Chapter Two
Profile of the Study Area: Tamil Nadu Coast Zone

2.1 History of Tamil Nadu

Tamil Nadu's history dates back pre-historic times and archeological evidence points to this area being one of the longest continuous habitations in India. From early pre-history Tamil Nadu was the home of the three famous kingdoms of the Chera, the Chola and the Pandya. The ancient Tamil literature points to an ancient civilisation lasting since the dawn of time. The Sangam literature has numerous mentions of the kings and princes who ruled this region. Scholars now generally agree that this literature belongs to the first few centuries CE. The Sangam literature is full of names of the kings and the princes, and of the poets who extolled them. The early Cholas reigned between 1st and 4th centuries CE. The first and the most famous king of this period was Karikala Chola, who expanded the Chola territories up to Kanchipuram. The Cholas occupied the present Thanjavur and Tiruchirappali districts and excelled in military exploits. In the height of their glory, the Chola kings had spread their influence as far as Ceylon (Sri Lanka) in the south and hundreds of kilometers across the northern region. The early Cholas went into decline around the third century CE, when the Tamil country was invaded by Kalabhras who defeated the Tamil kingdoms and ruled for almost three centuries. They were defeated and the expelled in the sixth century CE by the Pallavas in the north and the Pandyas in the south.

Around 580 CE, the Pallavas, great temple builders, emerged into prominence and dominated the south for another 150 years. They ruled a large portion of Tamil Nadu with Kanchipuram as their base. They subjugated the Cholas and reigned as far as the Kaveri River. Among the greatest Pallava rulers were Mahendravarman I and his son Narasimhavarman I. Dravidian architecture reached its epitome during Pallava rule. The
Cholas again rose to power by the 9th century. Under Rajaraja Chola and his son Rajendra Chola, the Cholas rose as a notable power in Asia. The Chola Empire stretched as far as Bengal. Rajaraja Chola conquered peninsular South India, and annexed parts of Sri Lanka. Rajendra Chola's navies went beyond, occupying coastal Burma, the Andaman and Nicobar Islands, Lakshadweep, Sumatra, Java, Malaya in South East Asia and Pegu islands. He defeated Mahipala, the king of the Bengal, and to commemorate his victory he built a new capital called Gangaikonda Cholapuram. Chola armies exacted tribute from Thailand and Cambodia. The Cholas revelled in building magnificent temples. Brihadisvara Temple in Thanjavur is a classical example of the magnificent architecture of the Chola kingdom. The power of the Cholas declined around the 13th century. With the decline of the Cholas, the Pandyas rose to prominence once again in the early 14th century. This was short lived; they were soon subdued by Muslim Khilji invaders from the north in 1316. Madurai was sacked. The invasion led to the establishment of the Madurai Sultanate. These Muslim invasions caused the establishment of Vijayanagara Empire in the Deccan. It eventually conquered the entire Tamil country (c. 1370 CE). As the Vijayanagara Empire went into decline after mid-16th century, the Nayak governors, who were appointed by the Vijayanagar kingdom to administer various territories of the empire, declared their independence. The Nayaks of Madurai and Thanjavur were most prominent of them all. They reconstructed some of the oldest temples in the country.

Around 1609, the Dutch established a settlement in Pulicat. In 1639, the British, under the British East India Company, established a settlement further south, in present day Chennai. The British used petty quarrels among the provincial rulers (divide and rule) to expand their sphere of influence. The British fought and reduced the French dominions in India to Pondicherry. They consolidated southern India into the Madras Presidency. Some notable chieftains or Poligars who fought the British East India
Company as it was expanding were Veerapandya Kattabomman, Maruthu Pandiyar, Pulithevan and Dheeran Chinnamalai. Pudukkottai remained as a princely state under British suzerainty. When India became independent in 1947, Madras Presidency became Madras State, comprising of present day Tamil Nadu, coastal Andhra Pradesh, northern Karnataka, and parts of Kerala. The state was subsequently split up along linguistic lines. In 1968, Madras State was renamed Tamil Nadu. (means Tamil Country)

2.2 Profile of Tamil Nadu

The State can be divided broadly into two natural divisions (a) the Coastal plains of South India and (b) the hilly western area. Parallel to the coast and gradually rising from it is the broad strip of plain country. It can further be subdivided into coromandal plains comprising the districts of Kancheepuram, Thiruvallur, Cuddalore and Vellore. The alluvial plains of the Cauvery Delta extending over Thanjavur and part of Tiruchirapally districts and dry southern plains in Madurai, Dindigul, Ramanathapuram, Sivaganga, Virudhnagar, Tirunelveli and Tuticorin districts. It extends a little beyond Western Ghats in Kanyakumari District.

