

CHAPTER – III

AGRO CLIMATIC ZONE PROFILE

This chapter portrays the Tamil Nadu economy and its environment. The features of the various Agro-climatic zones are presented in a detailed way to highlight the endowment of natural resources. This setting would help the project to corroborate with the findings and justify the same.

Based on soil characteristics, rainfall distribution, irrigation pattern, cropping pattern and other ecological and social characteristics, the State Tamil Nadu has been classified into seven agro-climatic zones. The following are the seven agro-climatic zones of the State of Tamil Nadu.

1. Cauvery Delta zone
2. North Eastern zone
3. Western zone
4. North Western zone
5. High Altitude zone
6. Southern zone and
7. High Rainfall zone

1. Cauvery Delta Zone

This zone includes Thanjavur district, Musiri, Tiruchirapalli, Lalgudi, Thuraiyur and Kulithalai taluks of Tiruchirapalli district, Aranthangi taluk of Pudukottai district and Chidambaram and Kattumannarkoil taluks of Cuddalore and Villupuram district. Total area of the zone is 24,943 sq.km. in which 60.2 per cent of the area i.e., 15,00,680 hectares are under cultivation. And 50.1 per cent of total area of cultivation i.e., 7,51,302

hectares is the irrigated area. This zone receives an annual normal rainfall of 956.3 mm. It covers the rivers of Cauvery, Vennaru, Kudamuruti, Paminiar, Arasalar and Kollidam. The major dams utilized by this zone are Mettur and Bhavanisagar. Canal irrigation, well irrigation and lake irrigation are under practice. The major crops are paddy, sugarcane, cotton, groundnut, sunflower, banana and ginger. Thanjavur district, which is known as “Rice Bowl” of Tamilnadu, comes under this zone.

Profile of Thanjavur District

The composite Thanjavur District comprising the present Thanjavur, Thiruvarur and Nagapattinam districts along with the composite Trichy district was known as Chola Naadu or Chola Mandalam in ancient days. Thanjavur was the capital of Chola kings for many years and later Maratha rulers had this place as their headquarters. Even now, the Maratha Royal Family has their heirs in Thanjavur.

Thanjavur district is one of the 28 districts in Tamil Nadu. The district was carved out from the composite district of Thanjavur, which had been trifurcated into Thanjavur, Thiruvarur and Nagapattinam. This district is a part of cauvery delta with rich and fertile soil. This district is contributing the major part of the food grains particularly paddy to the state pool and hence popularly known as “Rice Bowl” of Tamil Nadu and “Granary of South India”. A very old and efficient canal irrigation system has facilitated agriculture to be the main occupation of the population. The “Stanley Reservoir” constructed during pre-independence period across Cauvery River at a distance of about 200km northwest of Thanjavur is still serving as the chief source of surface water irrigation in Thanjavur delta. Water received from the dam through Cauvery River is well regulated at Grand Anicut located at a distance of 28 kms and distributed in a balanced way through 3 main systems like Cauvery, Vennar and Grand Anicut canal. However in the recent past, the storage capacity in the Stanely Reservoir has become low and people of the district are being forced to venture upon other sources for irrigation water particularly ground water.

The original Thanjavur District was bifurcated in late 80's and it was constituted with 15 development blocks. With effect from 1 January 1997, Valangaiman block became part of the then newly formed Tiruvarur District and therefore the district has 14 blocks at present. Bound by Tiruchirapalli, Ariyalur and Cuddalore districts in the north, Pudukkottai district in the west, Bay of Bengal in the south and Thiruvarur and Nagapattinam districts in the east. The district lies between $9^{\circ} 50'$ and $11^{\circ} 25'$ northern latitude and $78^{\circ} 45'$ and $79^{\circ} 25'$ of eastern longitude. The soil is fertile because of the deltaic terrain and greater part of the district consist of an undulating plain bisected by the valley of Cauvery. The climate is tropical and the district falls under the category of medium and high rainfall region with average rainfall around 1020 mm. Majority of the rain is received through North East Monsoon (October to early December).

The economy of the district is basically agrarian and about 75% of the work force is depending on agriculture. Paddy is the main crop of the district and raised in nearly 60% of the cropped area. Sugarcane, groundnut, pulses, gingelly and coconut are the other important crops cultivated in the district. Surface irrigation is the main source of irrigation. Cauvery, Vennar, and Grand Anaicut Canal with their subsidiaries viz. Vettar, Kudamurutti, Thirumalairajan, Veerachozhan, Arasalar, Agniyar, Kalyana Odai and Poonaikuthi river constitute the irrigation system of the district.

Being a land of temples, Thanjavur had always been the patron of fine arts and crafts. Bharathanatyam and Carnatic Music have their strong roots in Thanjavur. Thanjavur paintings and Thanjavur art plates are special items of the district. Thanjavur town is known for music instrument manufacturing especially, Veena and Harmonium. The areas near Kumbakonam are famous for icon making, bell metal wares, lead utensils and silk sarees. Pith work known as Netti work is also predominant in many places.

The basic strategies advocated under agro-climatic Zonal Planning System is to include improvement of Cropping systems, development of land and water resources, animal husbandry and fisheries activities. The district has extensive irrigation canal

network of the Cauvery system. Over dependence on canal irrigation which is subject to ravages of the monsoon and complexities of inter state water sharing arrangements among the riparian states is the main negative feature of the district.

Table 3.1 A Synoptic View of Thanjavur District

1. Geographical area	:	3,39,657.Ha.		
A. No. of Blocks/Taluks	:	14/8		
B. No. of villages	:	904		
2. Rainfall	:	1019.54		
a. Normal	:			
b. Actual	:			
		1998	1999	2000
		1233.80	979.21	1144.18
		<i>(In hectare) (1999-2000)</i>		
3. Agriculture	:	Net Sown Area		
		2,03,175		
		Forests		
		3,426		
		Farm forestry		
		6,288		
		Current fallows		
		8,396		
		Other fallows		
		26,656		
		Meadows& grazing lands		
		1,746		
		Land not available for cultivation		
		77,122		
		Cultivable wastes		
		10,647		
		Land not fit for Cultivation		
		2,201		
5. Irrigation (Ha)	:	1,74,211		
Net Irrigated Area	:	1,58,353 (90.9%)		
- by canals	:	7,913 (4.5%)		
- by tanks	:	7,116 (4.1%)		
- by tube wells	:	829 (0.5%)		
- by wells	:	43,370 (24.9%)		
- Irrigated twice	:			
6. Size of Land holdings	:	Size of Holding	No	Area.(Ha)
		Less than 1 Ha	2,13,782	75,805
		1 Ha to 2 Ha	38,191	54,199
		2 Ha to 3 Ha	13,063	31,632
		More than 3 Ha	12,740	68,134
		Total	2,77,776	2,29,770
7. Animal Husbandry	:	Plough animals		
		1,55,479		
		Cattle		
		3,76,128		
		Buffaloes		
		58,873		

		Sheep	27,143
		Goat	2,30,470
		Poultry	6,84,392
8. Human Population	:	Male	1091557
		Female	1113818
		Total	2205375
9. Classification of workers	:	Cultivators	1,89,724
		Agricultural labourers	3,23,026
		Household Industries	21,014
		Non- agri labourers	2,26,373

Source: NABARD, *Potential Linked Credit Plan: Thanjavur District, Tamil Nadu, 2001 – X Five Year Plan period 2002 – 2007*, Chennai 2001

The ground water exploitation is to the extent of 42% as per 1992 data leaving reasonable scope for development. Paddy, pulses, groundnut, gingely and sugarcane are the main field crops and coconut, cashew and banana are the important tree crops. Soya beans and Cotton also find a place in the agriculture map of the district. Thanjavur district is one of the six districts in the state where Oil-palm cultivation has been introduced.

The district has large tracts of land suitable for horticulture activities. Dairy and goat rearing are popular allied activities. Poultry farming also is done in some places. The district is blessed with the presence of substantial network of various Govt. departments, banking network and specialized agencies like the Soil and Water Management Research Institute, Soil Survey and Land Use Organisation, Tami Nadu Rice Research Institute, Paddy Processing Research Centre, Regional Coir Training and Development Centre, Marine Products Export Development Authority, etc. The district is industrially backward with 5 blocks classified as Industrially Most Backward and 6 Blocks as Industrially Backward. Well-developed Handloom and Handicrafts Sector include activities like icon making, lamp making, art-plates manufacture, musical instruments production etc.

The dependability of ground water is further increased by the vagary of monsoon as well as poor intensity of rainfall in the delta. This situation had put people to lots of hardships affecting even the drinking water supply in addition to agricultural instability.

When there is flow in Cauvery River, natural recharge is taking place in the delta area. With surface water availability not guaranteed, to the full extent, at a time when it is needed, people resorted to exploit the ground water in large proportions. This has caused lowering of water table in the area especially in summer months. In Thanjavur district, coastal habitations are facing severe drinking water supply problems especially in summer. A stage has come to sink deep tube wells to augment water supply in areas where shallow open wells are serving as the source of drinking water supply. To avoid further continuation of such a precarious situation, Government of Tamil Nadu timely thought it is necessary to arrest further depletion of water level by adopting suitable techniques of artificially recharging the groundwater aquifer.

