-up Land	38.15
		Paddy Converted to Coconut	19.10
		Paddy Converted to Coconut + Arecanut	22.34
		Paddy Converted to Cultivable Waste Land/Fallow	1.40
		Paddy Converted to Mixed Crops	30.23
		Paddy Converted to Rubber	8.71
		Virippu+Mundakan	439.98
		Water Body	7.68
		2882.83	
	Vallapuzha	Other Landuse	1643.87
		Paddy Converted to Banana	5.03
		Paddy Converted to Built-up Land	22.82
		Paddy Converted to Coconut	17.50
		Paddy Converted to Mixed Crops	27.79
		Paddy Converted to Rubber	6.96
		Virippu+Mundakan	462.93
		Virippu+Mundakan+Punja	0.72
		2187.63	
	Vaniyamkulam	Other Landuse	2394.52
		Paddy Converted to Banana	29.52
		Paddy Converted to Built-up Land	30.80
		Paddy Converted to Coconut	12.08
		Paddy Converted to Coconut + Arecanut	5.11
		Paddy Converted to Coconut+Rubber	7.15
		Paddy Converted to Cultivable Waste Land/Fallow	13.03
		Paddy Converted to Mixed Crops	91.79

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Palakkad	Keralassery	Paddy Converted to Rubber	5.61
		Virippu+Mundakan	669.48
		Water Body	200.02
			3459.10
			24316.89
		Other Landuse	1865.67
		Paddy Converted to Banana	39.90
		Paddy Converted to Built-up Land	13.20
		Paddy Converted to Coconut	34.07
		Paddy Converted to Coconut + Arecanut	40.36
	Paddy Converted to Cultivable Waste Land/Fallow	0.99	
	Paddy Converted to Mixed Crops	9.22	
	Paddy Converted to Rubber	6.77	
	Virippu+Mundakan	458.40	
	Water Body	1.47	
		2470.05	
	Kongadu	Other Landuse	2608.57
		Paddy Converted to Banana	45.04
		Paddy Converted to Built-up Land	57.78
		Paddy Converted to Coconut	26.14
		Paddy Converted to Coconut + Arecanut	89.52
		Paddy Converted to Mixed Crops	56.41
		Paddy Converted to Mixed Trees	69.46
		Paddy Converted to Rubber	110.85
		Virippu+Mundakan	583.56
		Water Body	0.47
		3647.80	
	Mankara	Other Landuse	1171.28
		Paddy Converted to Banana	64.85
		Paddy Converted to Built-up Land	130.60
		Paddy Converted to Coconut	12.84
		Paddy Converted to Coconut + Arecanut	18.55
		Paddy Converted to Mixed Crops	58.35
		Paddy Converted to Rubber	0.00
		Virippu+Mundakan	424.45
	Water Body	111.18	
		1992.09	
Mannur	Other Landuse	1269.82	
	Paddy Converted to Banana	100.64	
	Paddy Converted to Built-up Land	14.69	
	Paddy Converted to Coconut	10.62	
	Paddy Converted to Coconut + Arecanut	14.00	
	Paddy Converted to Coconut+Rubber	2.47	
	Paddy Converted to Mixed Crops	8.60	
	Paddy Converted to Rubber	10.81	

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Pattambi	Mundur	Virippu+Mundakan	331.63
		Water Body	1.37
			1764.65
		Other Landuse	2465.07
		Paddy Converted to Banana	54.37
		Paddy Converted to Built-up Land	146.67
		Paddy Converted to Coconut	78.23
		Paddy Converted to Coconut + Arecanut	55.12
		Paddy Converted to Mixed Crops	18.56
		Paddy Converted to Mixed Trees	267.36
	Parali	Paddy Converted to Rubber	30.62
		Virippu+Mundakan	473.87
		Water Body	0.88
			3590.75
		Other Landuse	1638.89
		Paddy Converted to Banana	39.34
		Paddy Converted to Built-up Land	260.72
		Paddy Converted to Coconut	33.33
		Paddy Converted to Coconut + Arecanut	44.65
		Paddy Converted to Mixed Crops	116.42
	Pirayiri	Paddy Converted to Mixed Trees	76.45
		Paddy Converted to Rubber	49.28
		Virippu+Mundakan	538.31
		Water Body	174.40
			2971.78
		Other Landuse	784.57
		Paddy Converted to Banana	47.38
		Paddy Converted to Built-up Land	295.77
		Paddy Converted to Coconut	40.45
		Paddy Converted to Mixed Crops	26.81
	Koppam	Virippu+Mundakan	567.99
		Water Body	119.50
			1882.46
		Other Landuse	1983.75
		Paddy Converted to Banana	2.57
		Paddy Converted to Built-up Land	11.70
		Paddy Converted to Coconut	5.67
		Paddy Converted to Coconut + Arecanut	5.94
		Paddy Converted to Cultivable Waste Land/Fallow	7.36
		Paddy Converted to Mixed Crops	36.31
	Paddy Converted to Rubber	8.77	
	Virippu+Mundakan	564.79	
	Water Body	0.23	
		2627.11	

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
	Kulukkallur	Other Landuse	1530.66
		Paddy Converted to Built-up Land	21.83
		Paddy Converted to Coconut + Arecanut	24.63
		Paddy Converted to Mixed Crops	32.17
		Paddy Converted to Rubber	18.06
		Virippu+Mundakan	337.48
		Water Body	66.58
			2073.90
	Muthuthala	Other Landuse	1167.46
		Paddy Converted to Banana	0.42
		Paddy Converted to Built-up Land	76.16
		Paddy Converted to Coconut	39.57
		Paddy Converted to Coconut + Arecanut	10.80
		Paddy Converted to Cultivable Waste Land/Fallow	0.95
		Paddy Converted to Mixed Crops	51.11
		Paddy Converted to Rubber	14.59
		Virippu+Mundakan	469.65
		Water Body	93.00
			1923.72
	Ongallur	Other Landuse	2277.16
		Paddy Converted to Banana	41.54
		Paddy Converted to Built-up Land	23.11
		Paddy Converted to Coconut	35.20
		Paddy Converted to Coconut + Arecanut	11.51
		Paddy Converted to Mixed Crops	38.77
		Paddy Converted to Rubber	4.32
		Virippu+Mundakan	643.75
		Water Body	150.83
			3226.19
	Parudur	Other Landuse	1067.20
		Paddy Converted to Banana	8.84
		Paddy Converted to Built-up Land	12.89
		Paddy Converted to Coconut	20.90
		Paddy Converted to Coconut + Arecanut	10.24
		Paddy Converted to Cultivable Waste Land/Fallow	30.21
		Paddy Converted to Mixed Crops	94.21
		Paddy Converted to Rubber	1.71
		Virippu+Mundakan	571.31
		Water Body	275.30
			2092.80
	Pattambi	Other Landuse	1118.59
		Paddy Converted to Banana	12.09
		Paddy Converted to Built-up Land	38.59
		Paddy Converted to Coconut	43.36
		Paddy Converted to Cultivable Waste Land/Fallow	1.61
		Paddy Converted to Mixed Crops	1.65
		Paddy Converted to Rubber	8.78

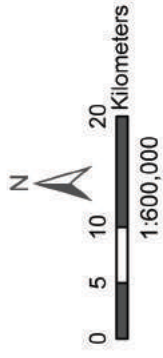
BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
Sreekrishnapuram	Thiruvengapura	Virippu+Mundakan	342.17
		Virippu+Mundakan+Punja	0.33
		Water Body	130.26
			1697.43
		Other Landuse	1440.39
		Paddy Converted to Banana	3.87
		Paddy Converted to Built-up Land	12.98
		Paddy Converted to Coconut	21.77
		Paddy Converted to Coconut + Arecanut	5.43
		Paddy Converted to Cultivable Waste Land/Fallow	3.60
		Paddy Converted to Mixed Crops	47.64
		Paddy Converted to Rubber	18.29
		Punja	0.94
	Vilayur	Virippu+Mundakan	398.88
		Water Body	63.47
			2017.27
		Other Landuse	1310.90
		Paddy Converted to Banana	3.56
		Paddy Converted to Built-up Land	23.16
		Paddy Converted to Coconut	24.01
		Paddy Converted to Mixed Crops	44.69
		Paddy Converted to Rubber	11.38
		Punja	3.32
		Virippu+Mundakan	229.94
		Virippu+Mundakan+Punja	50.26
		Water Body	82.87
		1784.09	
		17442.52	
	Cherplassery	Other Landuse	2096.28
		Paddy Converted to Banana	85.74
		Paddy Converted to Built-up Land	56.06
		Paddy Converted to Coconut	53.05
		Paddy Converted to Coconut + Arecanut	25.39
		Paddy Converted to Cultivable Waste Land/Fallow	2.50
		Paddy Converted to Mixed Crops	85.98
		Paddy Converted to Rubber	11.02
		Punja	97.87
		Virippu+Mundakan	365.85
		Water Body	105.82
			2985.57
		Kadampazhipuram	Other Landuse
Paddy Converted to Banana			57.20
Paddy Converted to Built-up Land			14.03
Paddy Converted to Coconut	23.06		

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
		Paddy Converted to Coconut + Arecanut	9.16
		Paddy Converted to Coconut+Rubber	4.64
		Paddy Converted to Mixed Crops	45.19
		Paddy Converted to Mixed Trees	18.08
		Paddy Converted to Rubber	49.01
		Virippu+Mundakan	790.39
		Water Body	6.81
		3864.46	
	Karakurissi	Other Landuse	2085.63
		Paddy Converted to Banana	6.83
		Paddy Converted to Built-up Land	0.83
		Paddy Converted to Coconut	7.01
		Paddy Converted to Coconut + Arecanut	269.69
		Paddy Converted to Coconut+Rubber	68.75
		Paddy Converted to Mixed Crops	23.10
		Paddy Converted to Mixed Trees	60.02
		Paddy Converted to Rubber	55.78
		Virippu+Mundakan	219.81
		Water Body	61.63
		2859.07	
	Karimpuzha	Other Landuse	3697.85
		Paddy Converted to Banana	109.56
		Paddy Converted to Built-up Land	27.33
		Paddy Converted to Coconut	84.10
		Paddy Converted to Coconut + Arecanut	39.28
		Paddy Converted to Coconut+Rubber	4.14
		Paddy Converted to Mixed Crops	90.51
		Paddy Converted to Rubber	22.05
		Virippu+Mundakan	563.99
		Water Body	168.72
		4807.54	
	Pookkottukavu	Other Landuse	1616.61
		Paddy Converted to Banana	44.82
		Paddy Converted to Built-up Land	11.97
		Paddy Converted to Coconut	1.59
		Paddy Converted to Mixed Crops	33.39
		Paddy Converted to Rubber	13.47
		Virippu+Mundakan	414.76
		2136.61	
	Sreekrishnapuram	Other Landuse	2396.19
		Paddy Converted to Banana	21.00
		Paddy Converted to Coconut	11.30
		Paddy Converted to Coconut+Rubber	14.00
		Paddy Converted to Cultivable Waste Land/Fallow	2.16
		Paddy Converted to Mixed Crops	36.38
		Paddy Converted to Rubber	10.32

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)	
Thrithala	Vellinezhi	Virippu+Mundakan	541.40	
		Water Body	10.06	
			3042.80	
		Other Landuse	2097.85	
		Paddy Converted to Banana	39.98	
		Paddy Converted to Built-up Land	17.68	
		Paddy Converted to Coconut	37.94	
		Paddy Converted to Coconut + Arecanut	9.78	
		Paddy Converted to Coconut+Rubber	6.27	
		Paddy Converted to Mixed Crops	28.54	
		Paddy Converted to Rubber	50.60	
		Virippu+Mundakan	375.19	
		Water Body	37.75	
			2701.57	
		22397.61		
	Anakara	Mundakan+Punja	2.57	
		Other Landuse	1308.25	
		Paddy Converted to Banana	16.77	
		Paddy Converted to Built-up Land	21.34	
		Paddy Converted to Coconut	10.62	
		Paddy Converted to Cultivable Waste Land/Fallow	5.64	
		Paddy Converted to Mixed Crops	154.60	
		Paddy Converted to Rubber	7.52	
		Punja	21.81	
		Virippu+Mundakan	405.23	
		Water Body	147.16	
			2101.51	
		Chalissery	Mundakan	1.77
			Other Landuse	1400.82
	Paddy Converted to Banana		15.98	
	Paddy Converted to Coconut		3.76	
	Paddy Converted to Cultivable Waste Land/Fallow		0.85	
	Paddy Converted to Mixed Crops		25.71	
	Virippu+Mundakan		510.03	
			1958.92	
	Kappur	Mundakan	69.96	
		Other Landuse	1806.17	
		Paddy Converted to Banana	5.57	
		Paddy Converted to Built-up Land	7.83	
		Paddy Converted to Coconut	5.55	
		Paddy Converted to Coconut + Arecanut	5.73	
		Paddy Converted to Mixed Crops	36.38	
Paddy Converted to Mixed Trees		1.26		
Paddy Converted to Rubber	0.24			