The Cauvery Delta presents some extremely distinctive physical and human features, its power being a main factor in the remarkable growth, the towns of Tamilnadu have witnessed. It is associated intimately with the life of all its broader regions. In the east the low country 500 feet below, varies from 50 to 80 miles in width. This plain extends almost upto the feet of the ghats and only minor elevation can be found here and there. For instance the Valanad hills. The Eastern Ghats enter the State from Andhra Pradesh in the north cut across the State and merge with The Nilgiris Hills on the Western Ghats.
The region is bounded on South-West by the crest of the Cardamom hills and on the North-West by the slopes of the plateau. The region is in the form of a Rhombus and the longer diagonal of its stretches from the Pulicat lake in the north to Cape Comorin in the South and the shorter diagonal from the Palghat ghat in the west to point calimere in the east.

The State has an uninterrupted coastline of 922 Kms. It includes the coastline of Pondicherry and Karaikkal. The coastline is a lengthy boundary on the east. Not a single natural harbour capable of accommodating ocean-going vessels can be found on the coast. Madras City has an artificial harbour. While it is a major Port and Tuticorin a medium one, several smaller ports like Cuddalore, Nagapattinam and Colachel are found.

2.2.1 River System

The Western Ghats form complete water shed and no river pierces through them. The main stream viz., Paralliyar and Vattaseri Phazhayar are 37 and 23 miles respectively in length and fall in the Arabian Sea. All the other rivers are east flowing rivers. The Eastern Ghats are not a complete watershed and as a result the river pierce through them and notable among them is the river Cauvery.

The Kaveri: The river is 475 miles long and drains an area of 28,000 square miles. It takes its origin on the Brahragiri in Coorg in the Western Ghats. After travelling some distance in Karnataka State, the river enters Tamilnadu. Across the river a huge reservoir has been constructed called the Mettur Dam. Near Tiruchirapalli there is an Anaicut called “Grand Anaicut”. The Cauvery has been so well utilised that its drainage channel, the coleroon is always dry. The tributaries of the river Cauvery are Bhavani, Amaravathy and Noyal.
Vaigai: This is the second most important river in Tamilnadu. It originates in Varushanad hills and receives much of the drainage from the upper and lower plains. The river has been dammed in Madurai close to Theni and there is also an anaicut at Anaipatti in Manamadurai.

Thamiraparani: This river which is 70 miles long, rises in the southern portion of the Western Ghats and drains an area equal to 1937 Square miles. The valley of the river contains some of the richest lands in the State. The chief tributaries of the river are Ramanadhi, Ghatana, Pachaiyar and Chittar.

Palar: The river palar rises in Nandhi Hills of Kolar, Karnataka State. It is 182 miles long and runs through Chingleput and North Arcot districts. Its chief tributaries are Cheyyar and Ponni.

Ponniyar: This river rises very near to Nandhi Hills in Karnataka State. It enters Tamilnadu near Dharmapuri and runs 200 miles before joining sea near Pondicherry with a drainage area of 620 square miles. The river has no delta on its mouth.

Vellar: This river rises in Kalrayan hills flows in the easterly districts and joins the Sea near Port- Nova. The length of the river is 134 miles and drains an area of 266 square miles.

Aerial Extent: It lies between 8° 5' and 13° 35' of northern latitude and 76° 15' and 80° 20' of eastern longitude with an area of 1,30,058 square kilometres. It is the 11th State in India in area forming 4.11 percent of the Union areas.

2.2.2 Population

The provisional population of India (2001 Census) is 1,027,015,247 comprising of 531,277,078 males and 495,738,169 females. The population of Tamil Nadu stood at 62,110,839 comprising of 31,268,654 males and 30,842,185 females. The population of Tamil Nadu constitutes 6.05 per cent of the India’s population. It ranks 6th among the
States/UTs. The population, which was 55,858,946 in 1991, has gone up by 6,251,893 over the last ten years. This represents an increase of 11.19 per cent during the period 1991-2001 as against the growth rate of 15.39 per cent during the period 1981-91. The density of population is 478 in 2001 per sq. km.

2.3 Profile of Nagappatinam coast

Nagappatinam (Figure-1) is a unique District with all its historical and cultural significance. Nagappatinam is one of the constituents of chola mandalam, acclaimed as the most prominent among the ancient Tamil Kingdoms. Its salient features more than anything else have contributed to the glory of the chola mandalam. Costal town Nagappatinam was the Headquarters of a region during the period. This region has been named after Kshathiriya sigamani. One of the titles of Raja Raja Cholan Nagappatinam was also known as 'Cholakula Vallippatinam'. The Heritage of the town is found in the Burmese historical text of 3rd century B.C. The same text gives evidences of a Budha Vihar built by the great Ashoka. The Chinese traveler Hiuen Tsang also mentioned the Budha vihar in his book. Nagappatinam is mentioned as Padarithitha in ancient Buddhist literature According to scholars avurithidal the name of the part of Nagappatinam might have been derived from the word "Padarithitha" is the name of the fruit tree "Bhirtree" very common in this region.