Table 3.2 Profile of Kumbakonam Block in Thanjavur District

Major Features		
1	Location and Extent	Kumbakonam block is bounded by Tiruchirapalli district in the north, by Tirupanandal and Thiruvidaimaruthur blocks in the east, by Thiruvarur block in the south and by Papanasam block on the west. It falls within the following co-ordinates: East Longitude: 79°16'30'' – 79°27'00'' North Latitude: 10°53'45'' – 11°06'50'' of G.I toposheets 58M/8 and N/5. This block has a total extent of 188.57 sq.km
2	River & Drainage	Kollidam river flows from west to east forming the northern boundary of this block. Cauvery river and Arasalar river flow at the central part of the block flanking Kumbakonam town. Thirumalairajanar river, Mudikondan river and Kodamurutti river flow from west to east on the southern part of the block. At Sundaraperumalkoil, 8 km west of Kumbakonam, Kodamurutti river is divided into Mudikandam river and Kodamurutti river.

2	Rainfall	Nearest rainfall station is situated at Kumbakonam. During the period from 1988 to 1996 maximum rainfall of 1881mm was recorded in the year 1996. Minimum rainfall of 668mm was recorded in the year 1988.
4	a) Geology	Levee sand and clay alluvial formations of quaternary period occupy the entire block area.
	b) Geomorphology	Rivers like Kollidam, Cauvery, Arasalar, Kodamurutti have favoured the formation of geomorphic units like flood plains, delta plains and levee complexes.
5	Hydrogeology	
	a) Water level	Summer water level ranges from 4.7 to 5.8m. Winter water level ranges from 1.6 to 2.6m
	b) Aquifer Thickness	Sedimentary area covered by quaternary alluvial formations. Thickness of filter point aquifer ranges from 6 to 8m.
	c) Depth to Basement	Huge thickness of sedimentary beds exists. No bore well data indicating depth to basement is available.
	d) Water Quality	Potable quality of water is available from the water table aquifer. The E.C value ranges from 740 to 1340 micromhos / cm.
6	Soil	The hydrological soil group 'B' with moderate infiltration and moderate runoff potential predominant in this block to the extent of 87%. The soil group 'C' with slow infiltration and moderate runoff potential covers about 12% area of the block. Hydrological soil group 'A' with high infiltration and low runoff potential constitutes a very little area to the extent of 1%.
7	Slope	The entire block area falls under nearly level sloping category.
8	Land Use	Major portion of the block is covered under plantation (about 69%). Settlements occupy about 22% of the block area, water bodies' account for nearly 7% of the block area.

Source: Institute of Remote Sensing, *Identification of Recharge areas Using Remote Sensing and GIS in Tamil Nadu*, Anna University, Chennai, 1998 – 1999

2. North Eastern Zone

The area covered by this zone is Chengleput district, North Arcot district, Cuddalore and Villupuram district excluding, Chidambaram and Kattumannarkoil taluks

and Ariyalur taluk of Tiruchirapalli district. The total geographical area of the zone is 31,194 Sq. kms. The total geographical area of the zone is 32,194 Sq. kms. The area under cultivation is 50.5 percent of the total area of cultivation. The annual normal rainfall is 1109 mm. The major rivers are Polar, Ponnai, Cheiyar, Vellar, Thenpennai, Manimuthar and Komugi. Major dams used for irrigation are Mettur, Sathur, Veedur, Komugi, Manimuthar and Wellington. Canal irrigation, well irrigation, Irrigation by lakes and by dams is under practice. The major crops are paddy, cholam, cumbu, ragi, groundnut, sugarcane and cashewnut. Chengleput district which is known as "Lake District" and also where the popular "Madhurandhagam lake" presents comes under this zone.

Profile of Villupuram District

Villupuram District was formed on 30th September 1993 by bifurcating the erstwhile composite South Arcot District. Villupuram is the district Headquarter. It is the fourth largest district in Tamil Nadu and is predominantly an agrarian district. The boundaries are Bay of Bengal and the Union Territory of Pondicherry in the East; Kanchipuram and Tiruvanamalai districts in the North; Cuddalore district in the South and Dharmapuri and Salem districts in the West. Plains excepting Kalrayan Hills and Gingee Hills characterize the entire district. There are eight taluks sub-divided into twenty-two blocks with red soil, sandy loam and black cotton soil mainly accounting for the soil structure.

Pennar, Gadilam, Gomukhi, Malattar and Sankaraparani are the rivers flowing in the district. The district is underlined by hard rocks of Achaean age in the West followed by the sediment Aries comprising of the clays and sand stones in the East. Artesian conditions exist at places in sediment Aries.

Agriculture is the main stay of the people. About 86 % of the active workers in the district are engaged in agriculture. Land holdings are highly fragmented and about 89.7% of the land holdings are less than 2 ha. each. The district has a vast reserve of

mineral deposits like fire clay, silica sand, steatite, black granite, multicolored granite and blue metal. Forest area constitutes about 8% of the total area of the district spreading over the areas bordering Salem, Dharmapuri and Thiruvannamalai districts. The Coastal length of the district is about 30 km in Marakannam and Vanur blocks. The Villupuram District is one of the industrially backward districts of Tamil Nadu. There is no industrial estate in the district. It has four sugar mills of which three are in the co-operative sector and one in private sector. It has a spinning mill, two cotton textile mills, few shoe making units, few sago units, granite units, crusher units, a few edible oil mills, a number of modern rice mills, two paper pulp units, two mineral water units etc. Other than these, there is no major industrial unit in the district. Nearness to Pondicherry offers good scope for development of ancillary units in the district. Further, the district offers good scope for setting up of agro processing industries.

Adequate transport facilities are available in the district for transport of passengers and goods. The district is well connected by rail. The total length of railway lines in the district is about 180km. Out of the 8 taluks excepting Gingee, Sankarapuram, and Vanur taluks; the remaining 5 taluks are connected by rail. Roads connect all the towns and villages in the district. All the towns, villages, hamlets and tribal villages are electrified. Out of the total power consumed in the district, about 63.7 per cent goes to agriculture, 13.7 per cent goes to industries and the balance of 22.6 per cent to household, public lighting, etc.

As per the latest census data, the SC/ST population in Villupuram District was about 7.73 lakhs forming 30.3 per cent of the population of the district. Thus there is a very good scope for voluntary agencies to play a major role for the upliftment of the downtrodden.

Table 3.3 : A Synoptic view of Villupuram District

1. Geographical Area	:	7222.03																				
a) No. of Blocks/Taluks	:	22/8																				
b) No. of Revenue Villages	:	1490																				
2. Rainfall (in mm)	:	Actual																				
Average = 989 mm																						
Normal = 947.7 mm																						
		<table border="1"> <tr> <th>1997</th> <th>1998</th> <th>1999</th> </tr> <tr> <td>1019</td> <td>1164</td> <td>932</td> </tr> </table>	1997	1998	1999	1019	1164	932														
1997	1998	1999																				
1019	1164	932																				
3) Agriculture (1999-2000) (in ha.)	:	<table border="1"> <tr> <td>Geographical Area</td> <td>722203</td> </tr> <tr> <td>Net Sown Area</td> <td>341035</td> </tr> <tr> <td>Fallow Land</td> <td>124114</td> </tr> <tr> <td>Land not available for cultivation</td> <td>119102</td> </tr> <tr> <td>Area under HYV seeds</td> <td>242386</td> </tr> <tr> <td>Fertilizer consumption pattern / ha (Kg)</td> <td>124</td> </tr> <tr> <td>ST/LT investment (in Rs)</td> <td>48000</td> </tr> <tr> <td>Forest Land</td> <td>71697</td> </tr> <tr> <td>Land not fit for Agricultural use.</td> <td>57297</td> </tr> <tr> <td>Thoppu</td> <td>8958</td> </tr> </table>	Geographical Area	722203	Net Sown Area	341035	Fallow Land	124114	Land not available for cultivation	119102	Area under HYV seeds	242386	Fertilizer consumption pattern / ha (Kg)	124	ST/LT investment (in Rs)	48000	Forest Land	71697	Land not fit for Agricultural use.	57297	Thoppu	8958
Geographical Area	722203																					
Net Sown Area	341035																					
Fallow Land	124114																					
Land not available for cultivation	119102																					
Area under HYV seeds	242386																					
Fertilizer consumption pattern / ha (Kg)	124																					
ST/LT investment (in Rs)	48000																					
Forest Land	71697																					
Land not fit for Agricultural use.	57297																					
Thoppu	8958																					
4) Irrigation	:	<table border="1"> <tr> <td>Net Irrigated Area</td> <td>209415</td> </tr> <tr> <td>By Canals</td> <td>8912</td> </tr> <tr> <td>By Wells</td> <td>49134</td> </tr> <tr> <td>By Tanks</td> <td>50602</td> </tr> <tr> <td>By Other Sources</td> <td>767</td> </tr> </table>	Net Irrigated Area	209415	By Canals	8912	By Wells	49134	By Tanks	50602	By Other Sources	767										
Net Irrigated Area	209415																					
By Canals	8912																					
By Wells	49134																					
By Tanks	50602																					
By Other Sources	767																					
5) Size of Holdings	:	<table border="1"> <tr> <th>(Hectares)</th> <th>No.</th> <th>Ares (ha)</th> </tr> <tr> <td>Less than 1</td> <td>165930</td> <td>165930</td> </tr> <tr> <td>Bet. 1 and 2</td> <td>71800</td> <td>107700</td> </tr> <tr> <td>Above 2 .</td> <td>27252</td> <td>92147</td> </tr> </table>	(Hectares)	No.	Ares (ha)	Less than 1	165930	165930	Bet. 1 and 2	71800	107700	Above 2 .	27252	92147								
(Hectares)	No.	Ares (ha)																				
Less than 1	165930	165930																				
Bet. 1 and 2	71800	107700																				
Above 2 .	27252	92147																				
6) Animal Husbandry	:	<table border="1"> <tr> <td>Plough Animals</td> <td>418455</td> </tr> <tr> <td>Cattle</td> <td>523785</td> </tr> <tr> <td>Buffaloes</td> <td>112612</td> </tr> <tr> <td>Sheep/Goat/ Piggery</td> <td>943876</td> </tr> <tr> <td>Poultry</td> <td>735640</td> </tr> </table>	Plough Animals	418455	Cattle	523785	Buffaloes	112612	Sheep/Goat/ Piggery	943876	Poultry	735640										
Plough Animals	418455																					
Cattle	523785																					
Buffaloes	112612																					
Sheep/Goat/ Piggery	943876																					
Poultry	735640																					