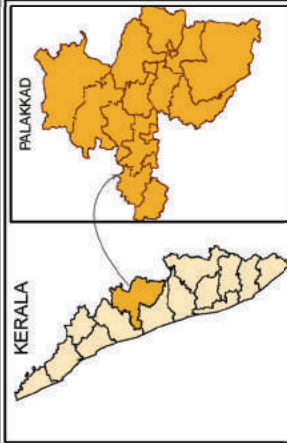
BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
		Virippu	1.36
		Virippu+Mundakan	426.40
		2366.45	
	Nagalassery	Mundakan	6.58
		Other Landuse	1879.87
		Paddy Converted to Banana	29.97
		Paddy Converted to Built-up Land	11.56
		Paddy Converted to Coconut	39.23
		Paddy Converted to Cultivable Waste	22.56
		Paddy Converted to Garden Land	13.95
		Paddy Converted to Mixed Crops	73.60
		Paddy Converted to Rubber	16.89
		Virippu+Mundakan	587.09
		Water Body	0.94
		2682.22	
	Pattithara	Mundakan	3.93
		Other Landuse	1864.69
		Paddy Converted to Banana	47.31
		Paddy Converted to Built-up Land	18.98
		Paddy Converted to Coconut	17.92
		Paddy Converted to Coconut + Arecanut	14.63
		Paddy Converted to Cultivable Waste	2.44
		Land/Fallow	
		Paddy Converted to Mixed Crops	82.27
		Paddy Converted to Rubber	17.47
		Punja	174.47
		Virippu+Mundakan	337.11
		Virippu+Mundakan+Punja	72.57
		Water Body	79.52
		2733.31	
	Thirumittakode	Other Landuse	2234.00
		Paddy Converted to Banana	12.01
		Paddy Converted to Built-up Land	14.45
		Paddy Converted to Coconut	41.24
		Paddy Converted to Coconut + Arecanut	4.35
		Paddy Converted to Coconut+Rubber	4.48
		Paddy Converted to Cultivable Waste	19.28
		Land/Fallow	
		Paddy Converted to Mixed Crops	86.79
		Paddy Converted to Rubber	37.66
		Punja	4.79
		Virippu+Mundakan	230.82
		Virippu+Mundakan+Punja	551.44
		Water Body	2.90
		3244.22	
	Thrithala	Other Landuse	1245.17
		Paddy Converted to Banana	57.04
		Paddy Converted to Built-up Land	39.36
		Paddy Converted to Coconut	25.75

BLOCK	PANCHAYATH	LANDUSE	Area in (Ha)
		Paddy Converted to Cultivable Waste Land/Fallow	4.42
		Paddy Converted to Garden Land	23.24
		Paddy Converted to Mixed Crops	91.66
		Paddy Converted to Rubber	4.37
		Punja	0.10
		Virippu+Mundakan	427.19
		Virippu+Mundakan+Punja	3.28
		Water Body	207.75
			2129.31
			17215.93
		District Total	448000.00

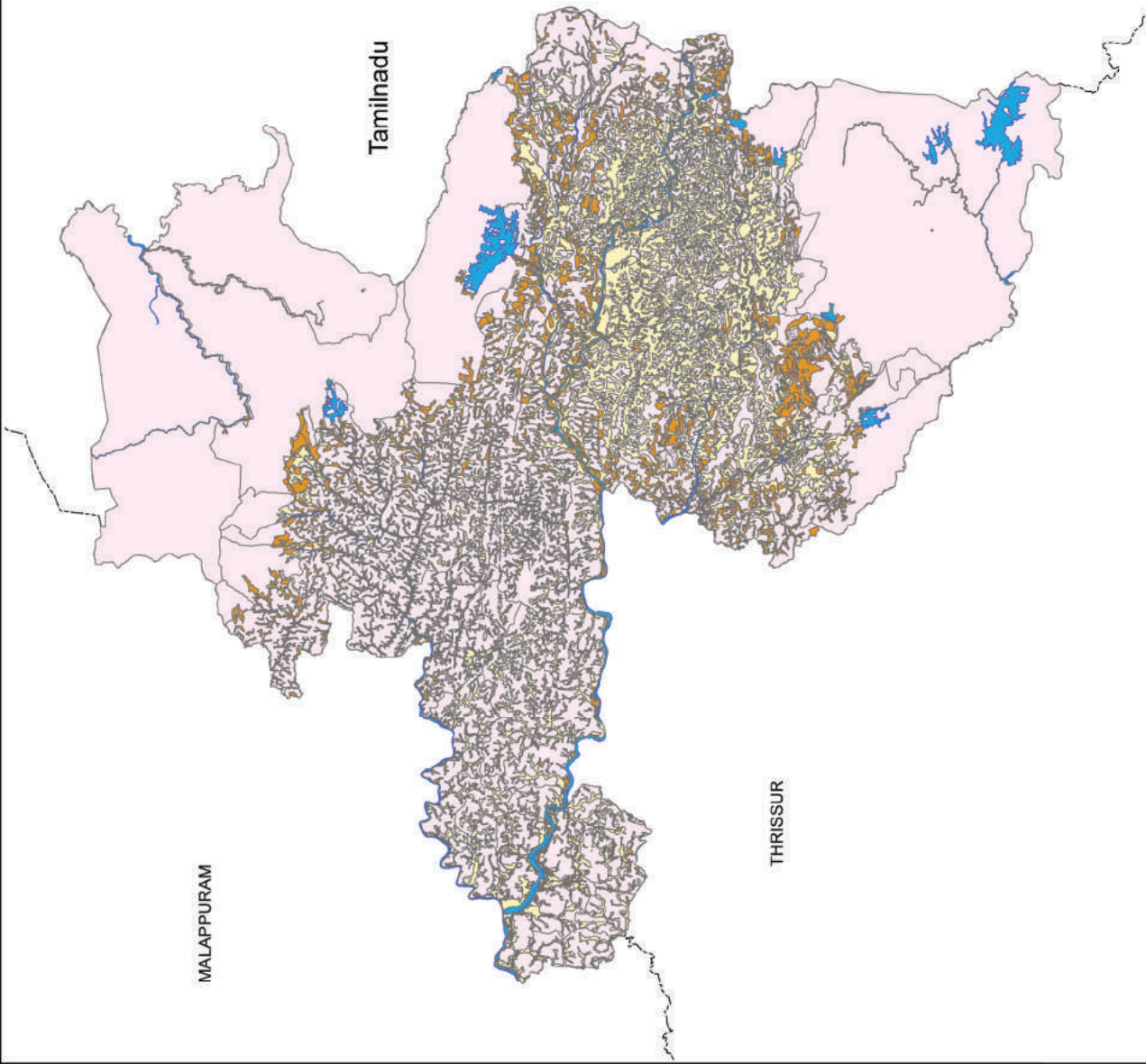


**WET LANDS
PALAKKAD DISTRICT**

- LANDUSE**
- Paddy
 - Other Landuse
 - Paddy Converted to Agriculture Land
 - Paddy Converted to Cultivable Waste Land/Fallow
 - Water Body



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:

- 01 Land with dense scrub
- 02 Land with open scrub
- 03 Waterlogged - permanent
- 04 Waterlogged - seasonal
- 05 Scrub dominated forest
- 06 Degraded pastures/grazing land
- 07 Sands - riverine
- 08 Coastal sands
- 09 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 within the framework of NNRMS specified standards form the primary input for updating of wastelands. Multi – temporal data sets are used for the updation of wastelands 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 ground truth 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 acquired 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 Spatial Framework defined for NNRMS standards the entire state is divided 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 divided 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 eight 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 cover.

3. Waterlogged / marshy land: - Waterlogged land is that land where the water is at/or near the surface for the most part of the year. Marsh is a land, which gets permanently or periodically inundated by water and is characterized by hydrophytic vegetation, which includes water hyacinth and reeds.

Depending on the duration of water logging seasonality, two sub classes are delineated.

a. Waterlogged – permanent :- These are waterlogged areas where the waterlogging conditions prevail during most part of the year. These areas are mostly located in low-lying areas.

b. Waterlogged – seasonal :- seasonally waterlogged areas are those where the waterlogging condition prevail usually during the monsoon period. These lands are mostly located in plain areas associated with the drainage congestion.

4. 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.

5. 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.

6. 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.

7. 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.

8. 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 wastelands.

Area and percentage to total of each category of wasteland

No.	Wasteland Categories	Area in sq.km	% to total geographical area	% to total wastelands
1	Land with Dense Scrub	33.64	0.75	7.16
2	Land with Open Scrub	131.79	2.94	28.06
3	Waterlogged - Seasonal	2.64	0.06	0.56
4	Scrub dominated forest	190.69	4.25	40.60
5	Degraded pastures / grazing land	9.06	0.20	1.93
6	Sands - Riverine	9.47	0.21	2.02
7	Mining wastelands	2.77	0.06	0.59
8	Barren rocky area	89.64	2.00	19.08
	Total	469.70	10.48	100.00

1. Scrub dominated forest:- Occurring over 190.69 sq km, this is the major category of wasteland. It covers 4.25 percent of the total geographical area and 40.60 percent of the total wastelands. Majority area of this wasteland occurs in Malampuzha Panchayath (4308.27 ha), Pudur Panchayath (2523.28 ha), Kottopadam Panchayath (1603.92 ha), Agali Panchayath (1357.48 ha). These areas are distributed in the forest lands that falls in the Parambikulam Wild Life Sanctuary, Nelliampathy R.F., Kollengod and Akamalavaram vested forest, Chennat Nayar R.F and Attappadi R.F. area. All of these forest lands are not seen include inside the green ribbon band boundary given in the Survey of India toposheets for notified forest. Some of the vested forest and private areas, eventhough came under Government

occupation are pending notification due to administrative reasons. This category consists of deforested areas in the catchments of the reservoirs, forest grasslands, failed forest plantations, etc.

- 2. Land with open scrub:-** With an extent of 131.79 sq km, this is the second major category of wasteland accounting to 2.94 percent of the total geographical area and 28.06 percent of the total wastelands. It is distributed in all the five taluks of the district. Major area of this category of wasteland occurs in Tharur Panchayath (932.88 ha), Ambalapara Panchayath (678.96 ha), Edappally Panchayath (629.19 ha), Kizhakkanchery (599.43 ha). They include the well known degraded agricultural lands of Attappadi valley and adjoining areas. This is a rain shadow area, lying in the eastern slope with low rainfall and prolonged dry period. Perennial crops are not established here after deforestation of the area long before. 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.
- 3. Barren rocky/stony waste/sheet rock area:-** This is the third category of wasteland in the district, covering 89.64 sq km area accounting to 2.00 percent of the total geographical area and 19.08 percent of the total wastelands. This category is distributed in all the five taluks. The villages having major area under this category are Nelliampathy Panchayath (3353.27 ha), Vandazhi Panchayath (1022.37 ha), Malampuzha Panchayath (382.88 ha), Pudur Panchayath (204.80 ha).

Suggestion and solutions for reclamation of wastelands

Out of the total wastelands of 46970 hectares in Palakkad district nearly 8964 hectares constituting nearly 20 percent areas falling under barren rocky and steep sloping lands have only very limited scope, for development because of the absence or lack of cultivable soil. Wasteland development programme are to be taken up over the rest of the area falling under land with scrub and the degraded for underutilized forest lands. Majority of the wastelands, identified in agricultural areas of Ottappalam, Palakkad, Alathur and Chittoor taluks are scattered on the isolated low hills located in the midland plains. All the degraded forestlands are to be developed to hold perennial vegetative cover in order to check further deterioration and to make better use of the potentialities. Afforestation or greenings of the degraded forestlands are to be taken with public participation.

These areas seen in different parts in small blocks have to be taken up for development, selecting suitable perennial species. But sizeable area this category identified in Attappady area have to be seriously considered for development. Shortage of water is the most important reason for its barren nature and poor plant growth and indiscriminate grazing of the area by periodical invasion of large herds of cattle mainly goat from the adjoining Tamil Nadu are found to be the major causes for degradation of Attappady area. Development of vegetation is the urgent need for reclamation here. Wheat ever tiny vegetation sprout up is being swept away by the herds of cattle led in this area without any sort of control. Soil erosion is another important degradation factor in Attappady area. Due to the absence of vegetal cover, the top soil is being washed away by the occasional high intense short duration rains.

In brief, the following points are to be duly considered while initiating steps for wasteland development in the area.

1. Check indiscriminate grazing in this area by large herds of the cattle from Tamil Nadu.
2. Provide adequate irrigation facilities.
3. Make it mandatory to have the agronomical part also implemented along with mechanical standers of soil conservation.
4. Promote cultivation of perennial crops selecting suitable species for the area.
5. Adopt suitable soil and water conservation measures, considering the rainfall condition, the intensity and length of slope, soil type and vegetal cover each locality.

For the development of degraded forest, suitable steps have to be initiated for afforestation, selecting species suited to each area. Since the degraded forest mostly belongs to the rain shadow area adjacent to Tamil Nadu, harly drought resistant varieties are to be selected for planting.

Here also, the indiscriminate grazing by large herds of sheep and goat is found to be a very series concern in the afforestation programme. Without controlling this, the afforestation measures taken are not likely to yield the expected result.