In ancient times, "NagaNadu", "Nagappattinam" referred only to Sri Lanka. Buddhist monks in Sri Lanka had close links with this town Nagappattinam. "Animangalam Copperplate" of Kulothungachola notes that "Kasiba Thera" [Buddhist Monk] Renovated the Buddhist temple in 6th century AD with the help of Buddhist monks of 'Naganadu'. This 'nagar annam vihar' later came to be known as 'Nagananavihar'.
STUDY AREA
Poompukar to Vedaranyam Coast

Tamilnadu in India

Tamilnadu

Tamilnadu

Nagapattinam coast

Scale
0 9
1 Kilometers

Fig-1
Pallava King Rajasimha [690-728 A.D.] permitted a Chinese king to build Buddha vihar in Nagappattinam. Hence there existed a Chinese built budha vihar in Nagappattinam. According to Anaimangalam copper plate of Kulothunga I, SriVijayathunga Varman of Sri Vijaya kingdom built Raja Raja Perumpalli in the name of Raja Raja Cholanand [Rajendra Chola Perumpalli] in the name of Rajendra Chola in 1090 A.D. This budha vihar also called Sudamani vihar'. Excavations were conducted by the Archaeological department at Vellipalayam in Nagappattinam and more than 300 Budha statues were unearthed and kept at the Museum in Chennai. This dilapidated Budist tower was razed down 200 years ago.

Nagore was called so because the Nagars inhabited it. The Nagappatinam Kayaroganam Shiva temple existed even in the 6th century ApparSambandar and Sundarar were associated with this temple; Kayaroganam Shiva temple is based on the "Laguleesa Pusuptha Cult". Soundaraja Perumal Viashnava Temple is one of the notable features of Nagappattinam. This favorite town of Chola Kings was also celebrated latter, by Vijaya Nagara Kings. Portuguese had a commercial contact with this town during the Tanjore Nayakkas rule [Sevvppa Nayakkar] and [Acchuthappa Nayakkar] Portuguese commercial centre was established in 1554; Since then christianity began to take root under the commercial contact, 10-villages are taken control of by Portugese traders With the advent of Portugese Velankanni Church came into existence.

In 1658, the Dutch tried to evict the Portugese town Nagappattinam to establish the commercial centre there under the agreement reached between King Vijaya Nayakkarof Thanjavoorand the Dutch on 05-01-1662. The following ten villages namely Nagappattinam Port;Puthur;Muttam, Poruvalancheri, Anthonippettai, Karureppankadu, AzhingiMangalam, Sangamangalam, Thiruthinamangalam, Manjakollai, Nariyankudi were transferred from the Portugese to the Dutch.
Ten Christian churches and a hospital were built by the Dutch. They also released coins with the name Nagappattinam; engraved in Tamil letters. According to the agreement between the first Maratta King 'Egoji' of Tanjore and the Dutch, Naagappattinam and surrounding villages were handed over to the Dutch on 30.12.1676. Latter this town fell into the hands of the British in 1781 after the prolonged struggles 277 villages with Nagur as the Headquarters were handed over to the East India company in 1779. Gold coins bearing the names 'Nagappattinam Varagan' and 'Nagappattinam chornam' were in circulation during Tanjore Maratha Kings period. Thus, the Nagappattinam has the history of over 2000 years for its credit. Today Nagappattinam remains the Headquarters of Nagappattinam District.

2.3.1 Historical Development

Nagappattinam district, the land of communal harmony, was carved out by bifurcating the composite Thanjavur district on 18.10.1991. This district has traditionally been referred to as East Thanjavur and Paddy granary of South India. Nagapattinam District lies on the shores of the Bay of Bengal between Northern Latitude 10.10' and 11.20' East Longtitute 79.15' and 79.50'. This is a peninsular delta District surrounded by Bay of Bengal on the East, Palk Strait on the South and land on the West and Northern Side. This District is predominantly, A Coastal District having a large coast line of 141 kilometres. This District has a numerous places of historical importance. Nagapattinam is an old Port Town.

This District is having an area of 2715.83 Sq. Kms in its fold. The District Headquarters is Nagapattinam. This district is enveloping 11 Panchayat Unions, 3 Municipalities, 9 Town Panchayats on its Development Side. On the Revenue Side, it is housing 2 Revenue divisions with 4 and 3 Taluks respectively and 523 revenue Villages. Nagapattinam is one of the oldest port cities of Chola Empire. It was called as "Naval
Pattinam"- The city of ships. During 1620 AD, a Danish settlement was established at Tharangambadi in this district.

2.3.2 Geographical Location of the District

The Nagapattinam district lies on the east coast to the south of Cuddalore district and another part of the Nagapattinam district lies to the south of Karaikkal and Tiruvarur districts. Its northern boundary is about 75 Km southwards from the Head Quarters of the Cuddalore district. Thanjavur district and Tiruvarur district flank it on the west and on the south and east it is bordered by the Bay of Bengal. The district lies between 10.25°N and 11.40°N North Longitude and 76°49' and 80.01°E East longitude. The general geological formation of the district is plain and coastal. The Cauvery and its offshoots are the principal rivers. Rising in the Coorg Mountains, this river bifurcates about nine miles at the west of Trichy into two branches, of which the northern one takes the name of Coleroon and the southern one retains that of the Cauvery.