7) Population (as per 2001 Census)	:	Male	1484573
		Female	1459344
		Total	2943917
8) Classification of Workers (in lakhs)	:	Main Workers	12.84
		Cultivators	4.50
		Small/Marginal Farmers	2.45
		Agricultural Labourers	5.13
		Household Workers	2.54
		Other Workers	0.66
		Marginal Workers	1.08
		Non-workers	13.64

Source: NABARD, *Potential Linked Credit Plan: Villupuram District, Tamil Nadu, 2001 – X Five Year Plan period 2002 – 2007*, Chennai 2001

Special Features of the District

The literacy rate is very low when compared to the state average. Literacy among females is also very low as compared to males. The Small and Marginal Farmers constitute the major chunk of the cultivators. The district also has a concentration of agricultural labourers. Thus the district offers good scope for formation of Self Help Groups. Though the district is blessed with natural resources like good soil, adequate quantity of water, large deposits of minerals, nearness to growth centers like Pondicherry, Tiruchirapalli, Chennai, Salem, etc., the industrial activity is not picking up due to lack of enterprise among the people of the district.

Villupuram Taluk, with undulating terrain, is generally sloping towards southeast. The district has number of isolated hillocks, mostly in Gingee area. The western border area in Sankarapuram and Kallakurichi Taluks is occupied by Kalrayan hill range. There are number of residual and denudational hills in Tirukoilur, Kallakurichi and Gingee taluks. In the Eastern sedimentary terrain, tertiary uplands are seen which are mainly composed of sandstone.

This district lies in 3 river basins, namely Tondiar basin, Ponniar Basin and Vellar basin. The areas falling in Gingee, Tindivanam, part of Villupuram and Vanur Taluks form part of Tondiar basin, which is drained by Tondiar and Gingee and their tributaries. Ponniar and its tributaries like Gadilam and Malattar drain the middle portion of the district covering parts of Sankarapuram, Tirukoilur and part of the Villupuram taluks. The south western part of the district lies in Vellar basin, which is drained by Manimuktha Nadhi, Gomukhi Nadhi and Mayura Nadhi of Vellar basin. All the rivers are ephemeral in nature and carry only floodwater during monsoon.

Table 3.4 Profile of the Vikravandi Block in Villupuram District

Basic Features		
1	Location and Extent	Vikravandi block of Villupuram district is bounded in the north by Vallam and Mailam blocks; south by Koliyanur, west by Kanai block and east by Mailam and Vanur blocks. It falls within the coordinates of North Latitude 11°57'40'' to 12°08'21'' and East longitude 79°24'40'' to 79°37'30'' of SOI toposheets 58P/8 and 12 and 58M/5 and 9. The block area is 242.03 sq.km.
2	Drainage and River	Gingee river is draining the central part of the block.
3	Rainfall	Nearest rainfall station is located at Vanur. The average rainfall for nine-year period (1988 to 1996) was 895 mm. The Minimum rainfall was 204mm in the year 1995. The Maximum rainfall was 1305mm in the year 1990.
4	a. Geology	The block area is covered by hornblende biotite gneiss, charnokite of crystalline rocks and alluvium on south east of the block.
	b. Geomorphology	The Major landform noticed in this block is pediments, buried pediment shallows, buried pediment deep and floodplains.
5	Hydrogeology	
	a. Water level	During the year 1972 to 1976, the summer water level ranges from 10.30 to 16.60m and the winter water level ranges from 7.03 to 15.65m.
	b. Weathered zone Thickness	The thickness of weathered zone varies from 9 to 28 mm.
	c. Depth to basement	The depth to bedrock ranges from 9 to 72m.
	d. Water Quality	Electrical conductivity value ranges from 1500 to 4000 micro mhos/cm.

6	Major soil types	Hydrological soil group 'B' with moderate infiltration and moderate runoff potential constitute about more than half of the area of the block. The hydrological soil group 'C' with slow infiltration and moderate runoff potential covers to the tune of the little more than one-third area of the block. Hydrological soil group 'A' with high infiltration and low runoff potential covers the rest of the area.
7	Slope	Almost the entire block has nearly level sloping (0-1%) category.
8	Land Use	About 59% of the block area is identified as water bodies and 34% of the block area is identified as agricultural land.

Source: Institute of Remote Sensing, *Identification of Recharge areas Using Remote Sensing and GIS in Tamil Nadu*, Anna University, Chennai, 1998 – 1999

3. Western Zone

This zone covers Periyar district, Coimbatore district, Tiruchengode taluk of Salem district, Karur taluk of Trichirapalli district and Northern part of Madurai district. This zone constitutes an area of 15,678sq.km. The area under cultivation is 6,98,105 hectares which is 44.5 per cent of the total area. And only 42.4 per cent of the area under cultivation is the irrigated area i.e., 2,96,201 hectares. The annual normal rainfall is 653.7 mm. Cauvery, Noiyal, Bhavani, Uppar, Sirvani and Amaravathi are the major rivers and Mettur, Bhavanisagar and Amaravathi are the major dams utilised by the zone.

Profile of Erode District

Erode district with a geographical area of 7505.58 Sq. kms is divided into 7 taluks and 20 blocks. The district has 539 revenue villages and the population is 23.20 lakh. Out of the geographical area of 8.16 lakh ha, about 3.09 lakh hectares. Constitute cultivated area forming 37.9 per cent of the total geographical area. Forest cover is about 2.29 lakh hectares and account for 28.1 per cent of the total geographical area of the district. The district falls under the agro-climatic zone of Southern plateaus and Hills. The district enjoys semi arid dry sub humid climate. The Soil Survey and land use Organisation, Coimbatore has identified about 30 soil series. A major part of the district

is covered with red soils. Alluvial Soils are found in small patches along Noyyal and Bhavani rivers. The district forms part of Cauvery River Basin and is blessed with a network of rivers viz., Bhavani, Noyyal, Amaravathi and their tributaries. The river Cauvery flows along the eastern border of the district. The normal rainfall in the district is 717 mm.

The net irrigated area of 1.71 lakh hectares accounts for 55.3 per cent of the net sown area and the cropping intensity is about 109 per cent. The Western Ghat Development Project is under implementation in the hill areas under which propagation of crops is being done by the Horticulture Department. The Government of India has sanctioned Rs.343.96 lakh for the Wasteland Development Project in Sathyamangalam block covering 4000 ha of land with grant assistance. There is a good network of banks in the district with 206 branches of 35 Commercial Banks, 32 branches of Erode DECCB, 228 PACBs and 12 PCARDBs. Further, 10 Urban Co-operative Banks and, one branch each of the TAICO Bank and REPCO bank are also functioning in the district as on 31st March 2001.

Table 3.5 Synoptic view of Erode District

1. Geographical Area	:	7505.58 Sq. kms											
I. No. of Blocks/ Taluks	:	20 / 7											
II. No. of villages	:	539											
2. Rainfall (mm) years	:	<table border="1"> <thead> <tr> <th>Year</th> <th>Normal</th> <th>Actual</th> </tr> </thead> <tbody> <tr> <td>1999</td> <td>717</td> <td>794.8</td> </tr> <tr> <td>2000</td> <td>717</td> <td>780.3</td> </tr> </tbody> </table>			Year	Normal	Actual	1999	717	794.8	2000	717	780.3
Year	Normal	Actual											
1999	717	794.8											
2000	717	780.3											
3. Agriculture (in ha)													
a) Geographical area	:	816191											
b) Net Sown Area	:	309131											
c). Fallow land – current	:	140659											
d). Land not put to Non-agricultural use	:	366401											

e) Consumption of Chemical Fertilizers & Pesticides					
i) Fertilizers (in 1000 tones)	:				
		N	P	K	
		45196	17963	20163	
ii) Pesticides	:				
a) Dust	:				94338
b) Liquid	:				165132
iii) Urea (in 1000 tones)	:				73436
5. Irrigation (in ha)	:				
a) Net irrigated area	:				170979
b) By canals	:				95805
c) By wells	:				68572
d) By tanks	:				307
e) By other sources	:				6295
6. Size of Holdings	:				
		Size of holdings	No.	%	Area (ha)
		Less than 1 ha.	147,657	49	72,098
		Between 1 & 2 ha.	77,984	26	106,910
		Between 2 & 4 ha.	50,450	17	136,202
		Above 4 ha	25,380	8	179,406
		Total	301,471	100	494,616
7. Animal Husbandry – 2000-01	:				
a) Plough Animals	:				86989
b) Dairy Animals (in lakh)	:				
i) Cattle	:				329592
ii) Buffaloes	:				259732
c) Sheep/Goat	:				686833
d) Poultry (Layers)	:				2700000

8. Population (1991 Census)	:	(in lakh)
a) Male	:	11.85
b) Female	:	11.35
c) Total	:	23.20
9. Classification of Workers	:	(in lakh)
a) Cultivators	:	2.740
b) Small and Marginal Farmers	:	2.190
c) Agricultural Labourers	:	4.500
d) Artisans	:	0.001
e) House-hold Cottage Industries	:	0.470
f) Allied Workers	:	0.610
g) Other Workers	:	3.810
h) Total workers	:	12.140
i) Non Workers	:	11.060
Total Population	:	23.200

Source: NABARD, *Potential Linked Credit Plan: Erode District, Tamil Nadu, 2001 – X Five Year Plan period 2002 – 2007*, Chennai 2001

The district is well connected by road and rail transport. It is one of the districts in Tamil Nadu, which is rich in Cattle wealth and progressive in outlook with specialized intensive development in agriculture and industrial sector. The district leads in the production of the milk in the state while also having largest area in the state where turmeric is cultivated. Farmers and entrepreneurs are renowned for their new and innovative approaches.