Table 19.1

WASTELAND

BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Alathur	Alathur	Barren Rocky Area	103.12
		Land with Open Scrub	97.71
		Miscellaneous polygon	1813.89
			2014.71
	Erimayur	Barren Rocky Area	23.02
		Land with Dense Scrub	7.26
		Land with Open Scrub	171.95
		Miscellaneous polygon	3100.52
		3302.75	
	Kannambra	Land with Dense Scrub	24.52
		Land with Open Scrub	69.14
		Miscellaneous polygon	3117.76
		3211.42	
	Kavassery	Barren Rocky Area	18.47
		Land with Dense Scrub	4.44
		Land with Open Scrub	231.17
		Miscellaneous polygon	2831.01
		3085.09	
	Kizhakkanchery	Barren Rocky Area	1.31
		Land with Dense Scrub	307.39
		Land with Open Scrub	599.43
		Miscellaneous polygon	9320.60
		Scrub Dominated Forest	622.26
		10850.99	
	Puthukode	Land with Open Scrub	123.13
		Miscellaneous polygon	1503.60
		1626.73	
	Tharur	Barren Rocky Area	19.89
		Land with Dense Scrub	4.73
		Land with Open Scrub	932.89
		Miscellaneous polygon	2410.00
		3367.51	
Vadakkanchery	Barren Rocky Area	66.80	
	Land with Dense Scrub	30.83	
	Land with Open Scrub	49.49	
	Miscellaneous polygon	3484.43	
	3631.54		
	31090.75		

BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Attappadi	Agali	Barren Rocky Area	117.95
		Land with Dense Scrub	140.03
		Land with Open Scrub	16.66
		Miscellaneous polygon	14165.00
		Scrub Dominated Forest	1357.48
			15797.13
	Pudur	Barren Rocky Area	204.80
		Land with Dense Scrub	368.49
		Miscellaneous polygon	34672.90
		Scrub Dominated Forest	2523.28
			37769.47
	Sholayur	Barren Rocky Area	25.51
		Land with Dense Scrub	346.58
		Miscellaneous polygon	19105.60
		Scrub Dominated Forest	53.65
		19531.34	
		73097.94	
Chittur	Elappally	Barren Rocky Area	0.98
		Land with Dense Scrub	9.58
		Land with Open Scrub	629.19
		Miscellaneous polygon	4138.93
			4778.67
	Erthampathy	Barren Rocky Area	7.34
		Land with Open Scrub	34.60
		Miscellaneous polygon	3655.45
			3697.39
	Kozhinjampara	Barren Rocky Area	49.94
		Land with Dense Scrub	10.37
		Land with Open Scrub	65.17
		Miscellaneous polygon	4512.88
			4638.36
	Nallepalli	Barren Rocky Area	4.52
		Land with Dense Scrub	15.85
		Land with Open Scrub	47.92
		Miscellaneous polygon	3772.79
			3841.08
	Perumatty	Barren Rocky Area	29.95
		Land with Dense Scrub	7.21
Land with Open Scrub		15.38	
Miscellaneous polygon		5817.78	
		5870.32	
Polppully	Miscellaneous polygon	1974.75	
		1974.75	

BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Kollengode	Vadakarapathy	Barren Rocky Area	91.09
		Land with Dense Scrub	19.51
		Land with Open Scrub	57.79
		Miscellaneous polygon	4803.38
			4971.76
	Koduvayur	Barren Rocky Area	10.81
		Land with Dense Scrub	7.18
		Land with Open Scrub	21.81
		Miscellaneous polygon	2235.80
			2275.60
	Kollengode	Barren Rocky Area	130.44
		Land with Dense Scrub	5.76
		Land with Open Scrub	88.95
		Miscellaneous polygon	3309.92
		Scrub Dominated Forest	128.10
		3663.18	
	Muthalamada	Barren Rocky Area	104.67
		Land with Dense Scrub	42.17
		Land with Open Scrub	295.26
		Miscellaneous polygon	7066.83
		Scrub Dominated Forest	42.64
		Waterlogged - Seasonal	21.77
		7573.34	
	Pattencherry	Barren Rocky Area	15.46
		Land with Open Scrub	35.48
		Miscellaneous polygon	3238.67
		3289.61	
	Peruvambu	Land with Open Scrub	11.48
Miscellaneous polygon		1899.74	
	1911.22		
Puthunagaram	Land with Open Scrub	37.44	
	Miscellaneous polygon	839.67	
	877.11		
Vadavannur	Land with Open Scrub	21.81	
	Miscellaneous polygon	1706.21	
	1728.02		
		21318.08	

BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Kuzhalmannam	Kannadi	Land with Open Scrub	21.22
		Miscellaneous polygon	2287.86
			2309.08
	Kottayi	Land with Open Scrub	7.67
		Miscellaneous polygon	1996.10
			2003.77
	Kuthannoor	Barren Rocky Area	123.71
		Land with Dense Scrub	29.63
		Land with Open Scrub	730.83
		Miscellaneous polygon	2630.20
			3514.37
	Kuzhalmannam	Barren Rocky Area	34.22
		Land with Open Scrub	43.27
		Miscellaneous polygon	3065.73
			3143.22
	Mathur	Land with Open Scrub	33.28
		Miscellaneous polygon	2450.81
			2484.09
	Peringottukuriissi	Barren Rocky Area	206.93
		Land with Dense Scrub	1.33
Land with Open Scrub		185.30	
Miscellaneous polygon		2697.27	
		3090.83	
Thenkurissi	Barren Rocky Area	37.53	
	Land with Dense Scrub	7.61	
	Land with Open Scrub	58.36	
	Miscellaneous polygon	2931.17	
		3034.67	
		19580.02	
Malampuzha	Akathethara	Land with Dense Scrub	340.50
		Land with Open Scrub	88.43
		Miscellaneous polygon	1456.15
		Scrub Dominated Forest	35.46
			1920.54
	Kodumbu	Land with Open Scrub	44.66
		Miscellaneous polygon	2281.33
			2325.99
	Malampuzha	Barren Rocky Area	382.88
		Land with Dense Scrub	463.02
		Land with Open Scrub	420.46
		Miscellaneous polygon	14104.70
			4308.27
		19679.34	

BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Mannarkad	Marutharoad	Land with Open Scrub	3.57
		Miscellaneous polygon	1561.32
			1564.89
	Puthupariyaram	Land with Dense Scrub	45.37
		Land with Open Scrub	192.72
		Miscellaneous polygon	2686.92
		Scrub Dominated Forest	4.30
			2929.31
	Puthussery	Barren Rocky Area	210.42
		Land with Open Scrub	536.95
		Miscellaneous polygon	9971.65
		Scrub Dominated Forest	608.72
			11327.74
			39747.80
	Alanallur	Land with Dense Scrub	67.18
		Land with Open Scrub	213.88
		Miscellaneous polygon	5106.33
		Scrub Dominated Forest	557.47
			5944.86
	Kanjirapuzha	Barren Rocky Area	55.63
		Land with Open Scrub	58.82
		Miscellaneous polygon	4993.27
		Scrub Dominated Forest	187.42
		Waterlogged - Seasonal	86.65
			5381.80
	Karimba	Barren Rocky Area	160.91
		Land with Open Scrub	70.24
		Miscellaneous polygon	4966.46
		Scrub Dominated Forest	618.46
			5816.06
Kottopadam	Barren Rocky Area	26.61	
	Land with Dense Scrub	71.48	
	Land with Open Scrub	141.48	
	Miscellaneous polygon	5841.72	
	Scrub Dominated Forest	1603.92	
		7685.22	
Kumaramputhur	Barren Rocky Area	62.18	
	Land with Dense Scrub	2.22	
	Land with Open Scrub	78.06	
	Miscellaneous polygon	3256.51	
	Scrub Dominated Forest	128.00	
		3526.98	

BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Municipality	Mannarkad	Land with Dense Scrub	0.61
		Land with Open Scrub	4.00
		Miscellaneous polygon	1172.22
			1176.84
	Thachampara	Barren Rocky Area	64.68
		Miscellaneous polygon	4502.62
		Scrub Dominated Forest	481.46
		Waterlogged - Seasonal	39.01
			5087.76
	Thachanattukara	Land with Dense Scrub	28.18
		Land with Open Scrub	158.66
		Miscellaneous polygon	3372.46
		3559.30	
	Thenkara	Barren Rocky Area	98.92
		Land with Dense Scrub	10.31
		Land with Open Scrub	6.16
		Miscellaneous polygon	4597.35
		Scrub Dominated Forest	968.43
			5681.17
		43859.97	
Nenmara		Barren Rocky Area	84.87
		Land with Dense Scrub	52.63
		Land with Open Scrub	396.33
		Miscellaneous polygon	9894.18
		Sands - Riverine	103.75
		10531.76	
	Ayiloor	Barren Rocky Area	43.08
		Land with Dense Scrub	76.88
		Land with Open Scrub	52.83
		Miscellaneous polygon	3844.93
Scrub Dominated Forest		90.41	
	4108.13		
Elevanchery	Barren Rocky Area	58.54	
	Land with Dense Scrub	0.28	
	Land with Open Scrub	93.90	
	Miscellaneous polygon	2638.46	
	Scrub Dominated Forest	546.44	
	3337.63		
Melarkkode	Barren Rocky Area	35.25	
	Land with Dense Scrub	22.55	
	Land with Open Scrub	119.02	
	Miscellaneous polygon	2400.77	
	2577.59		

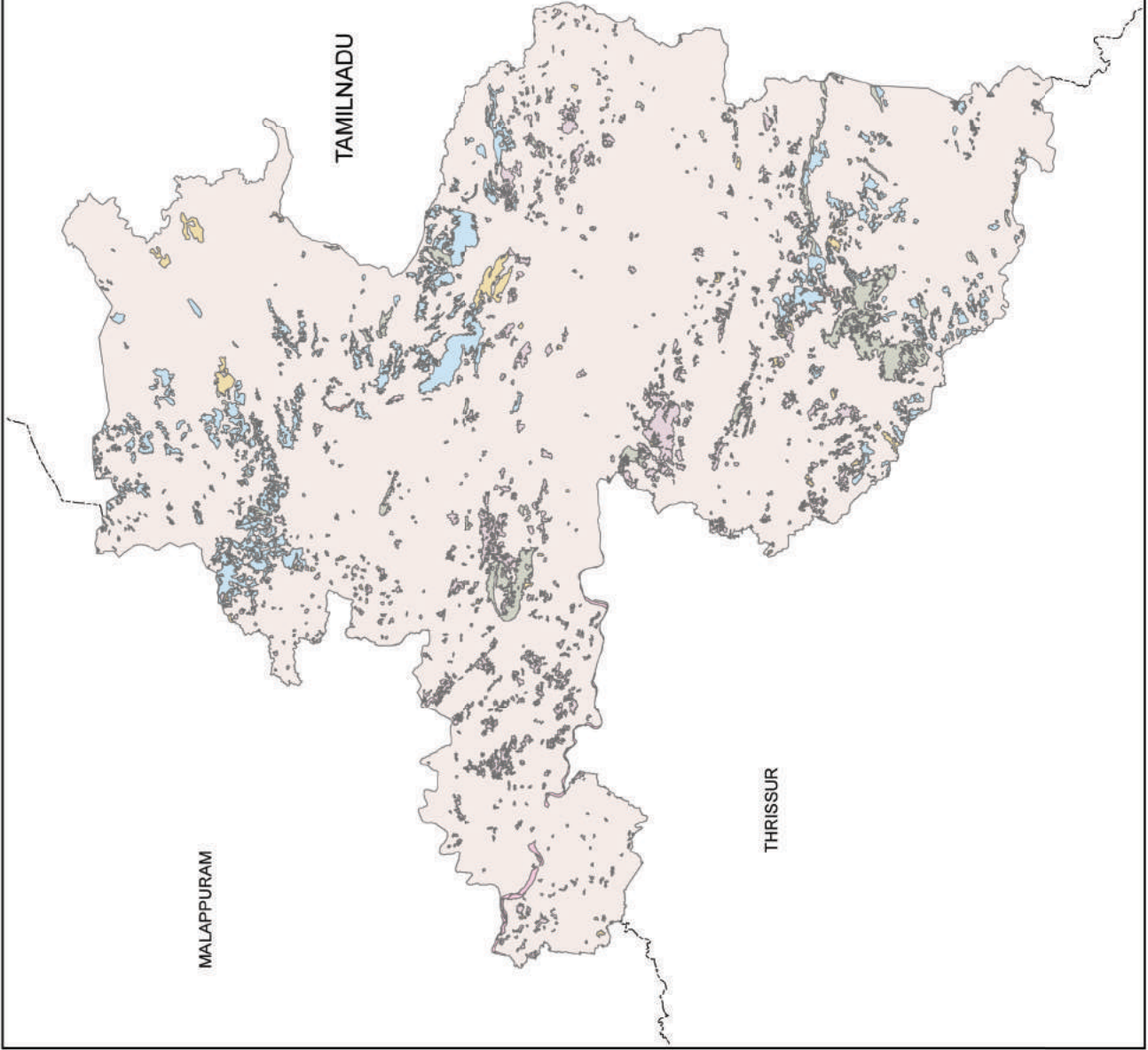
BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Ottappalam	Nelliampathy	Barren Rocky Area	3353.27
		Land with Dense Scrub	335.89
		Land with Open Scrub	36.46
		Miscellaneous polygon	48933.60
		Scrub Dominated Forest	3808.55
		Waterlogged - Seasonal	62.73
			56530.50
	Nenmara	Barren Rocky Area	64.05
		Land with Dense Scrub	119.58
		Land with Open Scrub	310.95
		Miscellaneous polygon	2796.45
		Scrub Dominated Forest	143.77
		Waterlogged - Seasonal	47.38
			3482.18
	Pallassana	Barren Rocky Area	55.53
		Land with Dense Scrub	55.42
		Land with Open Scrub	138.50
		Miscellaneous polygon	2679.44
			2928.89
	Vandazhi	Barren Rocky Area	1022.37
		Land with Dense Scrub	13.14
		Land with Open Scrub	442.08
		Miscellaneous polygon	4449.85
		Scrub Dominated Forest	16.91
		Waterlogged - Seasonal	6.47
			5950.82
		78915.75	
	Ambalapara	Barren Rocky Area	655.63
		Land with Dense Scrub	15.47
		Land with Open Scrub	678.96
		Miscellaneous polygon	3750.78
			5100.84
Anaganadi	Barren Rocky Area	144.98	
	Land with Dense Scrub	2.56	
	Land with Open Scrub	75.04	
	Miscellaneous polygon	1778.19	
		2000.76	

BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Palakkad	Chalavara	Land with Dense Scrub	6.75
		Land with Open Scrub	359.95
		Miscellaneous polygon	2765.48
			3132.17
	Lakkidi Peroor	Barren Rocky Area	7.32
		Land with Dense Scrub	3.19
		Land with Open Scrub	60.25
		Miscellaneous polygon	2961.40
			3032.16
	Nellaya	Barren Rocky Area	12.22
		Land with Open Scrub	213.02
		Miscellaneous polygon	2296.15
		2521.39	
	Thrikkaderi	Barren Rocky Area	460.82
		Land with Dense Scrub	7.30
		Land with Open Scrub	103.76
		Miscellaneous polygon	2310.94
		2882.82	
	Vallapuzha	Land with Open Scrub	219.39
		Miscellaneous polygon	1968.24
		2187.63	
	Vaniyamkulam	Barren Rocky Area	8.99
		Land with Dense Scrub	5.99
		Land with Open Scrub	184.98
		Miscellaneous polygon	3177.37
		Sands - Riverine	81.78
		3459.11	
		24316.89	
	Keralassery	Land with Open Scrub	59.41
		Miscellaneous polygon	2410.64
		2470.05	
	Kongadu	Barren Rocky Area	29.39
		Land with Dense Scrub	5.37
		Land with Open Scrub	103.49
		Miscellaneous polygon	3507.48
		Scrub Dominated Forest	2.09
	3647.81		
Mankara	Land with Open Scrub	51.62	
	Miscellaneous polygon	1938.14	
	Scrub Dominated Forest	2.32	
	1992.08		

BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Pattambi	Mannur	Barren Rocky Area	6.24
		Land with Dense Scrub	5.35
		Land with Open Scrub	99.34
		Miscellaneous polygon	1653.72
			1764.65
	Mundur	Barren Rocky Area	14.08
		Land with Dense Scrub	16.91
		Land with Open Scrub	173.25
		Miscellaneous polygon	3265.97
		Scrub Dominated Forest	120.53
			3590.75
	Parali	Land with Open Scrub	59.50
		Miscellaneous polygon	2855.54
		Scrub Dominated Forest	56.74
			2971.78
	Pirayiri	Land with Dense Scrub	14.62
		Land with Open Scrub	43.23
		Miscellaneous polygon	1824.62
			1882.46
			18319.58
	Koppam	Barren Rocky Area	4.32
		Land with Dense Scrub	3.68
		Land with Open Scrub	254.87
		Miscellaneous polygon	2364.23
			2627.11
	Kulukallur	Barren Rocky Area	14.44
		Land with Open Scrub	81.56
		Miscellaneous polygon	1977.90
			2073.90
	Muthuthala	Barren Rocky Area	4.82
		Land with Open Scrub	38.58
		Miscellaneous polygon	1876.50
		Sands - Riverine	3.81
			1923.71
	Ongallur	Barren Rocky Area	0.04
		Land with Open Scrub	369.56
Miscellaneous polygon		2794.43	
Sands - Riverine		62.17	
		3226.20	
Parudur	Land with Open Scrub	6.34	
	Miscellaneous polygon	1964.32	
	Sands - Riverine	122.14	
		2092.80	








BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Sreekrishnapuram	Pattambi	Barren Rocky Area	13.79
		Land with Open Scrub	24.00
		Miscellaneous polygon	1595.80
		Sands - Riverine	63.85
			1697.43
	Thiruvengapura	Land with Dense Scrub	2.47
		Land with Open Scrub	34.96
		Miscellaneous polygon	1979.84
			2017.27
	Vilayur	Land with Open Scrub	24.55
		Miscellaneous polygon	1759.54
			1784.09
			17442.50
	Cherplassery	Barren Rocky Area	20.71
		Land with Dense Scrub	18.68
		Land with Open Scrub	205.56
		Miscellaneous polygon	2740.61
			2985.56
	Kadampazhipuram	Barren Rocky Area	31.15
		Land with Dense Scrub	4.04
		Land with Open Scrub	305.74
		Miscellaneous polygon	3523.52
			3864.45
	Karakurissi	Barren Rocky Area	5.27
Land with Dense Scrub		2.78	
Land with Open Scrub		16.22	
Miscellaneous polygon		2834.79	
		2859.06	
Karimpuzha	Barren Rocky Area	134.13	
	Land with Dense Scrub	24.57	
	Land with Open Scrub	114.36	
	Miscellaneous polygon	4534.48	
		4807.53	
Pookkottukavu	Barren Rocky Area	154.48	
	Land with Dense Scrub	27.76	
	Land with Open Scrub	166.76	
	Miscellaneous polygon	1787.62	
		2136.61	
Sreekrishnapuram	Barren Rocky Area	15.37	
	Land with Dense Scrub	1.03	
	Land with Open Scrub	111.93	
	Miscellaneous polygon	2914.48	
		3042.81	

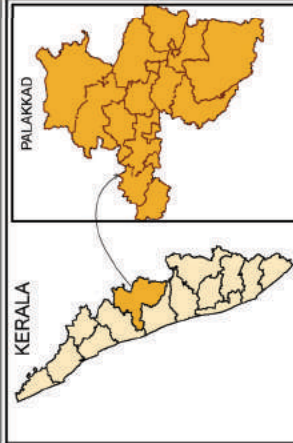
BLOCK	PANCHAYATH	DESCRIPTION	Area in Ha
Thrithala	Vellinezhi	Barren Rocky Area	7.17
		Land with Open Scrub	128.67
		Miscellaneous polygon	2565.74
			2701.57
			22397.61
	Anakkara	Land with Dense Scrub	15.82
		Land with Open Scrub	174.92
		Miscellaneous polygon	1723.90
		Sands - Riverine	186.88
			2101.51
	Chalissery	Land with Dense Scrub	10.72
		Land with Open Scrub	36.28
		Miscellaneous polygon	1911.92
		1958.91	
	Kappur	Land with Dense Scrub	32.56
		Land with Open Scrub	62.70
		Miscellaneous polygon	2271.18
		2366.44	
	Nagalassery	Land with Dense Scrub	8.78
		Land with Open Scrub	44.03
		Miscellaneous polygon	2629.40
		2682.22	
	Pattithara	Land with Dense Scrub	5.93
		Land with Open Scrub	80.11
		Miscellaneous polygon	2552.29
		Sands - Riverine	94.98
		2733.31	
	Thirumittakode	Barren Rocky Area	2.67
Land with Dense Scrub		13.62	
Land with Open Scrub		47.41	
Miscellaneous polygon		3176.22	
Sands - Riverine		4.29	
	3244.22		
Thrithala	Land with Dense Scrub	0.65	
	Land with Open Scrub	6.82	
	Miscellaneous polygon	2024.64	
	Sands - Riverine	97.20	
	2129.31		
	17215.93		
	District Total	448000.00	



**WASTELAND
PALAKKAD DISTRICT**

Waste land Type

-  Barren Rocky Area
-  Land with Dense Scrub
-  Land with Open Scrub
-  Miscellaneous polygon
-  Sands - Riverine
-  Scrub Dominated Forest
-  Waterlogged - Seasonal



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

WATERSHED

Sl. No.	WSCODE	Area(Ha)	Sl. No.	WSCODE	Area(Ha)
1	16C22a	21.41	40	16C26v	703.86
2	16C22b	0.14	41	16C26w	815.74
3	16C22c	387.21	42	16C27a	587.81
4	16C22d	1194.24	43	16C28a	504.96
5	16C22e	592.52	44	16C29a	588.76
6	16C22f	886.66	45	16C30a	696.19
7	16C22g	991.60	46	16C31a	346.77
8	16C22h	1195.23	47	16C32a	785.67
9	16C22i	722.46	48	16C33a	1092.46
10	16C22j	992.01	49	16C33b	541.93
11	16C22k	490.64	50	16C33c	309.05
12	16C22l	846.49	51	16C34a	656.00
13	16C22m	732.69	52	16C35a	784.58
14	16C22n	1017.49	53	16C36a	867.69
15	16C22o	781.37	54	16C37a	826.70
16	16C23a	637.16	55	16C38a	565.57
17	16C24a	735.06	56	16C38b	524.45
18	16C25a	881.02	57	16C38c	141.23
19	16C26a	223.16	58	16C38d	42.96
20	16C26b	1507.93	59	16C38e	15.43
21	16C26c	282.04	60	16C38j	6.14
22	16C26d	750.80	61	16C38p	4.70
23	16C26e	544.43	62	16C39a	11.42
24	16C26f	2154.95	63	17K17a	22.58
25	16C26g	235.46	64	17K18a	18.46
26	16C26h	1583.52	65	17K19a	49.92
27	16C26i	1305.11	66	17K20b	10.96
28	16C26j	874.54	67	17K28l	0.00
29	16C26k	758.94	68	17K28n	65.80
30	16C26l	796.66	69	17K28p	53.14
31	16C26m	639.85	70	18K12b	104.88
32	16C26n	1261.62	71	18K13a	20.39
33	16C26o	828.31	72	18K14a	84.93
34	16C26p	1192.74	73	18K14b	129.00
35	16C26q	552.19	74	19K10a	93.77
36	16C26r	722.37	75	19K3b	55.94
37	16C26s	1198.05	76	19K3c	860.65
38	16C26t	1375.19	77	19K3d	469.36
39	16C26u	1007.81	78	19K3e	314.45

Sl. No.	WSCORE	Area(Ha)
79	19K3f	139.29
80	19K6a	104.44
81	19K7a	713.55
82	19K7b	452.51
83	19K7c	919.75
84	19K7d	232.42
85	19K8a	1039.60
86	19K8b	401.46
87	19K8c	966.19
88	19K9a	345.83
89	20B10a	1901.84
90	20B11a	1027.86
91	20B12a	1544.76
92	20B12b	543.09
93	20B12c	3420.47
94	20B12d	1280.93
95	20B13a	1150.93
96	20B13b	1191.41
97	20B13c	3147.49
98	20B13d	1054.82
99	20B13e	678.39
100	20B13f	560.90
101	20B13g	952.90
102	20B13h	1099.49
103	20B13i	777.41
104	20B13j	729.24
105	20B13k	1035.22
106	20B13l	991.49
107	20B14a	2201.96
108	20B15a	1553.94
109	20B16a	1678.34
110	20B17a	1354.35
111	20B18a	332.95
112	20B18aa	1075.26
113	20B18ab	1376.15
114	20B18ac	407.71
115	20B18ad	758.38
116	20B18ae	2338.53
117	20B18af	1500.24
118	20B18ag	1263.38

Sl. No.	WSCORE	Area(Ha)
119	20B18ah	870.21
120	20B18ai	1007.81
121	20B18aj	1051.07
122	20B18ak	1388.29
123	20B18al	1277.87
124	20B18am	1885.85
125	20B18an	1691.21
126	20B18ao	3618.38
127	20B18ap	981.18
128	20B18b	1312.50
129	20B18c	629.56
130	20B18d	289.88
131	20B18e	1283.34
132	20B18f	1420.90
133	20B18g	1307.87
134	20B18h	1580.55
135	20B18i	555.76
136	20B18j	382.95
137	20B18k	835.54
138	20B18l	429.64
139	20B18m	1173.15
140	20B18n	2680.30
141	20B18o	599.29
142	20B18p	576.51
143	20B18q	1245.00
144	20B18r	684.05
145	20B18s	2649.78
146	20B18t	813.26
147	20B18u	1082.87
148	20B18v	1251.04
149	20B18w	360.98
150	20B18x	764.64
151	20B18y	699.83
152	20B18z	2614.63
153	20B19a	255.01
154	20B1a	5.30
155	20B20a	1417.37
156	20B21a	1834.58
157	20B22a	1788.01
158	20B22b	2991.32

Sl. No.	WSCODE	Area(Ha)
159	20B22c	2062.68
160	20B23a	946.25
161	20B24a	1526.11
162	20B25a	2090.59
163	20B26a	908.77
164	20B27a	681.15
165	20B28a	789.85
166	20B29a	746.94
167	20B30a	1591.96
168	20B31a	2743.67
169	20B32a	1103.02
170	20B33a	874.96
171	20B33b	929.51
172	20B33c	1164.36
173	20B34a	907.49
174	20B35a	1599.41
175	20B36a	1335.19
176	20B37a	2180.38
177	20B37b	2146.64
178	20B37c	716.76
179	20B37d	421.20
180	20B37e	2272.47
181	20B37f	1625.74
182	20B37g	1287.34
183	20B38a	10.49
184	20B39aa	558.82
185	20B39ab	591.12
186	20B39ac	932.71
187	20B39ad	1172.71
188	20B39ae	1004.84
189	20B39af	1653.55
190	20B39ag	1473.98
191	20B39ah	2361.81
192	20B39ai	2420.48
193	20B39aj	2032.96
194	20B39ak	406.15
195	20B39al	1065.29
196	20B39am	553.47
197	20B39an	1571.69
198	20B39ao	2753.41

Sl. No.	WSCODE	Area(Ha)
199	20B39ap	916.20
200	20B39aq	1686.27
201	20B39ar	1595.47
202	20B39as	713.46
203	20B39at	1657.85
204	20B39au	476.59
205	20B39av	351.04
206	20B39aw	673.68
207	20B39ax	2267.10
208	20B39ay	1030.34
209	20B39az	399.35
210	20B39b	1551.81
211	20B39ba	540.97
212	20B39bb	1395.69
213	20B39bc	1075.85
214	20B39bd	1384.29
215	20B39be	2470.44
216	20B39bf	2623.89
217	20B39bg	3772.68
218	20B39bh	793.48
219	20B39bi	207.83
220	20B39bk	682.45
221	20B39bl	30.84
222	20B39bo	1.45
223	20B39c	2289.79
224	20B39d	1349.71
225	20B39e	1473.60
226	20B39f	2097.83
227	20B39g	1408.88
228	20B39h	2419.69
229	20B39i	1266.65
230	20B39j	2475.99
231	20B39k	1271.31
232	20B39l	4007.31
233	20B39m	1911.82
234	20B39n	403.19
235	20B39o	853.33
236	20B39p	444.14
237	20B39q	771.02
238	20B39r	631.98

Sl. No.	WSCORE	Area(Ha)
239	20B39s	2012.92
240	20B39t	1234.59
241	20B39u	2164.91
242	20B39v	1761.29
243	20B39w	1316.72
244	20B39x	1402.42
245	20B39y	822.19
246	20B39z	1561.66
247	20B40a	9.57
248	20B41a	0.42
249	20B41f	0.21
250	20B42a	1.06
251	20B43a	14.51
252	20B44a	688.39
253	20B44b	214.71
254	20B44e	90.92
255	20B44f	686.11
256	20B44g	983.75
257	20B44h	523.27
258	20B45a	856.92
259	20B46a	2339.45
260	20B47a	1678.78
261	20B48a	1704.67
262	20B4a	39.93
263	20B4aa	389.86
264	20B4ab	619.00
265	20B4ac	1083.45
266	20B4ad	730.43
267	20B4ae	658.28
268	20B4af	806.91
269	20B4ag	1326.88
270	20B4ah	1176.28
271	20B4ai	1276.83
272	20B4aj	1219.05
273	20B4ak	3146.38
274	20B4al	2019.80
275	20B4am	1220.06
276	20B4an	1695.87
277	20B4ao	962.67
278	20B4ap	1032.48