All along the course of Cauvery and its distributaries, on both the banks numerous narrow strips of river porombokes lands called Paduagais that are cut up by countless patta lands. These strips ranging in width from about 3 metres to 100 meters are made up of bits of lands. Even though the Padugais and Poromboke lands are very dry they are very fertile. Flood banks of Cauvery and its distributaries are away from the watercourses in the upper reaches where the river is wide and closer in the lower reaches and the river become narrow gradually. The marine land or coastal land has plain lands except for few sand dunes. However there is a general tilt from coastal line to inland area. The Vederanyam salt swamp, which is the largest swamp in Tamilnadu, runs along the coast from Point Calimere westwards to Muthupet. Consequently extensive lagoons have been formed in these areas. The terrain is an open plain, sloping towards the east and devoid of any hills. In south and Southwest of Thanjavur
the country rises and forms a small plateau known as Vallam table land, broken by small ridges of grits and sandstone. Most of the rivers flow to the east into the Bay of Bengal. The most important feature of the district is the Cauvery River spread over with its numerous branches.

There are no less than eleven ports on the coast Nagapattinam district, of which eight are open to foreign trades. The coastline has a number of harbours of which mention may be made of Nagore, Point Calimere, Nagapattinam. The significant small ports are Kilvellore, Thirumulaivasalam, Nagapattinam, Velankanni, Topputturai, Muttupet and Adiramapatnam. The Nagapattinam district is made up the 6 Taluks of Nagapattinam, Kilvellore, Vedaranniyam, Mayiladuthurai, Sirkali and Thrangampadi. The East Side faces the Bay of Bengal. The district is the most part of a flat plain, slopping very gently to the sea on the east. The total geographical area of the district is about 3536.38 Sq.km.

Vedaranniyam salt swamp forms another great natural division. It runs along the coast from Point Calimere for about 48 kms. and is about 7 to 8 km. wide. This is the longest swamp of its kind in the state. It is filled by two periodical high tides during the full moon of months, May and June and retains sea water to a depth of two feet over a considerable area enclosed by low earthen banks, which when closed prevent the water from flowing back into the sea after the tide recedes. It is in this manner the well-known Vedaranniyam spontaneous salt is produced.

2.3.3 Administrative Arrangement in the District

Community Development Blocks in the district are: Sirkazhi, Kollidam, Sembanarkoil, Kuttalam, Mayiladuthurai, Thirumarugal, Nagapattinam, Kilvelur, Talanayar, and Vedaranniyam. The Nagapattinam district comprises 6 Taluks, 11 Blocks
and 497 Villages. As regards the hierarchy of administrative arrangement, there are 3 Municipalities, 10 Town Panchayats and 433 Village Panchayats in the district.

2.3.4 Climate

Temperature: The average maximum temperature for the district (from 1991 to 1996) as a whole is about 32.46° C and the average minimum temperature is 24.75° C. Wind: Dust Storms, whirl winds and dusty winds blow from various quarters towards the end of May. The Southwest winds sets in during April, it is the strongest in June and continues till September. Northeast monsoon starts during the month of October and blow till January. Cyclonic storm with varying wind velocity affects once in 3 or 4 years during the month of November-December. Both these storms affect the plantation crop. During Southwest monsoon the air is calm and undisturbed. Rainfall: The Northeast monsoon, which starts in October and ends in December, contributes about 60 per cent of the total annual rainfall. The Southwest monsoon rains from June to September and from March to May accounts equally for the rest of the annual rainfall. The monthly average rainfall in the district was 108.87 mm in 1991-96. Cyclone: Cyclonic storm brings havoc normally once in 3 or 4 years and heavy downpour during Northeast monsoon leads to flooding of the district and damages field crops and wealth of soil. The average number of rainy days, means maximum temperature, means minimum temperature and means relative humidity for the period 1991-96.

2.3.5 Demography

The Growth of population over the past four decades and the essential characteristics of the population in terms of birth rate, death rate, infant mortality rate and literacy levels are given below. The marginal farmers (cultivators) and agricultural labourers constitute a sizeable population of the labour force in the district.
2.3.6 Nagapattinam: Population

The population of the Nagapattinam district has grown from 4,25,127 in 1951 to 11,85,295 in 1991. The growth rate indicates that there has been a significant increase during the 1951-61 decade with the average growth rate being 3.48 per cent per annum during this decade. The growth rate has however stabilised over the past three decades at about 1.65 per cent per annum. According to the 1991 census, Mayiladuthurai taluk is the highly populated and Kilvellore taluk is the least populated in the district. There was a reduction of population of Nagapattinam taluk between 1971 and 1981 comprising bifurcated Tiruvarur taluk. There were also reductions of Sirkali taluks comprising bifurcated Tharangambadi taluk in 1991.