The district has taken the lead in the state with respect to implementation of the government schemes during the previous year and stands first in respect of KVIC schemes. Pilot Project for linking SHGs with banks is being implemented in association with much NGOs Government of India CBCS Project was under implementation where women undertook group activities. Women Development Corporation opened its office for encouraging women groups. TANWA women groups are organized by agricultural departments to impart training with a view to upgrade the skill of women in agricultural operations.

Apart from agriculture, other sectors like industries, trade and commerce also have a prominent position in the economy of the district. During the year 1999-2000, the Tamil Nadu Corporation for Industrial Infrastructure Development Ltd. (TACID) launched a mega project to provide an industrial estate at Perundurai on 2800 acres of land, and in association with SIPCOT prepared the master plans to provide all the basic infrastructural facilities required under one roof. The Indian oil Corporation has started an LPG bottling unit there and eight common Effluent Treatment plants are being set up to facilitate textile, dyeing and tannery units to function.

About seventy thousand weavers undertake textile production actively through 31,888 handlooms and 51,650 power loom units of which 4,686 power looms are in the Co-operative fold. The weekly textile market at Erode is well known and traders from the north also participate. Leather tanneries exist in the district and are localized between Erode and Bhavani. The district is the largest producer of milk in the state with 749 milk producers' cooperative societies and on an average 2.18-lakh liters of milk is procured on a daily basis. Of this 0.62 lakh liters is sent to Chennai and the remaining milk is either sold in the district or converted to milk powder. Apart from the two sugar mills, jaggery making in the KVI sector is also thriving. The weekly jaggery markets at Kavundapadi and Chithode are well known in the southern states.

Second largest turmeric market of the country is located at Erode. During the previous year, a turmeric trading centre was completed in Perundurai estate on land extending over 50 acres at a cost of Rs. 30.00 crore facilitate about 200 traders to carry our regular trading in turmeric. The district is the largest producer of turmeric in the state with over 10,000 hectares in the state being cultivated here. Ready-made garment units are emerging as major economic activity in the Erode, Bhavani and Perundurai triangle.

The district has 23 regulated markets spread over 17 blocks in the district, which cover 521 villages to enable marketing of agricultural and industrial outputs. Groundnut

crop is being raised annually on about 60,000 hectares in the district. The setting up of the urban vegetable markets popularly known as 'Uzhavar Santhais' have ensured marketing facilities for the producers of vegetables from villages near the town municipalities. There are four such markets in the district. Paddy, jowar, ragi are the main food crops. About one-lakh hectares of land are under cultivation of oilseeds. Turmeric and cotton are the major commercial crops.

A vermicompost unit has been set up in the district with NABARD refinance report. Similarly production of bio-control agent for control of sugarcane was supported with NABARD refinance. An export-oriented egg powder unit in the private sector has been established during 1997-98 and this is one of the three such units in the country. It is now earning substantial foreign exchange since all the egg powder is exported. Floriculture is emerging as a commercial crop in Sathy, Bhavanisagar, Nambiyur, Gobi, T.N.Palayam and Talavady blocks. Gherkin cultivation is expected to take roots in Sathy and BhavaniSagar areas as a new venture. Medicinal plants cultivation is proposed to be taken up with the assistance of the Forest Dept, and a German NGO by offering subsidy to the farmers.

Erode district is having moderately undulating topography with general slope from northeast to southwest. The northwestern part of the district which includes Thalavadi, Sathyamangalam, Gobichettypalayam, BhavaniSagar, Bhavani, Andhiyur, Ammapet blocks is flanked by southern slopes of eastern ghats. Southern slopes of Eastern Ghats flank the maximum elevation noted on the ghat. The maximum elevations noted on the ghat section are 1439m. This district form the part of Cauvery basin and contributes several tributaries viz., Bhavani, Noyyal, Uppar, Vattamalakkurai, Amaravathi, Shanmuganandhi and Nallanthangal Odai. These tributaries drain the district area into the river Cauvery. There are much irrigation projects namely Lower Bhavani Project across Uppar river, Vattamaalakarai odai. Because of these irritations projects, there is a well-built surface water irrigation network covering the major part of the district. Amaravathi River alone passes through the southern part of the district to

confluence in Cauvery in Karur district. The presence of these tributaries have helped much of the district to get number of good protected water supply through comprehensive water supply from river sources.

Table 3.6 Profile of Bhavani Block in Erode District

Major Features		
1	Location and Extent	Bhavani block is located on the eastern part of Erode district. It is bounded on the north by Ammapet and Andhiyur block, west by Gobi and Thukkanaickenpalayam blocks, east by Sankari block (Namakkal district) and south by Perundurai block. This block area falls within the coordinates of East Longitude 77°30'15'' to 77°44'00'' and North latitude 11°23'00'' to 11°32'30'' of G.I sheet 58 E/6, 7, 10 and 11.
2	Drainage and River	The river Bhavani is flowing from west to east direction through the central part of the block. The Cauvery river is flowing in the eastern part of the block. Generally Dendritic pattern of drainage exists in this block.
3	Rainfall	The nearest rainfall station is at Bhavani. During the five-year period (1991 to 1996) maximum rainfall of 922.6mm was noted in the year 1994. The minimum rainfall of 424 mm was noted in the year 1995.
4	a) Geology	The entire area of the block comes under hard, crystalline rock terrain of Archean age. The block is comprised of various rock types such as gneiss granites and pyroxenite. The gneiss is the predominant rock type of this block.
	b) Geomorphology	Lands forms like, denudational hills and deep buried pediments, pediments, shallow buried pediments and floodplain are noted.
5	Hydrogeology	
	a) Water level	The winter water level ranges from 1.61 to 8.07m below ground level. The summer water level ranges from 6.27 to 11.50m below ground level.
	b) Weathered zone Thickness	The thickness of weathered zone ranges from 23 to 75m below ground level
	c) Depth in bedrock	The depth to bedrock ranges from 35 to 80mm below ground level.
	d) Water Quality	The E.C ranges from 1626 to 1762 micro mhos/cm.
6	Major soil types	The hydrological soil group 'B' with moderate infiltration and moderate runoff potential covers about three fourth area of the block. Hydrological soil group 'A' with high rate of infiltration occurs a little less than one-fifth area. of the block. The rest of the area comes under soil group 'C' with slow rate of infiltration.

7	Slope	Almost the entire portion of the block (about 99%) of the block area varies between nearly level and very gently sloping category. A very little portion of the block falls under very steep sloping category (35%).
8	Land Use	Major portion of the block area is agricultural land (around 80%). About 6% of the block area, has been identified to contain problem soil.

Source: Institute of Remote Sensing, *Identification of Recharge areas Using Remote Sensing and GIS in Tamil Nadu*, Anna University, Chennai, 1998 – 1999

3. North Western Zone

This zone covers Dharmapuri district excluding hilly areas, Salem district excluding Thiruchengodu taluk and Peramabalur taluk of Tiruchirapalli district. This zone covers an area of 18,271 Sq. kms in which 10,28,097 hectares, which is 56.3 per cent, is under cultivation. Out of total area of cultivation, only 23 percent i.e., 2,35,828 hectares is the irrigated area. The annual normal rainfall of the zone is 849 mm. This zone has been identified as moderately drought prone. The major Rivers of this zone are Cauvery, Thenpennai and Manimuthar. Mettur and Krishnagiri are the major dams in this zone. Paddy, wheat, maize, ragi, bajra, sugarcane, groundnut, cotton, sunflower, tobacco and mango are the major crops of this zone. Forest area in this zone constitutes nearly 30 percent i.e. 5,35,282 hectares of the area of the zone, which is nearly 25 per cent of the total forest area of the State.

Profile of Dharmapuri District

Dharmapuri district was carved out of erstwhile Salem District on 2nd October 1965 with its headquarters at Dharmapuri. The district with a geographical area of 9619.18 Sq. kms is situated on North Western corner of Tamil Nadu State. It is one of the most backward and drought prone districts of the State. The district receives rainfall from the South West monsoon and North East monsoon. Two major rivers viz. Cauvery and Thenpennar and its tributaries flow through this District. The gross and net irrigated areas

are 1,44,543 and 1,17,883 hectares respectively. For administrative convenience, the district has been divided into 10 taluks and 18 blocks.

The updated and relevant data/information on the profile of the district and vital indices on various socio-economic parameters are shown in below exhibit. Dharmapuri district has good scope for Minor irrigation, Land development, dairy and food processing units and services activities. With the improvement in the power generation during the last 5-year plan period, and improvement in Rural Roads under RIDF, the district could march ahead in industrial scenario in tenth five year period. The line departments, particularly the agricultural and Sericultural Department provide wide publicity and maintain demonstration plots on scientific methods. Health camps under Chief Ministers programme have been organized to protect the animal population. Activities by the Animal Husbandary Department and University/Research centers have also improved the availability of quality animals.

The State Ground water Department conducts periodical surveys and classifies the ground water potential of the district. On the basis of the latest study, 7 blocks viz. Bargur, Dharmapuri, Harur, Krishnagiri, Mathur, Palacode and Pappireddipatti are categorized as DARK, 4 blocks viz. Karimangalam, Uthangarai, Kaveripattinam and Veppanapalli as GREY and the remaining 7 blocks as WHITE.