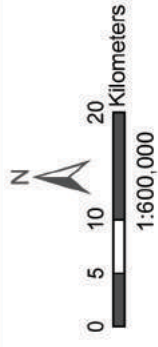
Sl. No.	WSCORE	Area(Ha)
279	20B4aq	926.04
280	20B4ar	453.49
281	20B4as	482.55
282	20B4at	1301.62
283	20B4au	435.04
284	20B4av	535.75
285	20B4aw	1287.93
286	20B4ax	758.70
287	20B4ay	695.49
288	20B4az	1488.66
289	20B4b	20.71
290	20B4ba	738.51
291	20B4bb	1478.91
292	20B4bc	2424.06
293	20B4bd	707.41
294	20B4be	1287.11
295	20B4bf	783.70
296	20B4bg	474.63
297	20B4bh	561.46
298	20B4bi	965.14
299	20B4bj	749.33
300	20B4bk	1242.85
301	20B4bl	1017.67
302	20B4bm	1090.44
303	20B4bn	481.09
304	20B4bo	1758.43
305	20B4bp	1264.11
306	20B4bq	946.81
307	20B4br	1418.98
308	20B4bs	1056.54
309	20B4bt	1030.97
310	20B4bu	1047.90
311	20B4bv	673.76
312	20B4bw	3983.96
313	20B4bx	1984.63
314	20B4by	880.82
315	20B4bz	2378.74
316	20B4c	0.32
317	20B4ca	2455.71
318	20B4cb	1563.23

Sl. No.	WSCODE	Area(Ha)
319	20B4cc	1344.58
320	20B4cd	2834.06
321	20B4ce	2196.39
322	20B4e	1.51
323	20B4f	13.95
324	20B4g	13.55
325	20B4h	3.54
326	20B4i	0.64
327	20B4j	3.90
328	20B4k	570.46
329	20B4l	408.35
330	20B4m	7.67
331	20B4n	1162.27
332	20B4o	2162.06
333	20B4p	1437.43
334	20B4q	635.51
335	20B4r	3343.88
336	20B4s	1665.16
337	20B4t	643.12
338	20B4u	609.85
339	20B4v	372.01
340	20B4w	1131.29
341	20B4x	379.54
342	20B4y	975.59
343	20B4z	1336.56
344	20B5a	568.06
345	20B5b	461.06
346	20B5c	442.27
347	20B5d	1155.66
348	20B6a	1945.17
349	20B7a	312.73
350	20B7b	571.83
351	20B7c	873.72
352	20B8a	449.70
353	20B9a	774.54
354	20B9b	1849.21
355	20B9c	1209.81
356	20B9d	1073.95
357	20B9e	1800.31
358	22B10a	311.49

Sl. No.	WSCODE	Area(Ha)
359	22B10b	702.21
360	22B10c	834.39
361	22B11a	670.70
362	22B12a	394.17
363	22B12b	505.26
364	22B12c	458.31
365	22B13a	201.59
366	22B13b	418.50
367	22B13c	490.18
368	22B14a	374.26
369	22B15a	691.70
370	22B16a	256.46
371	22B17a	566.12
372	22B18a	819.91
373	22B19a	406.74
374	22B1a	586.74
375	22B1aa	662.69
376	22B1ab	504.28
377	22B1ac	890.70
378	22B1ad	420.66
379	22B1ae	1165.25
380	22B1af	378.96
381	22B1ag	1155.25
382	22B1ah	915.47
383	22B1ai	514.31
384	22B1aj	405.87
385	22B1b	668.50
386	22B1c	810.13
387	22B1d	600.00
388	22B1e	839.33
389	22B1f	740.20
390	22B1g	733.63
391	22B1h	412.97
392	22B1i	1162.32
393	22B1j	509.38
394	22B1k	388.77
395	22B1l	2100.64
396	22B1m	1338.62
397	22B1n	782.49
398	22B1o	367.42

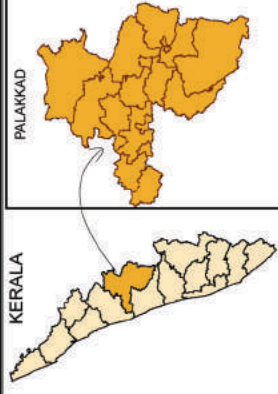
Sl. No.	WSCODE	Area(Ha)
399	22B1p	1395.30
400	22B1q	315.20
401	22B1r	450.14
402	22B1s	459.50
403	22B1t	711.54
404	22B1u	823.93
405	22B1v	676.99
406	22B1w	426.59
407	22B1x	290.49
408	22B1y	320.67
409	22B1z	915.77
410	22B20a	524.81
411	22B21a	813.26
412	22B22a	435.85
413	22B23a	889.05
414	22B24a	603.54
415	22B25a	345.34
416	22B26a	455.83
417	22B26b	689.18
418	22B26c	1091.99
419	22B26d	355.96
420	22B27a	305.51
421	22B28a	225.19
422	22B29a	272.43
423	22B2a	547.93
424	22B2b	598.89
425	22B2c	327.67
426	22B30a	183.30
427	22B30b	281.65
428	22B30c	249.47
429	22B30d	433.97
430	22B30e	1160.12
431	22B30f	518.68
432	22B30g	208.84
433	22B30h	1120.34
434	22B30i	635.82
435	22B30j	991.74
436	22B30k	650.69
437	22B30l	981.86
438	22B31a	335.42
439	22B32a	603.32

Sl. No.	WSCODE	Area(Ha)
440	22B33a	1281.86
441	22B34a	974.04
442	22B35a	425.83
443	22B36a	442.28
444	22B36b	686.26
445	22B36c	221.66
446	22B3a	433.46
447	22B4a	381.73
448	22B5a	370.19
449	22B6a	608.05
450	22B7a	451.48
451	22B8a	418.87
452	22B8b	1426.94
453	22B8c	773.88
454	22B9a	850.98
455	23K27c	38.04
456	23K27d	1.81
457	23K27f	5.81
458	23K28a	30.51
459	23K30c	219.65
460	23K30d	1131.20
461	23K30e	280.60
462	23K30f	409.58
463	23K30g	533.08
464	23K30h	866.54
465	23K30i	2250.22
466	23K30j	503.54
467	23K30k	2268.12
468	23K30l	1008.22
469	23K30m	419.15
470	23K30n	1276.63
471	23K30o	73.25
472	23K30p	383.94
473	23K30q	289.23
474	24C56h	0.30
475	24C56m	7.85
476	24C56w	8.69
477	MALAMPUZHA	2261.96
478	MANGALAM R	432.41
479	PARAMBIKOL	1774.41
480	TU1a	998.71
District Total		448000.00

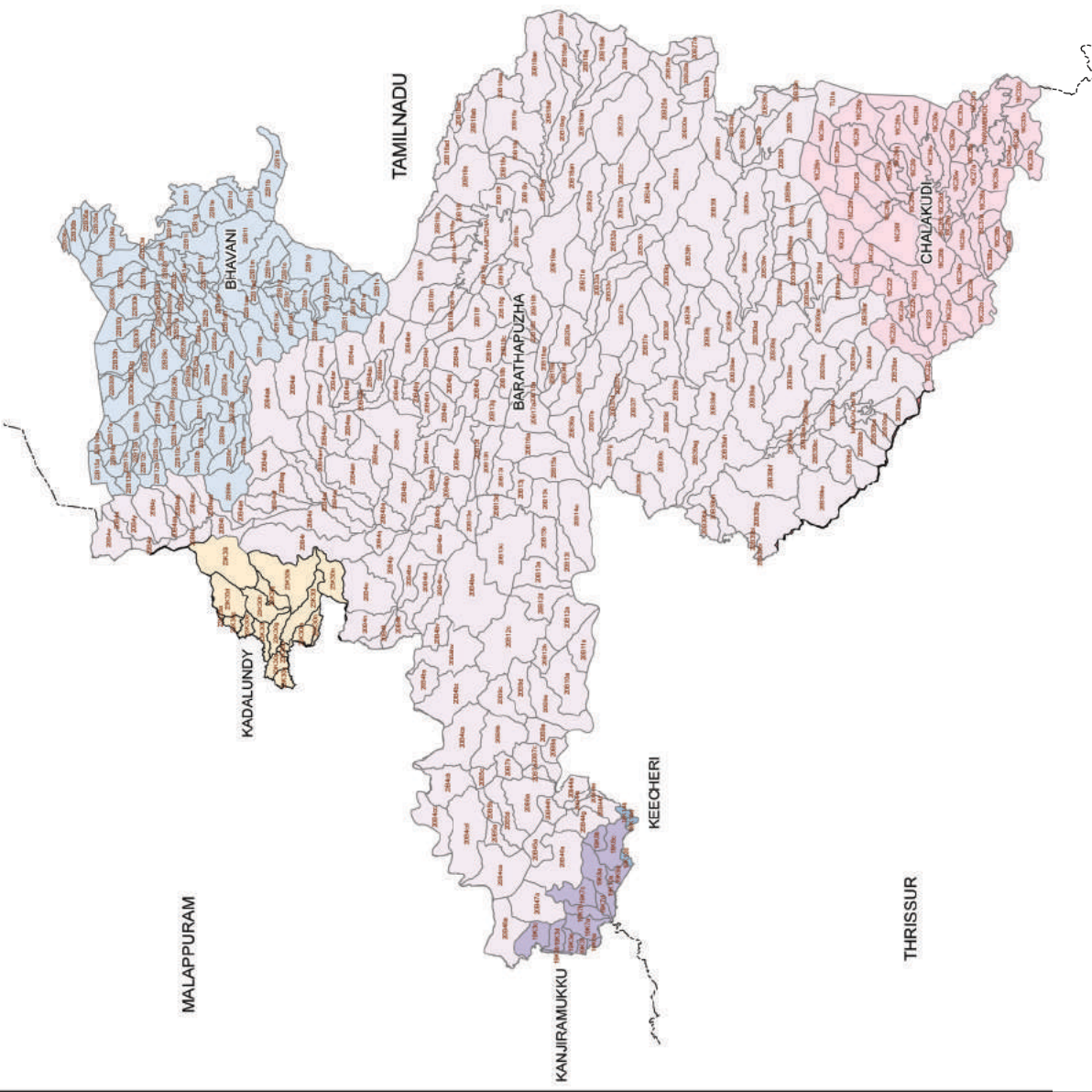


**WATERSHED
PALAKKAD DISTRICT**

- Watershed Name**
- BARATHAPUZHA
 - BHAVANI
 - CHALAKUDI
 - KADALUNDY
 - KANJIRAMUKKU
 - KEECHERI



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

Source : Minor Irrigation Census

MAJOR IRRIGATION

ATTAPPADY VALLEY IRRIGATION PROJECT

The scheme is intended for irrigation facilities in Attappady valley by constructing a masonry gravity dam across Siruvani river, a tributary of Bhavani River at Chittoor near Agali in Mannarkkadu taluk in Palakkad District. This is the first irrigation project proposed in the Bhavani Basin in the State With. Bhavani river is a tributary of the Cauvery river and thereupon the project comes under the interstate angle. The major beneficiaries of the scheme are tribal people and thus the implementation of project has a vital role in the tribal welfare by way of job opportunities, improved cultivation and over all development of the region. AVIP is proposed as a multipurpose project as it is proposed for drinking water supply and power generation.

BASIC INFORMATION

Potential area : Net 4347 ha Gross 8378 ha

HYDROLOGY

Drainage area of the river above the site : 96.96 Mm²
Available catchment area (Net) : 79.49 Mm²
Mean annual rainfall in the watershed or catchment : 3590 mm
Maximum annual rainfall in the water shed(1959) : 7816 mm
Minimum annual rainfall in the water shed (1965) : 2400 mm
Minimum dry weather flow : 0.6 cumecs.
Maximum flood level at dam site : 568.38 m

DETAILS OF RESERVOIR

Main annual run off (Estimate) : 165.26 Mm³
Expected Maximum flow : 952.3 cumecs
Observed maximum flow : 112.48 m³/Sec
Water spread at FRL : 3.5 km²

DETAILS OF DAM

Bed level of river at Dam site : 562.00m
Rock level in the river bed : 562.00 m
FRL : 611.00m
MWL : 611.00m
Height of Dam from rocky bed : 50.50m
Top level of Dam at Road way : 612.50 m
Width of river at Dam site : 45.00m
Top length of Dam : 450.00m
Width of Roadway over the dam : 4.6m

DETAILS OF SLUICE

There is only one canal sluice for both

LBC & RBC Sill level of sluice	:	+580.34m
Top of operating platform	:	612.50m

DETAILS OF AYACUT

Gross command area	:	8378 ha
Cultivable area	:	4347 ha
Irrigated net area	:	4347 ha

BRIDGE CUM REGULATOR AT TRITHALA, PALGHAT DISTRICT

This project proposes for the construction of a regulator cum bridge across Bharathapuzha at Vellaimkallu, 3 km away from Thrithala town. The project is located in the most underdeveloped and backward area of the district. This is a multipurpose medium irrigation project. The project stabilizes ayacut area of 1883 ha. (Net), 3997 ha (gross). The existing 10 lift irrigation schemes, which at present cannot even cater to the requirement of the crops to its full extent. This project envisages irrigation water requirements for the above Ayacut area and drinking water facilities about 7 lakhs people. Location-The proposed site is near Thrithala in Palakkad District at a latitude of 10° 48' 0"N and longitude of 76° 8'0"E.