2.3.7 Trend in Birth/Death Rate and Infant Mortality Rate

There has been a steady decline in birth rate, death rate and infant mortality rate over the past four decades in the district. The birth rate has come down from 39.50 in 1951 to 22.50 in 1991 (figures - per thousand) and the death rate from 21.0 in 1951 to 7.99 in 1991 (figures - per thousand). The infant mortality rate has also gone down from 92.50 in 1951 to 47.50 in 1991 (figures - per thousand). The details of birth rate, death rate and Infant mortality rate over the past four decades are given in graph.

2.3.8 Literacy Level

The literacy level of the Nagapattinam district according to figures available for the year 1996 is 59.87 per cent with male literacy level being more than the female literacy level. It is also observed that while the male literacy level has grown gradually from 62.70 per cent in 1981 to 65.89 per cent in 1996, there has been a steady increase of female literacy level from 37.92 per cent in 1981 to 49.03 per cent in 1996. The information on literacy level among the population of the district is given in graph.
2.3.9 Land Resources

Resources of the district, their availability, use and environmental status are discussed in the following chapters. In Nagapattinam district, Narimanam village is the place where Petroleum products are available. In respect of other places, especially in riverbed region, petroleum products are available.

The total geographical area of the district was 3536.38 Sq.km. in 1995-96. Cropped area accounts for about 65.53 per cent of the total area. Forest cover is very minimum accounting for only about 1.31 per cent of the land. The non-available for cultivation land covering Barren and Uncultivable land, and land put into non-agricultural uses, accounts for 22.83 per cent. The other uncultivated lands including (a) permanent pastures and other gazing lands, (b) miscellaneous tree crops and groves not in the net area shown and (c) cultivable waste land, cover 5.35 per cent. However, figure on forest land seems to be at variance with the reported extent of forest area by the forest department. The land utilisation pattern in the Nagapattinam district (Block-wise) is given in graph.

2.3.10 Agriculture and Horticulture

This coastal district abounds in green paddy fields, tall coconut groves, vast gardens of mango and plantain tree and other verdant vegetations. Paddy is the main crop of this district and it is grown three times in a year. The first crop is known as ‘Kuruvai’ (the short-term crop) with duration of three and a half to four months from June-July to October-November. The second crop called the ‘Thaladi’ has duration of five to six months from October - November to February-March. Third is the ‘Samba’ (the long-term) crop and has duration of almost six months from August to January. Other cereal crops of the district are cumbu, ragi, maize, korra and varagu. The pulses grown in the district are redgram, greengram and blackgram. Other food crops are condiments
and species, sugar crops, fruits and vegetables. Among the non-food crops, cotton/fibre, edible oils crops (groundnuts, coconut and gingelly) non-edible oils crops (castor, miger seeds, though in very small area) are the important ones.

2.3.11 Trend in Production and Productivity of Important Crops

Cereals, pulses and oil seeds are the three important crops produced in the district. The production of cereals, pulses and oil seeds fluctuate for the past five years (1991-96). The areas under production for cereals, pulses and oil seeds, also fluctuate for the past five years. The reason for the fluctuation could be using rotation of crops seasonally.

2.3.12 Soils

Sandy Coastal Alluvium and Black Soil types cover 88.71 per cent and 6.58 per cent respectively in this district. The other Soils in the district comprise 4.71 per cent. The soil of the district is mostly alluvial but varies greatly in quality. The rich soil is found in the north and the south of the railway line between Mayuram and Thiruthuraippundi. The worst land in the delta is found in the Tirutturaippundi and Nagapattinam taluks where the soil is saline and arenaceous and drainage is very defective. The chief sources of irrigation in the district are the rivers, a few rainfed tanks and wells. These tanks and wells occur mostly in the upland regions.

About 7.09 per cent of the land is affected by water logging and marshy land and 56.21 per cent are prone to floods. About 3.49 per cent of the land available for cultivation suffers from salinity/alkalinity and 17.69 per cent of the land is coastal sand. Thus the land affected by soil problems constitute about 84.48 per cent of the total geographical area excluding forest area and area not available for cultivation. The data
given are the composite old Nagai- Quaide- Milleth district comprising bifurcated Nagapattinam district.

2.3.13 Forest Resources

The forests of this division can be divided into two regions from the topography, and flora point of view. They are: Alluvial Regions or Riverine Land areas. These areas lie on the banks of river and canal in the form of narrow strips. Teak plantations mostly cover these areas, wherever the soil is unsuitable for teak, Sisso, Arjun and Eucalyptus have been planted in such areas. Although the soil is light and porous with high water table, the forest areas under these zones are subjected to tremendous biotic pressure and at present their poor floristic composition consist of limited number of herb and thorn species. The present situations do not bring them in any category of Forest type as per Classification of forests made by Champion and Seth.

The Coastal regions: This zone contains the Casurina plantations, the mangroves and the scrub jungle with the exception of a portion of Point Calimere sanctuary where about 23 sq.km. of tropical dry evergreen forests are existing. Major portion of the land 65.55 per cent is used for cultivation of paddy for three times in a year but the forest cover has lesser percentage (1.31 per cent).