There are 2 research institutes – One Agriculture Research Centre at Paiyur and another Animal Husbandry Research Centre at Dharmapuri.

The soil types ranging from black to mixed loam Red sandy soils are seen in Hosur and Harur taluks. Black and loam soil are found in Dharmapuri and Krishnagiri Taluks. Generally, the soil is low in Nitrogen and Phosphate content with no marked variations between taluks. The climate is generally warm and dry whereas the places bordering Karnataka State are cool. The temperature ranges from 17° c to 37° c. The annual average rainfall is 857mm.

Due to the congenial climatic conditions, the district offers good scope for cultivation of fruits and vegetables and floriculture for export oriented market. The Skill upgradation of the work force of the district is done through Government. Training programme like TRYSEM, SGSY, STED and EDPs conducted by DIC. NGOs functioning in the district also conduct a few EDPs conducted by DIC. NGOs functioning in the district also conduct a few EDPs and skill upgradation training for the SHGs and fellow NGOs through their training establishments. NABARD has conducted several exposure programmes on NFS for bank officers and officials from DIC, DRDA and NGOs.

The present level of ground water extraction in this district is about 69% of utilisable ground water resources. Based on the level of development, the blocks have been categorised as Dark, Grey and White. Out of 18 blocks in Dharmapuri district, 5 blocks fall under 'Dark' category whereas the development of ground water is more than 85%. In this district, 6 blocks are categorised as 'Grey' where the development of the ground water is in between 65% and 85% and rest of the blocks fall under "White" category, where the ground water development is less than 65%.

Physiography and Drainage

The general physiography of this district is characterised by undulating topography with many hill ranges. The western and northwest part of the district, occupying Hosur and Denkanikottai taluks, forms part of Mysore plateau, with an average elevation of 914m above mean sea level. The areas lying between north of Pennagaram and south of Denkanikottai is occupied by chain of undulating hills. The hills lying in south and southeast of Harur attain an elevation of 700 to 1000 MSL. Shervaroy hill ranges occupy the southern boundary of the district. The plains occupying the central, eastern and southern part of the district attain an average elevation of about 490m above MSL. The general slope of the district is towards South-East.

Table 3.7 : Synoptic view of District Dharmapuri

1. Geographical Area	:	9619 sq.kms																	
a) No.of blocks / Taluks	:	18/10																	
b) No. of Villages	:	1054																	
2. Rainfall (mm)																			
Normal	:	857																	
Actual	:	<table border="1"> <thead> <tr> <th>Year</th> <th>1995</th> <th>1996</th> <th>1997</th> <th>1998</th> <th>1999</th> </tr> </thead> <tbody> <tr> <td>R.fall</td> <td>105</td> <td>1134</td> <td>810</td> <td>815</td> <td>830</td> </tr> </tbody> </table>						Year	1995	1996	1997	1998	1999	R.fall	105	1134	810	815	830
Year	1995	1996	1997	1998	1999														
R.fall	105	1134	810	815	830														
3. Agricultural (ha)																			
a) Geographical Area	:	961918																	
b) Net Sown Area	:	416884																	
c) Fallow Land	:	58127																	
d) Land not available for cultivation	:	43846																	
4. Irrigation (ha)																			
a) Net irrigated area	:	117883																	
b) By canals	:	8712																	
c) By wells	:	82467																	
d) By other sources	:	26704																	
6. Size of Holdings		No.	Areas (ha)																
a) Less than 1 ha	:	284893	116646																
b) Between 1 and 2 ha.	:	92295	128983																
c) Above 2 ha.	:	64876	250779																
7. Animal Husbandry																			
a) Plough animals	:	187690																	
b) Dairy Animals	:	662795																	
i) Cattle Cows	:	526463																	
ii) Buffaloes	:	136332																	
c) Sheep / Goats	:	445418 / 242233																	
d) Poultry	:	1620536																	

8.Population(No)		
a) Male	:	14,62,136
b) Female	:	13,71,116
c) Total	:	28,33,252
9 Classifications of workers (No)		
a) Cultivators	:	497172
b) Of (a) Small/Marginal farmers	:	137336
c) Agricultural Labourers	:	359836
d) Artisans	:	-----
e) Household/Cottage industries	:	120239
f) Allied Agro Activities	:	85734
g) Other workers	:	1272556

Source: NABARD, *Potential Linked Credit Plan: Dharmapuri District, Tamil Nadu, 2001 – X Five Year Plan period 2002 – 2007*, Chennai 2001

Dharmapuri district is drained by two major rivers viz., the Cauvery and the Ponnaiyar. The Cauvery soon after its entry into Tamil Nadu flows along southwestern boundary of the district. The Doddahalla and the Chinnar are the important tributaries of the river Cauvery in the district. Hilly terrains, occupied by reserved forest, cover most part of the southwestern part of this district. The rest of the area of this district is drained by Ponnaiyar river systems with its major tributaries Pambar, Vaniyar and Kallar.

Table 3.8 : Profile of Pappireddipatti Block in Dharmapuri District

Major Features		
1	Location and Extent	This Block is situated in the southern part of the Dharmapuri district. The block is bounded by Morappur and Harur in the north. Kalrayan hills in the east, Peddanaickanpalayam block (Salem District) in the south and Yercaud and Kadayampatti block (Salem district) in the west. It lies in between North Lattitudes 11 47'50'' –

		12 00'00'' and East longitudes 78 13'50'' – 78 35'30''. It is covered in the SOI toposheets 57 L/8, 12 and 58 I/5, 9. The extent of the area is 394.29 Sq.kms.
2	River And Drainage	Block area is drained by Vaniyar.R system by its tributaries like Kallar, Veppadi, Krukkampatti. Ar etc.
3	Rainfall	The rainfall station is situated at Chitheri. During the six years period of 1988-1993 the maximum rainfall of 1640.9mm was recorded during 1991 and minimum rainfall of 636.4mm was recorded during 1993
4	a) Geology	The block area is covered by hard crystalline rock. The predominant geological units are Charnockite and foliate gneisses.
	b) Geomorphology	The various geomorphic units found in this block are buried pediment deep, buried pediment shallow, pediment, denundational hill, structural hill pediment inselberg and hill top pediments.
5	Hydrogeology	
	a) Water level	The winter water level ranges from 4.41 to 19.07m. The summer water level ranges from 2.94 to 9.47m. The Water level fluctuations ranges from 1.87 to 9.6m
	b) Water quality	The Electrical Conductivity value, ranges from 925 to 1375 micro mhos/cm.
	c) Thickness and Weathered zone	The weathered zone the thickness varies from 6 to 40m bgl.
	d) Depth to basement	The depth to bedrock ranges from 37 to 60m bgl.
6	Major soil types	The hydrological soil group 'D' with very slow rate of infiltration covers more than half of the block area. The hydrological soil group 'C' with slow rate of infiltration covers about one third of the area. The hydrological soil groups 'B' and 'A' with moderate and high rate of infiltration cover the Remaining portion of the area respectively.
8	Slope	Nearly 80% of the block area falls under moderately steep-to-steep sloping category (15-35%). The remaining part of the blocks falls in the strongly sloping category (10-15%).
9	Land Use	About half of the total area falls under forestland. Agricultural land constitutes about 35% while wasteland constitutes 10% of the total block area.

Source: Institute of Remote Sensing, *Identification of Recharge areas Using Remote Sensing and GIS in Tamil Nadu*, Anna University, Chennai, 1998 – 1999

5. High Altitude Zone

This zone covers the Nilgiris, Kodaikanal, Shevroy, Elagir Javadhi, Kollimalai, Pachamalai, Yercaud, Anamalais, Palani and Podhigaimalai. This zone covers an area of 2,549 sq.kms. The area under cultivation is 73,689 hectares, which is only 28.9 per cent of the total geographical, are of the zone. Furthermore, only 0.84 per cent of the total cultivated area is the irrigated area i.e., 621 hectares. The annual normal rainfall is 1857 mm. There are no dams for irrigation in this zone since there are no major rivers. Paddy and groundnut are cultivated relatively in less extent. The major crops are tea, coffee and vegetables. Forest area is 1,50,139 hectares which is 58.9 per cent of the total geographical area of the zone.

District Profile of Nilgiris

The Nilgiris popularly known as “*Blue Mountains*” is a tiny district on the Western Ghats located between 11°10’ and 11°45’ N latitude and 76°14’ and 77°2’ E Longitude. It is bordered by Kerala State in the North West, Karnataka State on the North, Coimbatore District on the South East and Erode District on the North East. Though situated in the tropical zone, the district enjoys a subtropical to temperate climate by virtue of its altitude and this has contributed to development of the district as a well-known tourist place. Tourism is a major factor contributing to the economy of the district. The district experiences an average minimum and maximum temperature of 5.1^{RC} and 24°C. With a geographical area of 2544 Sq. Kms, it is the smallest district in the State of Tamil Nadu. The district is divided into 2 natural zones viz. the Nilgiris Plateau and the Wynad. Ooty (Udhagamandalam), the District Head Quarters is one of the finest tourist destinations of Southern India and its often referred to as the “Queen of hill Stations”. For administrative purpose, the district has been divided into 4 blocks, viz., Udhagamandalam, Coonoor, Kotagiri and Gudalur. For local administration, the district has 2 municipalities, 1 Cantonment, 4 Panchayat Unions, 13 Town Panchayats, 35 Village Panchayats and 54 Revenue Villages covering 1077 hamlets.

The entire district is hilly with a minimum and maximum height of 750 meters and 2580 metres above MSL. The highest peak is at Doddabetta. The average rainfall in the district is 1856.5mm and it is as high as 3000 mm in some places.