BASIC INFORMATION

Ayacut Area : 1883 ha (net) Gross 3997 ha (potential)

Reservoir

Full Reservoir level	:	+15.00m
Storage Capacity	:	13.30 mm ³
Dead Storage level	:	+10 m (empty)
Live storage	:	13.30mm ³

Spillway

Spillway bays	:	27 nos. of 9m each
Max water level	:	+15.00m MSL
Max ht of Spillway Crest above deepest foundation	:	4.5m

Hydrology

Catchment area	:	4814 sq.km
Mean annual rainfall	:	272.10 cm
Max annual rainfall	:	452.78 cm
Expected Maximum flood discharge	:	6000 cum/sec

CHERAMANGALAM SCHEME

Cheramangalam is a diversion scheme in Palakkad District with a vier in 'Gayathri' now in Killiyar in Malarcodde Village of Alathur Taluk which was commissioned in 1951. The scheme irrigates an ayacut of 1205 ha in Alathur Taluk. The system depends on Malampuzha Project during peak irrigation period. Water is let out in Gayathri river at Pallavur from the tail end of L.B. Main canal of Malampuzha and picked up 5 Km. downstream at the river. Provision for a new link canal from Pallavur Branch Canal of Malampuzha L.B. Canal to Cheramangalam ayacut is made in this scheme which will enable water let out from Malampuzha to reach the ayacut direct rather than flowing 5Km. through the river. The command is irrigated with a network of canals. The main canal is 15.54 Km. in length. There are three branch canals having a total length of 29.80Km.

Subsequent to the completion of the Gayathri Project, ie, Meenkara and Chulliyar, the river flow was reduced considerably. Therefore in order to meet the water requirement for this ayacut and to supplement for this ayacut and to supplement the river flow for irrigation in this ayacut of Cheramangalam a discharge at the rate of about 0.7 to 1.1 cumecs from Malampuzha reservoir through its LBC has to be maintained during the crop period as per the Govt. order No. G.O(MS) No. 12/74/ (W&P)dated, Trivandrum, 27th March 1974. Even since this project depends on Malampuzha project during peak irrigation period.

SALIENT FEATURES

1.	Length of Anicut (Including Rock)	:	115.976 M
2.	Length of Anicut (Excluding Projected Rock)	:	110.97 M
3.	Maximum Height of Dam	:	2.591 M
4.	Maximum Supply Level (Crest Level)	:	67.97M
5.	Scour Vent (2 N0s)	:	1.83x 1.22 M
6.	Sill Level	:	65.38 M
7.	Head Sluice Vent (2 Nos)	:	1.83 x0.91 M
8.	Head Sluice Sill Level	:	66.98 M
9.	Main Canal Length	:	15.540 KM
10.	Bed fall	:	1/ 3600
11.	Main Canal Section	:	2.90x 0.91M
12.	Canal Discharge	:	57 Cusec.
13.	Ayacut	:	2913.96 Acres
14.	Length of Branches		
	a) Vadakkethara Branch	:	2.200 KM
	b) Ernakulum Branch	:	3.000 KM
	c) 16 A Branch	:	4.800 KM
15.	Length of FB	:	16.30 KM

GAYATHRI IRRIGATION PROJECT

Gayathri Irrigation Project is one of the medium irrigation projects in Kerala. It is situated in Mudalamada village of Palakkad district and consists of two storage reservoirs one at Meenkara and other at Chulliar. This project envisages irrigating an ayacut of 5465 hectares of paddy land. The Meenkara project was started in 1956 in Chittur taluk, commissioned in 1960 and completed in 1964. As a second stage, Chulliar was started in 1961, commissioned in 1966 and completed in 1970. Meenkara and Chulliar projects are renamed later as Gayathri Project stage I and II respectively. The Meenkara reservoir is located at a longitude of 76° 48' E and Latitude of 10° 38' N and is on the left side of the Kollengode- Govindapuram road at 15 km and then by project road to the dam site. The Chulliar reservoir is located at a longitude of 76°46'E and latitude of 10° 36'N on the right side of Kollengode-Govindapuram road at 11th km and then by the project road to dam site.

BASIC INFORMATION

District	:	Palakkad	
Ayacut Area in Ha		Potential	Achievement
	Net	5465	5465
	Gross	10930	10930
River	:	Meenkara (Bharathapuzha), Chulliar (Bharathapuzha)	
Benefited District	:	Palakkad	
Year of Starting	:	1956 (Meenkara), 1961 (Chulliar)	
Year of Completion	:	1964 (Meenkara) 1970 (Chulliar)	

MAIN FEATURES OF DAM AND CANAL

Meenkara dam consists mainly of an Earthen dam 934 m long with a masonry spillway of 30 m length located at the right end. The FRL of the dam is 513 m and reservoir capacity 11.33 Mm³. The maximum height of the dam is 18.9 m, with a catchment area of 90.65 sq.Km. serving an ayacut area of 3035 hectares(net).

The Chulliar dam consists of a masonry dam 555 m long with spillway of 30 m. The FRL of the dam is 493 m and reservoir capacity of 13.70 Mm³. The maximum height of the dam is 30.5 m with a catchment area of 29.78 sq.km. serving an ayacut area of 2430 hectares.

PRESENT STATUS

(a) MEENKARA PROJECT

Meenkara Project is an earthen gravity dam with a length of 934 m and having a masonry spillway of 30 m. The maximum height of the dam is 18.9 m with a water spread area of 250 hectares at FRL. The capacity of the reservoir is 11.30

Mm³. An Ogee type spillway has been provided with 2 nos. 12.19x4.57m size crest gate of vertical lift type and operating system. This dam serves an area of 3035 ha.

(b) CANAL SYSTEM

The right bank canal of Meenkara comprises the river itself from the Meenkara dam for a length of 5.5 Km and a diversion system called Pulliyanthone anicut with a canal net work. The length of the right bank canal is 15 Km with an ayacut area of 2023 ha. The river portion upto "Pulliyanthone anicut" also treats as right bank canal having two branch canals viz (1) Kallukettichalla (2) Poothoni Challa, takes off from the river portion with separate diversion arrangements. The left bank canal of Meenkara links with Chulliar at 6.20 Km and then continues as left bank canal of the combined system upto 20.50 Km.

The left bank canal of Meenkara is designed for a discharge of 1.33 m³/sec at the head end and at the confluence with the left bank canal from chulliar for 4.53 m³/sec. The right bank canal is designed for a discharge of 2.65 m³/sec at the head end.

(c) CHULLIAR PROJECT

This project was started in 1961 and partially commissioned in 1966. It was completed in 1970. It is a masonry gravity dam with a length of 555 m and zonal type earth dam for 1500 m. The maximum height of the dam is 30.5 m and the capacity of the reservoir is 13.70 Mm³. The water spread area is 165 hectares at FRL and the catchment area is 27.80 sq. Km. There are three Ogee type spillway of 30 m length with vertical lift type of crest gate including operating system. There is one head sluice for LB canal of 1.52x 1.83 m with lifting arrangement. The ayacut of the project is 2430 ha.

The main source of water for both reservoirs are mainly from rains during the south west and north east monsoon. The surplus water available from Parambikulam Aliyar Project (Inter State Agreement) through Chitturpuzha system is diverted by the leading canal of Moolathara LBM canal which begins from Kannimari surplus escape to the Meenkara reservoir and the Chulliar reservoir by connecting both reservoirs with a link canal of 4.20 Km length.

Ayacut Area

Originally, the ayacut area upto 10.50 Km of the left bank canal was allocated under Meenkara ayacut (1012 ha.) and the remaining ayacut of 2428 ha. was allocated under Chulliar ayacut. But practically only the area upto 6.2 km i.e., upto the feeding point from Chulliar left bank is being irrigated from Meenkara reservoir and the remaining area of 3076 ha. is being irrigated from the Chulliar reservoir. Hence the present ayacut of Meenkara is 2389 ha. and that of Chulliar is 3076 ha. The total ayacut of the Gayathri project is 5465 ha.

SALIENT FEATURES

1.	Name	:	Gayathri (Meenkara and Chulliar)
			<u>Meenkara</u> <u>Chulliar</u>
2.	Year of Starting	:	1956 1961
3.	Year of 1 st Commissioning	:	1960 1966
4.	Year of completion	:	1964 1970
5.	Location		
	River	:	Meenkara Chulliar (Bharathapuzha) (Bharathapuzha)
	Nearest Town	:	Palakkad Palakkad
	District	:	Palakkad Palakkad
	Longitude	:	76 ⁰ 48' E 76 ⁰ 46' E
	Latitude	:	10 ⁰ 38' N 10 ⁰ 36' N
6.	Type of Dam	:	Earth Dam of Masonry Dam of Zonal Type, Straight Gravity Type & Earthern Dam of Zonal type
7.	Catchment Area	:	90.65 Sq.Km. 29.78 Sq.Km.
8.	Length of Masonry	:	30 m. 555 m
9.	Total Length of Earth Dam	:	934 m 1200 m
10.	Maximum Height of Dam	:	18.9 m 30.5 m
11.	Total Volume (Excluding canals)		
	Masonry	:	0.007 m.cum 0.08 m.cum
	Concrete	:	0.00229 m.cum 0.01154 m.cum
	Earth Work	:	0.91 m.cum. 0.17 m.cum.
12.	Length of Main canal, branches and distributaries	:	64.30 Km. 28.26 Km
13.	Storage	:	11.33 m.cum 13.70 m.cum
14.	Type of Spill way	:	Ogee type Ogee type
15.	Length of Spillway	:	30 m. 30m.
16.	Designed flood discharge	:	472.6 cumecs 223.7 cumecs

17.	Type of Crest gates	:	Vertical Lift type	Vertical lift type
18.	No. of Crest gates	:	2	3
19.	Purpose	:	Irrigation	Irrigation
20.	Ayacut	Net (ha)	3035	2430
		Gross (ha)	6070	4860
21.	Water Spread Area at FRL	:	241.5 ha	165 ha
22.	Canal Sluice level	:	+143.64m.	+136.55m
			1.52mx1.83m	1.52mx1.83m
23.	Canal Sluice			
	Length of LBC	:	7 km.	13.50 Km.
	Length of Branches and Distributary	:	25.10.Km	23.02.Km.
	Length of RBC	:	15 Km.	
	Length of Branch Canal and Distributaries	:	32.20Km.	
	Full supply discharge			
	LB Canal At Meenkara	:	133 m ³ /Sec.	LB Canal at Chulliar 4.5m ³ /sec
	RB Canal at Pulianthoni Anicut	:	2.65m ³ /Sec.	
	Crops	:	Paddy, Pulses, Groundnut, and Cotton.	

KURIYARKUTTY - KARAPPARA IRRIGATION PROJECT

Kuriyarkutty Karappara Project is a multipurpose project which envisages the utilisation of Chalakkudy river water for power generation and tail race water which is let down into Bharathapuzha basin will be utilized for Irrigation. Basically it is an interbasin transfer with the state for apt utilisation of water resources. The tailrace water will be diverted for irrigation 17488 ha. of land in the Chittur taluk and Kozhinjampara taluk of Palakkad District. LOCATION Latitude between 10⁰ 26' N and 10⁰ 48'N & Longitude between 76⁰ 38'E and 76⁰54"E.

BASIC INFORMATION

Potential Area - Net 17488 ha Gross 34976 ha

MAIN COMPONENTS OF THE PROJECTS

1. Storage dam and Power House at Karappara
2. A weir at Kuriarkutty and the conveyance system of water to the power house at Vellaramkadavu.
3. A pick up weir at Vellaramkadavu

4. A canal system of length 18.50 KM. to irrigate the ayacut of Muthalamada and Elevancherry villages.
5. A tail race canal of length 14.63km, to take the water from Vellaramkadavu to Moolathara left bank canal at ch: 11.60 Km. and modification of MLBC for 1.38 Km.
6. The Moolathara right back canal for a length of 32.625 Km to irrigate an ayacut of 13453Ha. in the drought prone area in Kozhinjampara Firka.

MALAMPUZHA IRRIGATION PROJECT

The Malampuzha irrigation project is the first large scale irrigation system attempted in the Malabar District of the old Madras State. The Project works were commenced during 1949 i.e., during the First Five Year plan and completed and commissioned during 1955 under second five year plan. At the time of formation of the State of Kerala in November 1956 the dam was fully operational. The aim of Malampuzha project was not only to bring new lands to cultivation and to supply water for the first crop, but also to supplement the rainfall in the season between the south west and north east monsoon in December and January. The cultivation was depending entirely on rainfall, which was heavy but ill distributed. All low lying lands that can retain some moisture could raise two crops, while the high level land raises only one crop. The seeds for the first crop which coincide with the south west monsoon are laid in the month of may after two or three showers and as soon as this is harvested the land is prepared for the second crop which is entirely transplanted and which coincide more or less with the north east monsoon during the period from October to February. The problem timely rains for the sowing and culmination as well of seeds in the month of May and for the last stage of the second crop in December January was a constant headache to the Malabar riots. But the second crop was more or less a gamble and rarely attempted. The Malampuzha river has its source in the portion of the western ghat lying due north of Palakkad Taluk.

The Malampuzha project consists of a masonry dam across Malampuzha, a tributary of Bharathapuzha and a network of canal system to irrigate an area of 21,349 ha. The stream lies between longitude 76° 38' and 76°42' and latitude between 10°48' and 10°55'. The Malampuzha river has its source in the hills, due north Palakkad Taluk, extending up to the boundary of Coimbatore District of Tamil Nadu. The Dam and reservoir are located about 8 km on the north east of Olavakkod railway station of Southern Railways, which is nearest railway station and about 13 km north east of Palakkad town, which is the nearest town.

The Project consists of two main canals one at left bank and the other at right bank. The canal system was designed with a duty of 60 acres/cusecs with a provision of 12 ½% for transmission losses. Water is let out from the main canal irrigation through a network of branch canals and field channels. Left Bank Main canal irrigates an area of 17,050 ha and right bank main canal an area of 4299 ha.