Forest Area: There are 41 forest areas in the Nagapattinam district constituting a total area of 5311.70 hectares. 35 forest areas fall under the Reserve Forest category with 5037.21 hectares and 6 under reserve land category with 274.49 hectares.

2.3.14 Green cover Classification

Green cover classification report has been studied with reference to reported figure for the composite Thanjavur district comprising of Thanjavur Forest Division, where total area of forest is shown as 19971 Ha. Dense and Sparse forest are 2079 and 4947 Ha. Respectively. There is no grassland in the region. Degraded forest area cover
is 9567 Ha. in Thanjavur division. The given figures are composite figure of Thanjavur, Tiruvarur and Nagapattinam Districts.

2.3.15 Wild life and Birds sanctuary

There is a sanctuary including Bird Sanctuary at Thalainayar village of Vedaranniyam Taluk in the Nagapattinam district spread over 1728.81 ha. This constitutes 14.92 per cent of total forest area in the district. Point Calimere Wild life and Birds sanctuary is located on the coromandel coast in Nagapattinam district of Tamilnadu bounded by Bay of Bengal in the East and Palk Straits in the south forest area is extending over an area of approx. 333 Sq. Kms. which includes 23 Sq. Kms of tropical dry evergreen forests on the eastern extremity, 190 Sq. Kms. of Muthupet Mangrove forests towards the extreme west (proposed extension of sanctuary).

The Vast saline marshes of the Great Vedarayam Swamp forms the major refuge for migratory and resident birds along-with rich terrestrial population in the adjoining tropical dry evergreen forest of Kodiakkadu represented by approx. 300 plant species. Both the habitats inhabit more than 260 spp of resident and migratory birds belong to 50 families. With the onset of NE monsoons during October, a large number of passerine and aquatic species migrate to the area from Soviet Union, Iran, Australia, Europe, N-India and other places. Important species include Greater and lesser flamingos, Pelicans, Storks, Gulls, Wild ducks, Stints, Sandpipers, Plovers etc. Most of the birds return by the end of January i.e. in the beginning of salt extraction activity.

A wild life sanctuary was formed at Point Calimere in 1967 on an area of 1729 hectares to preserve wild in the original surroundings. The sanctuary is unique of having a large concentration of black bucks or Indian antelopes. Due to the absence of hills and forests, the district is devoid of wild animals like tigers, elephants, pantherÂ’s etc. In the small belt of Jungle at Kodaikadu near Point Calimere are found spotted deer, antelopes
and wild pigs. Jackals and foxes can be found almost in the entire district. Snakes exist in large numbers. All the Indian birds like the crow, the kite, the vulture, the owl etc. can be found here. The swamps of Point Calimere are of great interest to ornithologist due to the abundance of variety of Avifauna. Special mention may be made of flamingoes visiting these swamps in thousands during winter months. The swarms of these birds with white and pink plumes are a rare sight and offer a spectacular display.

Wild life census in Point Calimere Sanctuary indicates that 2043 animals are in the sanctuary. 1292 black bucks, 200 wild boars, 150 monkeys, 125 mongooses, 100 monitor lizards and other animals are protected in the sanctuary.

2.3.16 The flora

Tropical dry evergreen forests represented by Manilakara Hexandra, Memecyclon, Umbellatum, Maba Buxifolia, and Syzygium Cumini etc.; there are 300 species within 218 genera and 77 families having a composition of 61 per cent evergreen, 36 per cent animals, 3 per cent deciduous. Mangrove forests with the domination of In great vedaranyam swamp 106 species within 90 genera and 48 families represented by 60 species of herbs, 25 species of shrubs, 11 species of trees and 10 species of climbers had been recorded.

Point Calimere has the second largest congregation of flamingos after Rann of Kutch. The birds visit the area mostly for feeding and evidences of breeding are not available. During early 80Â’s roughly 50,000 numbers of flamingos were recorded which has steadily reduced to less than 10,000 presently because of biotic interference, fishermen activity and reduced availability of shrimps and plankton due to increased salinity.
2.3.17 Animal Husbandry

Animal husbandry is an allied activity of agriculture in this district as well but it could not keep pace with the developmental work undertaken in the field of modern agricultural techniques. Therefore, the cultivators still depend on cattle imported from other neighbouring districts. The livestock found in this district are generally cattle and buffaloes, sheep, goats, pigs apart from poultry birds, which include fowls and ducks. The district have several artificial Insemination centres, and sub-centres, key village blocks, veterinary hospitals and dispensaries which render valuable services for the development of livestock in the district.

2.3.18 Mineral Resources

Lignite: Lignite seams have been encountered between 320 to 370-metre depth during the course of drilling by the Oil and Natural Gas Commission (ONGC) in Tirumangalam area near Mayilathuthurai. The fixed carbon ranges from 26.12 per cent to 37.50 per cent, which is higher than the lignite of Neyveli. The similar occurrences have also been reported from Vanadirajapuram, Chittakadu, Pandanallur and Kattumannarkoil areas.