Forests occupy 56.37 % of the total geographical area. The main forest produces are sandalwood, bamboo, teak, eucalyptus, blue gum and wattle. Despite high rainfall, irrigation facilities available in the district are poor. Irrigated area constitutes only 7.8% of the total cultivated area. Bhavani and Moyyar are the two main rivers flowing through the district. Significantly, all the four blocks in the district are classified as 'White'. The soil formation is classified into 4 varieties, viz., black soil, brown soil, yellow soil and red soil. The district is prone to land slides and soil erosion during heavy rains.

Tea is grown in about 66% of the cropped area and it is in the mainstay of the economy of the district. The district accounts for a third of the total tea production from South India. The area under tea has been increased by nearly 6000 hectares during last 15 years owing to crop diversification. Coffee comes next to tea in terms of area coverage. Potato is the third major crop after tea and coffee and the Nilgiris district accounts for three fourth of the total potato production in the state. Paddy and Cereals are grown on a limited scale mainly in Gudalur area, which is the only terrain suitable for such crops. Major vegetable crops grown in the district include potato, cabbage, carrot, beans, radish, cauliflower etc. Orange, Jackfruit, Plum, Peach, Apple and Mango are the major fruits cultivated in the district. Apart from these, spices like cardamom, garlic, pepper, and ginger are grown in a limited scale.

The district is well connected with transport facilities with a total road length of 1625km. The assistance provided by NABARD under the Rural Infrastructure Development Fund, has helped in improving the road network in the district, facilitating better access to processing/Marketing centres for agricultural produce, which predominantly comprises perishable vegetables, and other plantation produces like green / processed tea.

The cool and pleasant climate in the Nilgiris is favourable for many innovative activities like floriculture, mushroom cultivation etc. The Nilgiris is known for its wealth of medicine plants, culinary herbs and aromatic plants and offers potential for cultivation of aromatic and medicinal plants. The climate is suitable for producing hybrid cows and rearing of hybrid calves.

Table 3.9: A Synoptic view of the District Nilgiris

1. Area	:	2544 sq.km																									
2. No of Blocks/Taluku/Villages	:	<table border="1"> <tr> <td>Blocks/ Taluku</td> <td>4</td> </tr> <tr> <td>Villages</td> <td>54</td> </tr> </table>	Blocks/ Taluku	4	Villages	54																					
	Blocks/ Taluku	4																									
Villages	54																										
3. Rainfall (mm)	:	1856.50																									
	:	<table border="1"> <tr> <td>Normal</td> <td>1998</td> <td>1999</td> <td>2000</td> </tr> <tr> <td>Actual</td> <td>1495</td> <td>1956</td> <td>1509</td> </tr> </table>	Normal	1998	1999	2000	Actual	1495	1956	1509																	
	Normal	1998	1999	2000																							
Actual	1495	1956	1509																								
:																											
4.Agriculture (area in ha)	:	<table border="1"> <tr> <td>Total Geographical area</td> <td>254381</td> </tr> <tr> <td>Area under forests</td> <td>143351</td> </tr> <tr> <td>Net Sown Area</td> <td>77393</td> </tr> <tr> <td>Fallow lands – current</td> <td>4472</td> </tr> <tr> <td>Land put to non- agricultural use</td> <td>8562</td> </tr> <tr> <td>Fertilizer Consumption (kg/ha)</td> <td>137</td> </tr> </table>	Total Geographical area	254381	Area under forests	143351	Net Sown Area	77393	Fallow lands – current	4472	Land put to non- agricultural use	8562	Fertilizer Consumption (kg/ha)	137													
	Total Geographical area	254381																									
	Area under forests	143351																									
	Net Sown Area	77393																									
	Fallow lands – current	4472																									
	Land put to non- agricultural use	8562																									
	Fertilizer Consumption (kg/ha)	137																									
5.Crop	:	Area under HYV (ha)																									
	:	<table border="1"> <tr> <td>Vegetables</td> <td>3268</td> </tr> <tr> <td>Potato</td> <td>2854</td> </tr> <tr> <td>Tea</td> <td>28216</td> </tr> </table>	Vegetables	3268	Potato	2854	Tea	28216																			
	Vegetables	3268																									
	Potato	2854																									
Tea	28216																										
:																											
:																											
6.Irrigation (area in ha)	:	<table border="1"> <tr> <td>Net Irrigated Area</td> <td>4736</td> </tr> <tr> <td>By Canals</td> <td>467</td> </tr> <tr> <td>Shallow tube wells</td> <td>50</td> </tr> <tr> <td>By Other Sources</td> <td>4219</td> </tr> </table>	Net Irrigated Area	4736	By Canals	467	Shallow tube wells	50	By Other Sources	4219																	
	Net Irrigated Area	4736																									
	By Canals	467																									
	Shallow tube wells	50																									
By Other Sources	4219																										
:																											
7. Size of land holdings	:	Area in hectare																									
	:	<table border="1"> <thead> <tr> <th>Size of holdings</th> <th>No.</th> <th>%</th> <th>Area (ha)</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>Less than 1</td> <td>34050</td> <td>71</td> <td>14046</td> <td>16</td> </tr> <tr> <td>Between 1 and 2</td> <td>7933</td> <td>17</td> <td>10845</td> <td>13</td> </tr> <tr> <td>Above 2</td> <td>5667</td> <td>12</td> <td>60888</td> <td>71</td> </tr> <tr> <td>Total</td> <td>47650</td> <td>100</td> <td>85779</td> <td>100</td> </tr> </tbody> </table>	Size of holdings	No.	%	Area (ha)	%	Less than 1	34050	71	14046	16	Between 1 and 2	7933	17	10845	13	Above 2	5667	12	60888	71	Total	47650	100	85779	100
	Size of holdings	No.	%	Area (ha)	%																						
	Less than 1	34050	71	14046	16																						
	Between 1 and 2	7933	17	10845	13																						
	Above 2	5667	12	60888	71																						
Total	47650	100	85779	100																							
:																											
:																											
:																											
:																											

8. Animal Husbandry (no.)	:	Plough animals	949
		White Cattle (Cows)	68280
		Black Cattle (Buffaloes)	10808
		Sheep	6169
		Goat	29747
		Poultry	115637
9. Population (as per 2001 Census)	:	Male	379610
		Female	385216
		Total	764826
10. Classification of workers (no.)	:	Cultivators	10922
		Of 'a' Small /Marginal farmers	9397
		Agricultural labourers	24992
		Household Cottage Industries / allied agro activities	1348
		Other workers	252955

Source: NABARD, *Potential Linked Credit Plan: Nilgiris District, Tamil Nadu, 2001 – X Five Year Plan period 2002 – 2007*, Chennai 2001.

Physiography & Drainage

Many streams originate from the hill slopes and have formed several rivers in the deep valley portions. The surface water flowing through these valleys had been well harnessed by construction of number of reservoirs like Kamarajar, Mukkurti, Porthimund, Parsan valley, Pykara, Emerald, Avalanche and upper Bhavani. Water storage of these reservoirs helps power generation and drinking water supply. Parsan valley serves the source of drinking water supply to Udthagamandalam municipality. Hydroelectric power is generated at Pykara and Kundha using the reservoir waters. The surplus of Pykara reservoir flows towards north as Pykara River, which then flows towards east with name of Moyar bordering the northern boundary of the district. The surplus of the Kamarajasagar reservoir flows towards north as Sigur River joins Moyar

river. The surplus of Emerald and Avalanche reservoirs flows towards south as Kunda river and joins Bhavani river. A jungle stream named Kateri river originates from the middle part of the Coonoor taluk flows eastward gains momentum with the name as Coonoor river and finally joins the Bhavani river near Mettupalayam.

Table 3.10 : Profile of Coonoor Block in Nilgiris District

Major Features		
1	Location and Extent	Coonoor block is bounded on the north by Kothagiri and Uthagamandalam blocks of Nilgiris district, east and south by Karamadai block of Coimbatore district and on the west by Uthagamandalam block. It falls within the following co-ordinates: E.Longitude : 76°40'00'' to 76°52'00'' and North Latitude: 11°15'00'' to 11°23'00'' of G.I.Toposheet Nos. 58A/11 and 15. This block has a total extent of 227.80 Sq.Kms.
2	River & Drainage	This block is located on the western ghats hill range. Hence, many streams originate from different slopes to form the Coonoor river. Coonoor river flows in the central part of the study area from west to east confluence into Bhavani river, near Mettupalayam.
3	Rainfall	Nearest rainfall station is at Coonoor. During the period of 1988 to 1996 maximum rainfall of 2189 was recorded in the year 1990 and minimum rainfall of 1118 was recorded in the year 1988.
4	a. Geology	Coonoor block is covered by crystalline rocks of Archaean age. The rock type includes fully charnockites only.
5	b. Geomorphology	Different geomorphic units like deflection slope, less dissected plateau, moderately and highly dissected plateau regions are noticed in the study area. Deflection slopes are seen on the southern and eastern parts. Highly dissected plateau is noticed on the north western part of the study area. Moderately dissected plateau region is noticed on the rest of the study area. Palaeo scars (of landslides) are seen on the central part of the block area.
6	Hydrogeology	
	a. Water level	The pre-monsoon water level ranges from 2.00m to 2.91m. Minimum water level ranges from 1.47m to 2.68m.
	b. Weathered zone Thickness	The thickness of the weathered zone ranges from 2m to 3m.

	c. Depth to basement	The depth to basement ranges from 6 to 7m.
	d. Water quality	Generally the quality of the water is potable in the study area. The EC value ranges from 170 to 660 microchips/cm

Source: Institute of Remote Sensing, *Identification of Recharge areas Using Remote Sensing and GIS in Tamil Nadu*, Anna University, Chennai, 1998 – 1999

6. Southern Zone

This zone comprises the districts of old Ramanathapuram, Nellore, Kattabomani, V.O. Chidambaram, Kamraj and Dindigul taluk of Anna district, Natham, Melur, Thirumangalam, Madurai South and Madurai North taluks of Madurai districts and Pudukkottai district excluding Aranthangi taluk. This zone constitutes an area of 36,655 sq.kms. The total area under cultivation is 16,50,250 hectares which is 45 per cent of the total area.