BASIC INFORMATION

Ayacut Area in Ha		
Achievement	:	Net – 22554, Gross 45705
Potential	:	Net – 21,245, Gross 42490
Volume of rubble Masonry	:	24, 50,000 m ³
Normal bed level	:	85.650 m
Road level at top	:	120.27 m
Length of Masonry Dam	:	1626.71 m
Width of the road at top	:	4.87 m
Top width including operation Platform	:	8.99 m
Maximum width	:	21.336 m
Full reservoir level	:	115.06 m
Dead storage	:	2.4 Mm ³
Maximum draw down level	:	91.44 m
Water spread at FRL	:	22 Sq.km.
Crest Level	:	110.49 m
Length	:	55.00 m
Floor of Stilling Basin	:	85.344 m
Width of Stilling Basin	:	56.69 m
Catchment Area	:	147.635 Sq.Km.
Mean Annual Rainfall in Watershed	:	2169.16 mm
Maximum Rainfall in Watershed	:	2430.9 mm
Minimum Rainfall in Watershed	:	1384.5 mm
Estimated Mean Annual Runoff	:	207.00 Mm ³
Maximum Flood Discharge	:	30,000 cusecs
Total Length	:	222.20 m
Top Width	:	6.10 m
Top Level of Bund	:	120.27 m
Side Slopes adopted D/S & U/S	:	2:1 and 2.5:1
Deepest Foundation Level	:	83.82 m
Maximum Height	:	28.83 m
		<u>LBC</u>
Length of Main Canal	:	31.68 Km
Spill Level of Canal Structure	:	98.80 m
Bed Level at beginning	:	91.44 m
Bed width at beginning	:	18.0m
Depth of flow at full supply	:	1.50m
Normal full supply	:	21.24 m ³ /sec
Gross command area	:	34400 Ha
		<u>RBC</u>
		32 Km
		98.00m
		96.01 m
		7.50 m
		1.05 m
		4.05 m ³ /sec
		7930 Ha

SALIENT FEATURES

1. General Data

1) District	:	Palakkad
2) River	:	Malampuzha
3) Location of Dam	:	13 km from Palakkad Dist. Of Kerala state
4) Name of river/basin	:	Bharathapuzha
5) Longitude and latitude	:	Longitude between East 76 ⁰ 39 and 76 ⁰ 42 (At dam site) latitude between North 10 ⁰ 48' and 10 ⁰ 55'

2. Hydrological Data

1) Catchment area at dam Site	:	147.635 Sq.km
2) Annual Rainfall (mm)		
(a) Maximum	:	2430.90mm
(b) Minimum	:	1384.50mm
(c) Average	:	2169.16mm
3) Annual runoff (M.cum)	:	207Mm ³

4) Reservoir Data

(a) Storage (M.cum)

Existing	Proposed	Original	Revised
(i) Maximum water level		+115.06 m	+115.06 m
(ii) Full Reservoir level		+115.06 m	+115.06 m
(iii) Lowest water level		+91.440 m	+91.440 m
(iv) Dead storage level		+91.440 m	+91.440 m
(v) River bed level		+85.650 m	+85.65 m
(vi) Irrigation outlet level		+91.440 m	+91.440 m
(i) Gross storage capacity		226 Mm ³	226 Mm ³
(ii) Dead storage capacity		2.4Mm ³	2.4Mm ³
(iii) Live storage		223.60Mm ³	223.60Mm ³

b) Elevations (E-m)

c) Water spread area (in sq.km)

	Original	Revised
(i) Dead storage level	+0.81	+0.81

MANGALAM IRRIGATION PROJECT

Mangalam Dam is constructed 17 Km away from Vadakkanchery in Cherukunnam river, a tributary of Mangalam river which joins the Gayathri and then Bharathapuzha. The project is envisaged to irrigate paddy lands in Alathur taluk of Palakkad District. The Ayacut area spread in 13 villages, viz. Kizhakkanchery, Vakkala, Cherukunnam, Vadazhy, Kavakpadam, Mariyapadam, Vadakkanchery, Kannambara, Puthukode, Plazhyapadoor, Kozhani, Kavassery and Anakkappara.

BASIC INFORMATION

District	:	Palakkad
Ayacut area in ha. (Achievement)	:	Net 3308 ha Gross 6616 ha
(Potential)	:	Net 3440 ha Gross 6880 ha
River	:	Cherukunnapuzha (Bharathapuzha)
Benefited District	:	Palakkad & Thrissur
Year of Starting	:	1953
Year of First Commissioning	:	1956
Year of Completion	:	1966
Total Expenditure incurred	:	Rs.225 lakhs(app:) (up to 3/2002)
Officer in charge	:	Executive Engineer, Irrigation Division, Malampuzha.

SALIENT FEATURES

Location	:	Latitude 10 ⁰ 31'N Longitude 76 ⁰ 32'E at Kizhakkanchery and Vandazhy villages.
Type	:	A straight gravity rubble masonry dam and two earthen dam namely saddle I and saddle II of Rock type.

RESERVOIR

1. Full reservoir level	:	77.88 M
2. Storage Capacity	:	25.494 Mm ³
3. Dead Storage	:	0.150 Mm ³
4. Live storage	:	25.344 Mm ³
5. Top level of dam at Parapet	:	80.95 M.
6. Water spread area	:	3.96 Sq.Km.

SPILLWAY AND DAM

1. Type	:	Gravity type
2. Length of masonry Dam	:	162 m
3. Length of left saddle	:	752 m
4. Length of right saddle	:	143 m

5. Maximum height of Dam : 19.35 m
6. Top level of crest of 1st set of spill way shutter : 75.90m
7. Top level of crest of 2nd set of spill way shutter : 76.50 m
8. No. of vents 1st Set : 3 Nos.
9. No. of vents 2nd set : 3 Nos.
10. Size of vents 1st Set : 8.69 x 1.98 m
11. Size of vents 2nd set : 8.69 x 1.98 m
12. Top level of shutter : 77.88 m
13. Type of Shutter : M.S.
14. Total length of spillway : 54.88 m
15. Type of Spillway : Ogee
16. Total Length of Earthen Dam : 901 m.

HYDROLOGY

1. Catchment area : 48.85 Sq.Km.
2. Mean Annual Rainfall in the catchment : 216.8 cm
3. Maximum Annual Rainfall : 257.6 cm
4. Expected Maximum flood discharge : 294.88 m³/Sec
5. Corresponding maximum regulated flow from reservoir : 249.88 m³/Sec.

CANAL SYSTEM

	<u>L.B.</u>	<u>R.B.</u>
Length of main Canal	: 24.00 Km.	21.50 Km.
Length of main Canal, Branches, Distributaries	: 69.50 Km.	
Sill Level Canal	: 64.00 m	64.00 m
Expenditure incurred	: 43.00 lakhs	61.10 lakhs
Total expenditure incurred	= 227.285 Lakhs	

STRUCTURE

Depth of flow at full supply	:	67.9 cm
Normal full supply	:	3.00 m ³ /sec to 3.30 m ³ /sec
Gross Command Area	:	3440 Hectares
Cultivable Command Area	:	3440 Hectare
Cost as per Original Estimate	:	97.5 lakhs
Potential Area	:	Net – 3440 Ha. Gross – 6880 ha
Achievement till 3/2000	:	Net – 3308 Ha. Gross – 6616 Ha
Original Estimated cost	:	45 lakhs
Total Expenditure as on 3/2002	:	125 lakhs
Crops	:	Paddy, Pulses, Tapioca, Ginger, Sesamum

THE EXISTING IRRIGATION SYSTEM

1. ORIGINAL SYSTEMS:

The main canal starts from 0/00 km. at the dam from left side. This main canal is designed for a discharge of 4.53 m³/Sec. The canal bifurcates as left bank canal system and right bank canal system at chainage 0/200 km. The R B canal crosses river by means of an aqueduct. Main canal sluice is located in masonry dam at an off-take level of +64.00. From off-take to 0/200 km., the canal runs parallel to the parent river.

2. L.B. SYSTEM

L.B. Main canal is designed for a discharge at the head for 2.27 m³/sec. to serve an ayacut of 1720 ha. at a duty of 60 acres/cusec. The length of the canal is 24.00 km. and is aligned as a contour canal. It goes through alternate cutting and filling with a maximum cutting up to 10 m. and filling up to 8.5 m. The bed width of the canal at chainage 0.200 km. is 5.50 m. The bed width gradually reduces into 1.60 m. when canal reaches at chainage 20/926 km. Accordingly the discharge of 2.27 m³/sec. at the beginning of canal reduces to 0.15 m³/sec. at the chainage 20/926 km. This canal finally empties its residual water into

Mangalam river, which in course joins Gayathri river to pitched up by Cherrakuzhy weir.

The bed fall of the canal at chainage 0/200km. is 1 in 3017 and at the end reach of chainage 20/926 km. is in 1920. Depth of the canal at initial stage is 75cm. and at the tail end portion is 35cm. The designed duty of the canal is 60 acres/cusec. side slopes are 1:1 in cutting and 1 ½ :1 in embankment. Also a slope of ½: 1 is adopted where soil is very hard. This canal in its course crosses the National Highway '47' (Thrissur- Palakkad) at chainage 13/800km. In view of the heavy embankment at Ayakkad and Pudukkode is necessary regulator and canal escapes have been provided in the upstream of Ayakkad.

3. R.B. SYSTEM

The R.B. Main canal is designed for discharge of 2.27m³/sec. having a length of 21.5km. The canal is aimed for irrigating an area of 1720 ha. the off take from the main canal to R.B. canal has been made by means of a regulator. The canal is designed with a silt factor of 1.1 of Lacey's equation and a value of 0.025 N is used in Kutter's formula. The designed duty of this canal is also 60 acres/cusecs. At present there is not lind portions in this canal.

There are very heavy cutting in canal at chainages 1/710 km. to 1/911 km. 5/332 to 5/634km. and 10/ 463 to 11/ 265 km. and there are two very heavy embankments at chainages 7/640 to 9/658 km. and 8/451 to 9/457 km.

The R.B. Canal crosses 3 rivers, Cherukunnampuzha, Vandazhy Puzha and Ayloor Puzha at chainages 0/0km. 5/231km. and 9/251km. respectively. Aqueduct with flume section and R.C.C. trough are provided in the canal system here. The hydraulic particular of the canal is exactly the same as that of L.B. canal.

POTHUNDY IRRIGATION PROJECT

The Aliyar River, across which the dam is constructed is a tributary of the Gayathri Puzha which in turn joins Bharathapuzha, the longest river in Kerala. The Pothundy Project consists of (a) An Earth Dam across the tributaries of Aliyar River namely Meenachady Puzha and Padipuzha about 400 M above the confluences (b) A masonry Spillway at right flank of the Dam for Surplussing the flood discharge and other appurtenant work like sluice (c) Two main canals, their branches and distributaries to irrigate lands in Chittoor and Alathur Taluk of Palakkad District. Dam site at Pothundy is in Nenmara and Pothundy Villages of Chittoor Taluk in Palakkad District.

BASIC INFORMATION

District	:	Palakkad
Ayacut Area (Ha)		
Potential	:	Net: 4986 Gross: 9972
Achievement	:	Net: 4785 Gross: 9570
River	:	Meenhadipuzha (Bharathapuzha)
Benefited District	:	Palakkad
Year of Staring	:	1958
Year of Completion	:	1971

SALIENT FEATURES

Dam

Location On Aylur River latitude $10^{\circ}.37 \frac{1}{2}'$ N and longitude $70^{\circ}.37 \frac{1}{2}'$ E at Pothundy 8 Km. from Nenmara in Palakkad District of Kerala State.

Type **Earth Dam**

1.	Total Length of Dam	:	1680 m.
2.	Maximum Height	:	32.61 m
3.	Top Width	:	7.32 m
4.	Maximum Width at Bottom	:	133.8 m
5.	Upstream slope	:	2:1
6.	Down Stream Slope	:	2:1.
7.	Bottom Width of cut off trench	:	3 m

Reservoir

1.	Full Reservoir Level	:	108.204 m
2.	Storage Capacity	:	50.914m ³
3.	Dead Storage	:	7.014 m ³
4.	Live Storage	:	43.90 m ³
5.	Top Level of Dam	:	110.642 m
6.	Water Spread area at F.R.L.	:	274.54 Ha

Spill Way

1.	Type	:	Gravity Type with ogee curve
2.	Average Height of Masonry Structure up to Crest Level	:	3 m
3.	Top Level of crest	:	104.09
4.	No. of Vents	:	3 Nos.
5.	Size of Vents	:	12.19 x 4.11 m

6.	Top level shutter	:	104.09 m
7.	Type of Shutters	:	M.S.
8.	Total Length of Spillway fabricable	:	1643.43 m

Hydrology

1.	Catchment Area	:	31 Sq. Km.
2.	Mean Annual Rainfall In the Catchment	:	274 cm
3.	Maximum Annual Rainfall	:	368.25 cm
4.	Expected Maximum Flood Discharge	:	680 m ³ /Sec.
5.	Corresponding Maximum Regulated flow from the Reservoir	:	680 m ³ /Sec.
6.	Discharge Capacity of The Surplus Weir	:	682.44m ³ /Sec

Canal System

			LBC	RBC
1.	Length of Main Canal	:	8.30 Km.	10.500 Km
2.	Sill Level of Canal	:	91.44 m.	91.44 m

Structures

1.	Depth of Flow at Full Supply	:	1.20 m	1.20 m
2.	Normal Full Supply	:	3.30m ³ /Sec.	3.20m ³ /Sec
3.	Net Command Area	:	2530 Ha.	2456 Ha.
4.	Cultivable Command Area as per Verification	:	2074.07	2711.55
5.	Cost as per Original Estimate	:	88 lakhs	
6.	As per Revised Estimate	:	585.8 lakhs	
7.	Expenditure incurred Up to 3/85	:	494.38 lakhs.	
8.	Crops	:	Paddy, Pulses, Vegetable	

WALAYAR IRRIGATION PROJECT

Walayar Project is located at Walayar a tributary of Bharathapuzha. It is a medium Project in Kerala. This Project includes one reservoir at Walayar and 9 anicuts viz. Nettu Iyer, Vadasseri, Koundan, Nellisseri, Thattan Chalai, Kovilakom, Ponnampillai and Vanabhojanam and its canal systems. The dam consists of two portions, viz. (1) a masonry dam of gravity type in the central portion and (2) connecting earth dam in continuation of the masonry dam on both sides. There is

only a left bank main canal taking off from Nellissery anicut. This project serves an ayacut area of 3752 ha in Palakkad district. The main source of water is from rains during south west and north east monsoon. Water is released from the dam into the natural river course at about 3.5 km downstream of the Walayar dam. The main canal is designed for a discharge of 138 cusec (at the head). Paddy is the main crop raised in the ayacut. Location - Walayar River, Longitude between 76° 42' and 76° 50' E and Latitude 10° 43' & 10°52' N.