Illemenite Sands: Illemenite garnet sands were located between Mimisal and Adiramapattinam, Tranquebar, Tirimullaivasal and at the mouth of Coleroon river. In Tranquebar probable reserves of illemenite and garnet are estimated at 90,400 tonnes and 4,900 tonnes respectively. An occurrence of illmenite rich beach sands is reported in east of Kodiampalayam. It extends over a distance of 2 kilometres with an average width of 50 metres.

Kankar: Kankar and tuffaceous limestone occurs under red soil/laterite ranging in thickness from 0.3 to 1 metre, and Kankar layers are noticed in stream sections. The important occurrences are seen on the Grand Anicut canal cutting between
Kuruvadipatti and Podur also in neighbourhood Thirumalasamudram. The thickness of Kankar in Thirumalasamudram area ranges from 2 to 2.5 metres and the total reserves are about 0.5 million tonnes. The Kankar is of good quality, with Cao ranging from 48.43 to 52.72 per cent and low in magnesia and silica contents. Salt pans are located at Adirampattinam and Vedaranyam.

ONGC: The ONGC of India is intensively exploring to augment the underground oil and natural gas resources of the Cauvery delta and not it is estimated to have vast potential. Many wells are being opened and started yielding oils and gas.

2.4 Water Resources

The district is situated in the deltaic region of the famous river Cauvery and crisscrossed by lengthy network of irrigation canals. Kollidam River forms the northern boundary of the district, whereas Arasalar, Tirumalairajanar, Vettar and Vennar rivers drained the other parts of it. These all rivers are tributaries and branches of the river Cauvery.

2.4.1 River basins and their Catchment Areas

Catchment Area of River Basin: Vettar, Odambogiar, Kaduvaiyar, Pandavaiyar and Vellaiyar are the five minor basins of river basins in the district. Place of origins, total and within the district length and area of the basin in areas. Basin-wise Status of the Ground Water Availability: Basin-wise status of the ground water availability for the Cauvery basin is made available only for composite Nagapattinam district comprising bifurcated Tiruvarur district.

2.4.2 Irrigation by Different Sources

Nearly canals serve 80 percent of the total net area irrigated and only the river Cauvery feeds these canals. The Cauvery Delta system is the most ancient of all
irrigation schemes in the undivided Thanjavur. This comprises mainly of three important projects. They are the famous Grand Anicut, the Upper Anicut and the Cauvery Vennar Regulator Project. Tanks and wells are rarely used for irrigation in the district. The gross area irrigated by canals and other sources are 1,13,374 hectares and 21,405 hectares respectively. The gross area irrigated by the tanks and the wells are 40 hectares and 50 hectares respectively. Therefore canal irrigation constituting 84.07 of the total irrigated area remains the predominant source of irrigation. On an average about 58.20 per cent of the total cropped area are irrigated. Mayiladuthurai block achieves about 74 per cent irrigation at the maximum and Vedaranniyam achieves 17.85 per cent at the minimum. Some blocks achieve irrigation at about 60 per cent. The block wise details on irrigated area by different sources.

2.5 Incidence of Drought, Flood and Cyclone

Information on this head is scarce. However it has been ascertained from the available information that all the 6 Taluks and 12 Blocks were affected by Flood during the year 1991-92 and affected by Cyclone during the year 1993-94.

2.6 Fisheries Production

The Nagapattinam district has a coastal line of 165 kms. The Inland Fresh Water area spreads for about 1,000 (10 Sq. Km.) hectares. Marine fishing is practised in 60 coastal villages of the district. The fish production fluctuates in both quantity and value from 1990-96.

Fishery: Since the district is a coastal region, marine fishing assumes importance. The marine fish catch mainly comprises of leognathics, sharks, flying fish, chank, catfish, prawns, silver bellies, crabs, rays and other miscellaneous varieties.
Mechanised boats; catamarans and country canoes are all used for fishing. A fish-landing jetty has been constructed at Kodikarai, which caters to the needs of marine fishermen and is the only workshop in this coastal area. A comparison indicates that the Coastal Fish Production is higher than the Inland Fish Production.

2.7 General Fish Seed Production

The Fish Seed production thousands standard fry was 10545; the highest in the year 1993-94 followed the year 1994-95 and 1995-96. However in the year 1990-93, there was No Fish Seed production in this district. The district has good fishing potential in view of its rich coastal area. The coastal fish production is more than the inland fish production and the production has seen fluctuations. As regards fish seed production, the same is observed from 1993-96.