Around 44 per cent of irrigated area out of the area under cultivation is 7,22,166 hectares. This zone is prone to frequent drought. The annual normal rainfall is 816.5mm. It covers the rivers of Vaigai, Sitar, Thamraparani, Numbiar, Pachaiyar, Kludar, Arjunar, Kodumudiyaar, Manimuthar, Periyar and Vaigai. The dams used by this zone are Periyar, Vaigai, Manjalar and Bhabanasam. The patterns of irrigation are well irrigation, canal irrigation, irrigation by dams and by lakes. Paddy, cholam, cumbu, ragi, groundnut, cotton, banana and tobacco are the major crops.

Profile of the District Ramanathapuram

Ramanathapuram District in its present form came into existence from 15 March 1985 trifurcating the composite Ramanathapuram District. It is surrounded by Pudukkottai District to the North, Sivaganga and Virudhunagar districts on the North West and West, Tirunelveli, Tuticorin districts and Gulf of Mannar on the south and Palk Strait on the East.

The district has been divided into 7 taluks and 11 community development blocks. There are 429 Panchayats with 400 revenue villages consisting of 197 small village and

hamlets. There are 9 town Panchayats and two municipalities. The Collectorate is located at its headquarters at Ramanathapuram.

The district has a geographical area of 408957 hectares, with a normal net sown area of 183651 hectares. The district is the most backward district in the state. Most of the soils are found throughout the district. A small portion of alluvial soils is found in Kamuthi, Muthukulathur, Paramakuddi and Tiruvadanaï taluks. It is a mono cropped area with 90% of irrigation through taluks wholly depending upon monsoon rains for cultivation. There are no perennial rivers. Paddy and chilies are main crops grown in this district. Cotton and groundnut are also grown to some extent.

There are 15 banks with 107 branches are operating in the district besides one branch of TIIC. There are 12 commercial banks with 54 branches. Pandian Grama Bank(RRB) with 23 branches, 4 PARDBs under the control of one branch of SARDB and Ramnathapuram DCCB with 26 branches. The district has 2831.44 kms of road and 105 kms of meter gauge Railways. NABARD has also contributed for laying roads in the district to the extent of 517 kms from its RIDF Fund.

Table 3.11 A Synoptic view of the District Ramanathapuram

1. Geographical Area	:	408957 Hectares														
No. of Blocks/ Taluks	:	11 / 7														
No. of villages	:	2087														
No. of Revenue Villages	:	400														
2 Rainfall (mm) years	:	<table border="1"> <thead> <tr> <th>Rainfall</th> <th>1998</th> <th>1999</th> <th>2000</th> </tr> </thead> <tbody> <tr> <td>Normal</td> <td>827</td> <td>827</td> <td>827</td> </tr> <tr> <td>Actual</td> <td>858.5</td> <td>549.9</td> <td>902</td> </tr> </tbody> </table>			Rainfall	1998	1999	2000	Normal	827	827	827	Actual	858.5	549.9	902
Rainfall	1998	1999	2000													
Normal	827	827	827													
Actual	858.5	549.9	902													
3.Agriculture (in ha)	:	<table border="1"> <tbody> <tr> <td>Net Irrigated area</td> <td>408957</td> </tr> <tr> <td>Net sown area</td> <td>183651</td> </tr> <tr> <td>Fallow land</td> <td>94148</td> </tr> <tr> <td>Land not available for cultivation</td> <td>84485</td> </tr> </tbody> </table>			Net Irrigated area	408957	Net sown area	183651	Fallow land	94148	Land not available for cultivation	84485				
Net Irrigated area	408957															
Net sown area	183651															
Fallow land	94148															
Land not available for cultivation	84485															

4. Irrigation (in ha)	:	<table border="1"> <tbody> <tr> <td>Net Irrigated Area</td> <td colspan="2">66865</td> </tr> <tr> <td>By Tanks</td> <td colspan="2">60293</td> </tr> <tr> <td>By Wells</td> <td colspan="2">6036</td> </tr> <tr> <td>By Other Sources</td> <td colspan="2">536</td> </tr> </tbody> </table>			Net Irrigated Area	66865		By Tanks	60293		By Wells	6036		By Other Sources	536	
		Net Irrigated Area	66865													
		By Tanks	60293													
		By Wells	6036													
By Other Sources	536															
5. Size of holdings	:	<u>No. / Lakhs</u>	<u>Area/ha</u>													
Less than 1 ha	:	2.53	101023													
Between 1 and 2 ha	:	0.50	70048													
Above 2 ha	:	0.20	108634													
6. AH- Livestock census 1998																
Plough animals	:	123165														
Dairy animals – cattle	:	307906														
Buffalo																
Sheep	:	302642														
Goat	:	212183														
Poultry	:	394685														
7. Population (in '000)	:	<u>Urban</u>	<u>Rural</u>	<u>Total</u>												
I. Male		125	437	562												
II. Female		125	449	574												
Total		250	886	1136												
8. Classification of workers	:	<i>No</i>														
Cultivators	:	228660														
Agricultural labourers	:	38288														
Household Cottage	:															
Industries	:	15418														
Other workers	:	16815														
Marginal workers	:	62250														
Total		361421														

Source: NABARD, *Potential Linked Credit Plan: Ramanathapuram District, Tamil Nadu, 2001 – X Five Year Plan Period 2002 – 2007, Chennai 2001*

The rainfall occurring during cyclones accounts for the major precipitation in the state. During floods, there is a heavy loss of fresh water as runoff. In the coastal areas, since the water table is shallow, the rainwater recharges the aquifer quickly and then drains into the sea. In the hard rock areas the high intensity of rainfall is experienced in

the mountainous regions, part of it run long distances traversing the pediplains, recharging the valley fills, bazada zones and topographically low areas, where and dissected fractured areas, while major part of it flows as runoff through streams and nallahs and then drained into the sea. In Tamil Nadu, there is phenomenal increase in the minor irrigation development by ground water. The total number of energized wells during 1950-51 was 0.144 lakhs where as it is in the order of 14.48 lakhs as on April 1994. The above analysis shows how Tamil Nadu is advanced in the development of ground water.

In view of the above problems it is quite essential that artificial recharging of aquifers taken up in the state in a large scale to augment the ground water resources. Considering the above in depth, the government of Tamil Nadu has sanctioned this project for identifying suitable areas for recharging the aquifer.

The development of groundwater is of the higher side in the districts of Coimbatore, South Arcot and Chengalpet MGR. Due to over development many problems like water table lowering, seawater intrusion, increasing trend of dark and grey blocks. Because of over exploitation in many parts of the state especially in hard rock areas, ground water sources like dug wells and borewells have become dry. Keeping the above objective, this project has been envisaged to sustain the existing water resources by artificially recharging the aquifer in block wise.

Table 3.12 : Profile of Tirupulani Block in Ramanad District

Major Features		
1.	Location and Extent	This block is bounded by Mandapam block in the east, Ramanathapuram block in the north, Gulf of Mannar in the south, Mudukuluthur block in the North west and Kadaladi in the Southwest.. The block falls within the co-ordinates of North Latitude: 9°12'50'' to 9°23'40'' and East Longitude 78o40'00'' to 78°56'15''.
2.	Rainfall	The average Rainfall is 876.96 mm. The maximum 1329 was recorded during 1992. The maximum 2000mm was recorded during 1920. The minimum 235 was recorded during 1964.
3a.	Geology	The entire Tirupulani block is mainly covered by recent

		alluvium followed by terrain sediments.
3b	Geomorphology	This block is covered by deltaic plains sand dunes ridges are occur along the coast in Tirupulani block which is mainly comprised of medium to fine sands.
4	Hydrogeology	
	a. Water level	The maximum ground water level is 7.75m and the minimum ground water level is 1.39m.
	b. Water quality	Electrical conductivity ranges from 540 to 11,000 micromhos/cm at 25°C.
	c. Depth to basement	The height of the block varies from 0m to 10m above mean sea level.
5	Major soil types	Hydrological soil group 'A' covers an area upto 86.33 Sq.km that is 29.91 % of total area. Hydrological soil group 'B' covers an area upto 50.84 Sq.km that is 17.62 % of total area. Hydrological soil group 'C' covers an area upto 54.13 Sq.km which is 18.75 % of total area and Hydrological soil group 'D' which covers an area upto 97.07 Sq.km which is 33.72 % of total area.
6	Slope	The entire area of the block is a flat terrain with the gentle slope towards the coast. The maximum elevation ranges from 20m to 60m above MSL. The average slope value of the area is below 1° and it decreases below the coast.
7	Land Use	Built-up lands indicate areas of both urban and rural settlements. Agricultural lands in this block are concentrated mainly in the tank-irrigated areas. Small portion of Reserved forest area land is also found.

Source: Institute of Remote Sensing, *Identification of Recharge areas Using Remote Sensing and GIS in Tamil Nadu*, Anna University, Chennai, 1998 – 1999

7. High Rainfall Zone

This zone consists of only Kanyakumari district. The total geographical area is 1,684 Sq. kms, in which 63.1 per cent of the area i.e. 1,06,260 hectares are the area under cultivation. And 47.4 per cent of the total area under cultivation is the irrigated area i.e., 50,349 hectares. This zone receives an annual normal rainfall of 1456mm. It covers the rivers of Pazhaiyar, Kothair and Paraliyar. And the dams utilised by this zone are Pechiparai, Periyar, Sitharu Dam-1 and Sitharu Dam-2. The major pattern of irrigation is river irrigation. Paddy, coconut, vegetables, tea, cashew nut, banana and rubber are the major crops.