Ayacut Area in Ha	(Potential)	:	Net – 3752
			Gross – 7504
	(Achievement)	:	Net – 3752
			Gross – 7504
Catchment Area		:	106.35 Km ²
Water Spread Area		:	2.59 Km ²
Length of Masonry Dam		:	150 M
Length of Earth Dam		:	1328 M
Maximum Height		:	28.105M
Storage		:	18.4 Mm ³
Type of Spillway		:	Ogee type
Flood Discharge		:	396.4m ³ /sec
Canal Sluice Level		:	188.975 M
River Sluice Level		:	182.575 M
Purpose of Project		:	Irrigation
Ayacut Area		:	3752 ha
Length of Main canal		:	12.36 Km.
Length of Branches and Distributaries		:	94.226 Km.
Discharge at Head End		:	3.84 M ³ /Sec

Source: Irrigation Dept

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) (Net area in Ha.)

Sl. No.	Name of Schemes	2007-08	2008-09
1	MI Class I	2217.00	1474.81
2	MI Class II	711.00	1522.93
3	Lift Irrigation 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 – PALAKKAD (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
4141	663	844	574	741	949	569	436	8917

Table : 21.5

DISTRIBUTION OF SHALLOW TUBEWELLS IN USE AND THEIR POTENTIAL CREATED / UTILISED ACCORDING TO PUBLIC AND PRIVATE

No. in use			Potential created (Ha)			Potential Utilised (Ha)		
Public	Private	Total	Public	Private	Total	Public	Private	Total
5	631	636	41	1050	1091	41	1030	1071

Table : 21.6

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
190	32	55	66	147	68	65	25	648

Table : 21.7

SHALLOW TUBEWELLS IN THE COMMAND OF MAJOR/MEDIUM PROJECT AND SUPPLEMENTARY IRRIGATION

Location of Dugwells (Nos)			Supplementary Irrigation (Ha)				
Inside Command	Outside Command	Total	Kharif	Rabi	Perennial	Others	Total
58	590	648	24	25	6	7	62

Table: 21.8

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
8	2	3	1	3	6	9	7	39

Table : 21.9

DEEP TUBEWELLS IN THE COMMAND OF MAJOR/MEDIUM PROJECT AND SUPPLEMENTARY IRRIGATION

Location of Dugwells (Nos)				Supplementary Irrigation (Ha)				
Inside Command	Outside Command	Augmentation	Total	Kharif	Rabi	Perennial	Others	Total
0	39	0	39	0	0	0	0	0

Table : 21.10

SURFACE FLOW SCHEMES IN THE COMMAND OF MAJOR/ MEDIUM PROJECT AND SUPPLEMENTARY IRRIGATION

Location of Schemes (Nos.)		Augmentation	Total	Supplementary Irrigation (Ha)				
Inside Command	Outside Command			Kharif	Rabi	Perennial	Others	Total
600	1690	9	2299	135	572	83	13	803

Table : 21.11

SURFACE FLOW SCHEMES- POTENTIAL CREATED AND UTILISED THROUGH TANKS

Tanks (nos.)	Irrigation Potential Created				Total	Irrigation Potential utilised				Total
	Kharif	Rabi	Perennial	Others		Kharif	Rabi	Perennial	Others	
964	1754	1557	277	861	4449	1723	1520	261	810	4314

Table : 21.12

DISTRIBUTION OF SURFACE FLOW SCHEMES (TEMPORARY DIVERSION) IN USE AND THEIR POTENTIAL CREATED/ UTILISED ACCORDING TO PRIVATE AND PUBLIC

No. in use			Potential Created (Ha)			Potential Utilised (Ha)		
Public	Private	Total	Public	Private	Total	Public	Private	Total
29	44	73	872	332	1204	844	327	1171

Table : 21.13

DISTRIBUTION OF SURFACE FLOW SCHEMES (WATER CONSERVATION-CUM GROUND WATER RECHARGE) IN USE AND THEIR POTENTIAL CREATED/ UTILISED ACCORDING TO PRIVATE AND PUBLIC

No. in use			Potential Created (Ha)			Potential Utilised (Ha)		
Public	Private	Total	Public	Private	Total	Public	Private	Total
21	7	28	834	480	1314	809	470	1279

Table : 21.14

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
1228	136	195	233	223	126	82	31	2254

Table : 21.15

DISTRIBUTION OF SURFACE LIFT SCHEMES (ON RIVER) IN USE AND THEIR POTENTIAL CREATED/ UTILISED ACCORDING TO PUBLIC AND PRIVATE

No. in use			Potential Created (Ha)			Potential Utilised (Ha)		
Public	Private	Total	Public	Private	Total	Public	Private	Total
43	1022	1065	5867	3403	9270	5416	3264	8680

Table : 21.16

DISTRIBUTION OF SURFACE LIFT SCHEMES (ON STREAM) IN USE AND THEIR POTENTIAL CREATED/ UTILISED ACCORDING TO PUBLIC AND PRIVATE

No. in use			Potential Created (Ha)			Potential Utilised (Ha)		
Public	Private	Total	Public	Private	Total	Public	Private	Total
13	368	381	324	1445	1769	289	1309	1598

Table : 21.17

DISTRIBUTION OF SURFACE LIFT SCHEMES (ON DRAIN/ CANAL) IN USE AND THEIR POTENTIAL CREATED/ UTILISED ACCORDING TO PUBLIC AND PRIVATE

No. in use			Potential Created (Ha)			Potential Utilised (Ha)		
Public	Private	Total	Public	Private	Total	Public	Private	Total
2	63	65	186	235	421	186	233	419

Table : 21.18

DISTRIBUTION OF SURFACE LIFT SCHEMES (ON TANK/ POND) IN USE AND THEIR POTENTIAL CREATED/ UTILISED ACCORDING TO PUBLIC AND PRIVATE

No. in use			Potential Created (Ha)			Potential Utilised (Ha)		
Public	Private	Total	Public	Private	Total	Public	Private	Total
1	728	729	137	1640	1777	137	1471	1608

Table : 21.19

SURFACE LIFT SCHEMES- POTENTIAL CREATED AND UTILISED THROUGH TANKS/ PONDS

Tanks/ Ponds (Nos)	Irrigation Potential Created (Ha)					Irrigation Potential Utilised (Ha)				
	Kharif	Rabi	Perennial	Others	Total	Kharif	Rabi	Perennial	Others	Total
731	614	583	391	191	1779	541	549	332	187	1609

Table : 21.20

AGRICULTURE LAND AND ITS USE

Graphical Area	Cultivable Area	Net Area Shown	Net Area Irrigated through			
			Maj/ Med Scheme	Ground Water	Surface Water	Total
439882	244869	204169	9848	9574	22063	41485

Table : 21.21

VILLAGES ACCORDING TO THEIR GROUND WATER LEVEL

Below 10 Mtr	10-15 Mtr	15-20 Mtr	20-25 Mtr	25-30 Mtr	30-35 Mtr	35-40 Mtr	40-45 Mtr	45-50 Mtr	50-55 Mtr	55-60 Mtr	60-65 Mtr	65-70 Mtr	Above 70 Mtr	Total
77	14	3	0	0	0	0	0	0	0	0	0	0	0	94

Table : 21.22

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		
17	94	8917	648	39	9604	2299	2254	4553	14157	

Table : 21.23

IRRIGATION POTENTIAL CREATED /UTILISED THROUGH GROUND WATER SCHEMES IN USE

DUG WELLS			SHALLOW TUBEWELLS		
No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised
8854	9403	8809	636	1091	1072

DEEP TUBEWELLS			TOTAL		
No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised
39	357	280	9529	10851	10161

Table : 21.24

IRRIGATION POTENTIAL CREATED/ UTILISED THROUGH SURFACE WATER SCHEMES IN USE

SURFACE FLOW			SURFACE LIFT			TOTAL		
No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised
2250	19622	18840	2240	13238	12306	4490	32860	31146

Table : 21.25

IRRIGATION POTENTIAL CREATED/ UTILISED THROUGH SURFACE FLOW SCHEMES IN USE

TANKS			OTHER STORAGES			PERMANENT DIVERSIONS		
No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised
1	2	3	4	5	6	7	8	9
959	4441	4313	1048	6897	6497	142	5766	5581

TEMPORARY DIVERSIONS			WATER CONSERVATION CUM GROUND WATER RECHARGE			TOTAL		
No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised
10	11	12	13	14	15	16	17	18
73	1204	1171	28	1314	1279	2250	19622	18841

Table : 21.26

IRRIGATION POTENTIAL CREATED/ UTILISED THROUGH SURFACE LIFT SCHEMES IN USE

ON RIVER			ON STREAM			ON DRAIN/ CANAL		
No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised
1	2	3	4	5	6	7	8	9
1065	9270	8680	381	1770	1598	65	421	419

ON TANK/ POND			TOTAL		
No. in use	Potential Created	Potential utilised	No. in use	Potential Created	Potential utilised
10	11	12	16	17	18
729	1777	1609	2240	13238	12306

Table : 21.27

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
2907	2712	2538	651	8808	432	222	338	80	1072

DEEP TUBEWELLS					TOTAL				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
11	12	13	14	15	16	17	18	19	20
13	73	87	107	280	3352	3007	2963	838	10160

Table : 21.28

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
1723	1520	261	810	4314	2314	2133	482	1567	6496

PERMANENT DIVERSIONS					TEMPORARY DIVERSIONS				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
11	12	13	14	15	16	17	18	19	20
1558	1551	617	1855	5581	472	384	39	275	1170

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
389	399	104	387	1279	6456	5987	1503	4894	18840

Table : 21.29

**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
6456	5987	1503	4894	18840	4847	4490	2147	821	12305

TOTAL				
Karif	Rabi	Perennial	Other	Total
11	12	13	14	15
11303	10477	3650	5715	31145

Table : 21.30

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
3353	3007	2963	839	10162	11303	10477	3651	5715	31146

TOTAL				
Karif	Rabi	Perennial	Other	Total
11	12	13	14	15
14656	13484	6614	6554	41308

Table : 21.31

**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
109	149	87	6	351	24	25	6	7	62

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	133	174	93	13	413

Table : 21.32

**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
9	248	13	5	275	91	272	58	8	429

PERMANENT DIVERSIONS					TEMPORARY DIVERSIONS				
Karif	Rabi	Perennial	Other	Total	Karif	Rabi	Perennial	Other	Total
11	12	13	14	15	16	17	18	19	20
0	7	1	0	8	34	39	1	0	74

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	5	10	0	15	134	571	83	13	801

Table : 21.33

**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
5	185	7	0	197	0	13	1	1	15

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	1	0	1	9	44	3	0	56

TOTAL				
Karif	Rabi	Perennial	Other	Total
26	27	28	29	30
14	242	12	1	269

Table : 21.34

**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
135	572	83	13	803	14	242	13	1	270

TOTAL				
Karif	Rabi	Perennial	Other	Total
11	12	13	14	15
149	814	96	14	1073

Table : 21.35

**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
133	174	93	13	413	149	814	96	14	1073

TOTAL				
Karif	Rabi	Perennial	Other	Total
11	12	13	14	15
282	988	189	27	1486

Table : 21.36

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
8440	645	39	1003	317	60	613	11117

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
323	0	0	64	65	4	115	571

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
8763	645	39	1067	382	64	728	11688

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	Vadakkepuzha		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

Table 23.1

NUMBER OF MOTOR VEHICLES HAVING VALID REGISTRATION AS ON 31.03.2010

Goods	Buses			Four Wheelers			Three Wheelers			Tractors/ Trailors				Total
	Three wheeler	Stage carriage	Contract carriage	Motor Car	Motor Cab	Jeep	Autorickshaw	Motor Cycle	Tractor	Tiller	Tractor	Other		
Four wheeler and above	6031	2523	8991	36727	8781	3739	32950	220758	4561	951	121	2665	348248	

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
Palakkad								
Chittoor	37	32	19	2580	47.94	46.54	65.59	60
Mannarkkad	30	25	20	5300		27.94	51.86	60
Palakkad	93	79	87	4350	124.16	123.1	146.4	60
Vadakkanchery	30	29	30	3210	37.49	32.76	44.09	

Table 23.3

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

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
134363	100	152539	113.5	171217	127.4	188722	140.2	205434	152.9
2005-06		2006-07		2007-08		2008-09		2009-10	
Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index	Motor Vehicles (Nos)	Index
217703	162	228493	170.1	283308	210.9	312549	232.6	348248	259.2

Table 23.4

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.)
Palakkad					
Chittoor	36	411	150	8570	2074
Mannarkkad	26	348	255	7181	2046
Palakkad	91	450	50	10419	2320
Vadakkanchery	28	390	107	7611	1937

Table 23.5

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

Transport Vehicles	Palakkad
Multi Axiled/ Articulated Vehicles	1
Trucks/ Lorries	54
Four Wheelers	0
Three Wheelers	540
Total	595
Stage Carriages	101
Contract Carriages	201
P.S.V.S	12
Other Buses EIV	64
Total Buses	378
Motor Cabs	536
Maxi Cabs	260
Other Taxis	4
Total Taxi	800
LMV Passenger 3 Wheeler	3685
4-6 Seaters	0
M Cycle on Hire	0
Total	3685
Other TVs	11
Total TVS	5469
Scooter	896
Mopeds	4668
Motor Cycle	12356
Total	17920
Cars	6397
Jeeps	512
Omni Buses	82
Tractors	54
Trailors	121
Other Vehicles	14
Total	7180
Total NTVS	25100
Grand Total	30569

0 5 10 20 Kilometers
1:600,000

TRANSPORT NETWORK PALAKKAD DISTRICT

Road Type

- NATIONAL HIGHWAY
- STATE HIGHWAY
- DISTRICT ROAD
- OTHER ROADS

KERALA
PALAKKAD

Kerala State Land Use Board
Vikas Bhavan, Thiruvananthapuram-33