Profile of Kanyakumari District

Kanyakumari district lies at the Southern most tip of the Indian peninsula at the confluence of Indian Ocean, Bay of Bengal and the Arabian Sea. It is the smallest district in Tamil Nadu and bounded by Tirunelveli district in the East and North, Kerala State in the West and the tri-seas in the South. This district has a variety of natural landscapes ranging from the hills to the coast. This district has a variety of natural landscapes ranging from the hills to the coast. This district is divided into 3 natural divisions viz. mountains, terrain, lands and undulating valleys. The people are highly literate and the district has been declared as 100% literate. The district is divided into 2 revenue divisions and 9 blocks. The district has a population of 16 lakh and 83% of the population lives in rural areas. The district is a fertile land having more area under forest and plantations. Rivers and forests are the important source of irrigation. Thamiraparani, Pazhayar and Valliyar are the major rivers in the district. Favourable agro-climatic conditions enables to the cultivation of variety of crops etc. The important feature of this district is the production of off-season mangoes. The important allied activities carried on by the cultivators and agriculturists are dairying and goat rearing. One of the richest fishing grounds in the world viz. the wedge bank lies 88 Kms from South of Kanyakumari and extend to about 56Km on either side of Cape Comirin. Two out of 6 minor ports in Tamil Nadu viz. Kanyakumari and Colachel are in the KanyaKumari District. The district has been a land of handicrafts. The important crafts are lace and embroidery works, sculpture, woodcarving and marketing articles from bamboo, reed, screw pins and seashells.

There are six regulated markets. On an average, there are 2 to 9 markets in each Panchayat dealing mainly in agricultural products. There are 2 'uzhavar sandais' in the district. All the blocks and villages are well connected with all-weather roads.

Being highly educated, the people in the district have a fascination towards white collar jobs more particularly government jobs and hence they are reluctant to invest in

industry. The non-availability of lands for industries and the high cost of farmland are the major factors affecting the growth of industries. Sheep rearing is not popular in the district since the area under grazing land is very limited. Kanyakumari district is densely populated. The population of SC/ST is very small.

The district has a unique advantage of rainfall during both the Southwest & Northeast monsoons. The period of Southwest monsoon is June to September while that of Northeast monsoon is October to December. The temperature ranges from 22.6 to 32.1 degree centigrade. The rainfall is generally high in the Northern part of the district. The average rainfall is 1457 mm/annum

Agriculture is the major activity in the district. Dairy development is an important subsidiary activity. Fishing is a traditional activity. About 8000 fishermen are actively engaged in fishing. About 10,000 industrial units such as SSI, village and cottage industries and handicraft units provide employment opportunities. Kanyakumari is a land of handicrafts. There are 25 major handicraft activities in 404 units employing 6,919 craft persons. The annual production is Rs. 13.30 crore. Two NGOs and two commercial banks are in the process of forming 50 SHGs exclusively for these artisans. The presence of large number of tenant cultivators, particularly under banana plantation in the district has prompted NGO/ VAs to organize these farmers into SHGs so that they have easy access to bank credit. This district also offers good scope for fresh water prawn farming. This activity is also eco-friendly and fetches very high returns per unit area. In addition to coir brush & broom making five other clusters on coconut shell crafts, palm leaf crafts, seashell craft, lace and fiber crafts and temple jewellery may be developed further. NABARD has taken up the initiatives of developing in the coconut craft / doll making from unhusked coconut cluster during the year 2001-02.

Table 3.13 : A Synoptic View of Kanyakumari District

1. Geographical Area	:	1,67,184 ha./1672 Sq.Km.		
a) No of Taluks	:	4		
b) No of blocks	:	9		
c) No of villages	:	88		
2. Rainfall (mm)	:	1457		
Normal	:	1998	1999	2000
Actual	:	1980	1703	1598
3. Agriculture (1999-2000) (in ha)				
a) Geographical area	:	1,67,184		
b) Net sown area	:	81,408		
c) Fallow Land	:	1,296		
d) Land Put. To Non agricultural use	:	24,141		
e) Barren and Uncultivable land	:	3,338		
f) Reserved Forest	:	49,369		
g) Cultivable waste	:	147		
h) Land not available for cultivation	:	25,095		
i) The area brought under HYV seeds	:	28,594		
j) Consumption organic &	:			
4. Irrigation (1999-2000) (in ha)				
a) Net irrigated area	:	29,009		
b) By channels	:	10,972		
c) By wells	:	1,593		
d) By other sources	:			
i) Tanks	:	16,173		
ii)Others	:	271		

5. Size of holding

Sl.No	Class	Number	Percentage	Area (ha)	Percentage
A	Less than 1 ha	337,538	96.87	62,427	61.89
B	Between 1 & 2 ha	7,504	2.15	10,049	9.97
C	Above 2 ha	3,415	0.98	28,393	28.14
	Total	348,457	100	100,869	100

6. Animal Husbandry

a) Plough animals	:	15,472
b) Dairy Animals		
i) Cows	:	1,24,501
ii) Buffaloes	:	12,019
c) Sheep / goat	:	9,181/83, 664
d) Poultry	:	6,53,979
6. Population		
a) Male	:	8,03,839
b) Female	:	7,96,510
c) Total	:	16,00,349
9. Classification of Workers		
a) Cultivators	:	61,567
b) Of (a) Small & Marginal Farmers	:	60,195
c) Agricultural Labourers	:	1,77,410
d) Artisans	:	59,854
e) House hold cottage industries	:	25,589
f) Allied agro-activities	:	9,871
g) Other workers	:	53,133

Source: NABARD, *Potential Linked Credit Plan: Nilgiris District, Tamil Nadu, 2001 – X Five Year Plan Period 2002 – 2007*, Chennai 2001

Out of the total geographical area of 1672 Sq.kms, the net area sown is about 815 sq.kms. Irrigation is practiced mostly in plains and the principle crop of the area is paddy. Other crops like groundnut are also cultivated in smaller extent of the area; coconut plantation is common in the Southern plains. Rubber plantations are common in the

Northern hilly terrain. Major irrigation sources are Pechiparai and Peruchani dams and they serve the plains in the district, with network of 53 canals, running to a total length of 540 kms. Groundwater is being developed sparingly for agriculture purpose in Rajakamangalam, Agateeswaram and Thoivalai blocks. In other parts of the district, usage of ground water for agricultural purpose is limited. Since the district is benefited by Southwest and Northern monsoons and also with good amount of summer precipitation. (January to May), farmers are not much depending on groundwater for irrigation needs.

Kanyakumari district is administratively divided into 4 taluks viz. Thoivalai, Agateeswaram, Vilavancode and Kalkulam. These taluks are further divided into 9 blocks, namely Thoivalai, Agateeswaram, Rajakkamangalam, Melpuram, Munchirai, Killiyur, Thakkai, Thiruvettar and Kurunthancode. The stage of groundwater development varies from 3.5% to 26% of utilisable groundwater recharge and all the blocks fall under the white category.

Table 3.14 Profile of Killiyur Block in Kanyakumari District

Major Features		
1	Location and Extent	This block is bounded on the North by Melpuram. Ambasamudiram block is Northern side, South by Arabian sea, West by Munchirai block and East by Takkalai and Kurunthancode blocks. The block falls within the co-ordinates of North Latitude: 8°10'50'' to 8°19'50'' and East Longitude 77°10' to 77°16'30''. The area extent of this block is 82.70 Sq,kms.
2	Drainage and River	The river which drains this block are Tamiraparani river and also it act as Northern boundary of the block. A number of streams and irrigation canals traverse every part of the blocks.
3	Rainfall	The nearest rainfall station is located at Kulachal. Over the 5 year period from 1992 to 1996. The maximum 1329 was recorded during 1992. The minimum 689 was recorded during 1993.
4	a) Geology	The geology of the area indicates the presence of the rock types which includes garnet, sillimanite graphite gneiss, Quaternary fluviomarine sediments, quaternary marine sediments and alluviam.
	b) Geomorphology	The major geomorphical feature are less dissected plateaus, sedimentary plains and coastal plains.

5	Hydrogeology	
	a) Water level	Over the five year periods of time, is from 1991 to 1996. The summer water level ranges from 19.08 to 35.20m. The winter water level from 19.06m to 35.45m below ground level.
	b) Water quality	Electrical conductivity ranges from 500 to 1000 micromhos/cm
	c) Depth to basement	The depth to basement ranges from 35 to 37m.
	d) Weathered zone thickness	The thickness of the weathered zone varies from 22m to 26m.
6	Major soil types	The hydrological soil group 'B' with moderate infiltration and moderate runoff potential covers 52% area of the block. The remaining area of 48% is constituted by soil group 'C' with slow infiltration and moderate runoff potential.
7	Slope	Nearly 80% of the block area falls between moderately sloping (5-10%) and strongly sloping (10-15%) category. About nearly 19% of the areas falls between nearly level (0-1%) and very gently sloping (1-2%) category.
8	Land Use	Majority of the block area falls under agricultural lands (about 94%). The remaining small portion of the block is covered under settlements. Water bodies and problem soil

Source: Institute of Remote Sensing, *Identification of Recharge areas Using Remote Sensing and GIS in Tamil Nadu*, Anna University, Chennai, 1998 – 1999

The detailed profile would help examine the interrelations of common property resources, rural poverty and environmental degradation in the State of Tamil Nadu follows in the analysis chapters.