2.8 Places of Tourist Attraction

Poompuhar (Sirkazhi block), Tharangampadi (Sembanarkoil block), Velankanni (Velankanni block), Nagore (Nagapattinam block) and Point Calimere (Vedaranniyam block) are the main tourist spots in the district. The first 4 tourist spots are visited throughout the year and the last tourist spot is visited from August to March. The foreign tourist arrivals have fluctuations and domestic tourist arrivals have been steadily increasing except in the years 1992-93 and the tourist arrivals both domestic and foreign are estimated at 2,99,150 during 1996. These five tourist spots are also included in the tourist circuits identified by the Tourism Department. The district has a large number of temples and many of these are under the management of Hindu Religious and Charitable Endowments Board. Among these, some selected ancient temples are briefly described in the following paragraphs:
2.9 Cultural Heritage

The ancient temple of Sri Mayuranathaswamy is situated at Mayuram, a town deriving its name from this renowned temple. The presiding deity is a Swayambu Lingam with consort known as Abhayapradhambikai, Adhayambikai, Anjalanayaki, Anjalai, etc. meaning one who gave refuge to the peahen. The inspiring temple measures 719' x 52' and has a nine-storeyed imposing gopuram, 164 ft. high on the eastern entrance. The ancient temple had been built during the period of the famous Chola kings. Some renovations were done to the temple about 400 years ago. There are many small shrines here of which three are dedicated to Sri Vinayagar one for Lord Natarajar and the rest to other deities. Navarathri, Adi Pooram, Avani Moolam, Karthigai, Skandha Sashti, Thula Uthsavam in Ayppasi and the Vaikasi Brahmothsavam are the regular annual festivals celebrated attracting thousands and thousands of pilgrims. The head of the Thiruvaduthurai Adheenam who is the hereditary Trustee of the temple manages the affairs of the temple.

Sri Swaminathaswamy temple is built on an artificial hillock about sixty feet high in Swaminalai, the renowned place of pilgrimage in South India. The famous king Kartha Veeryarihuna had built this ancient shrine. The main shrine is a specimen of old architecture while the rest are by recent renovations. The hill temple is provided with a flight of sixty stamps. The presiding deities are the life-style images of Moorage and Siva, the former imparting the divine message to the latter. A six feet high granite icon in a standing posture offering a spectacular view to devotees represents Sri Swaminathaswamy. In the ground floor of the temple, there are separate shrines dedicated to Sri Sundareswarar and goddess Meenakshi. Of the major festivals, mention may be made of the six days Skandha Sashti, Valli Kalyanam and the ten-day Thirukarthigai, which attract thousands of devotees. The affairs of the temple are managed by and Executive Officer and Board of Trustees consisting of five members, all
appointed by the Hindu Religious and Charitable Endowments Department. Sri Navaneetheswarar temple is in Sikkil, a railway station on the Thanjavur - Nagore line and on the bus route from Tiruvarur to Nagapattinam. As Sambandar has sung in praise of Sri Navaneetheswarar, the temple can be presumed to be in existence since the 7th Century A.D. The temple was in a state of ruin towards the close of the last century and Sri Alagappa Chettiar of Thekkur of Ramnad district renovated it. There are eight stone inscriptions in the temple. Though, the presiding deity is Navaneetheswarar, the temple is more widely known as one of the seats of Lord Subrahmanya who is known as Singaravelavar. He is the processional deity. There are numerous other deities including a Perumal who is installed in a separate sanctum. His name is Kola Vamanar. The temple covers an area of about 2 acres and maintains an orphanage where poor orphans are fed, clothed and educated free of cost. A small hospital is also maintained for the benefit of those in the orphanage. Apart from Skanda Sashti, the other main festival is Brahmotsavam in Chithirai, which attracts thousands of devotees. An Executive Officer and three Trustees manage the temple.

Sri Rajagopalswamy temple was constructed in the 12th century but the sanctum is believed to have been in existence earlier. The place is known as South Dwarka and Lord Krishna gave darshan to two devotees, Gopralayar and Gopilar. Lord Krishna is said to have enacted before them all his 32 exploits from his birth to his becoming a charioteer of Arjuna. A Naik King of Thanjavur made extensive additions. It is one of the important Thengalai Vaishnavite shrines in South India, adopting Pancharatragama. There are two sub-temples attached to the main temple, viz. Sri Gopralaya and Sri Lakshminarayana Perumal temple.

The temple celebrates a number of festivals annually, of which the most important ones are Adipooram for 10 days, Ahyayana Uthsavam for 20 days in margazhi, Brahmothsavam for a period of 25 days during the months of Panguni and
Chithirai and the floating festival in the month of Ani. These festivals attract a large number of devotees from the adjoining villages, towns and districts. An Executive Officer and a Board of Trustees appointed by the Hindu Religious and Charitable Endowments Board manages the affairs of the temple. Sri Vedaranyaswamy temple dedicated the Lord Siva in Vedaranniyam was renovated by the Chola Rulers. Since both Appar and Sambandar have worshipped the Lord here, the temple should have been in existence prior to 7th century A.D. Sri Vedaranyeswarar and His consort Sri Vedanayaki Amman are the presiding deities of the temple.

It covers an area of 6 acres and has some 90 stone inscriptions. The temple is fashioned like the Tiruvarur temple and has two prakaras and a tower. There are three mandapas in the temple precincts. The regular annual festivals observed in the temple are Brahmotsavam, 18 days theerthavari festival during Masimakham, Mahasivarathri, and Panguni Uththiram, wedding of the Lord and His consort on the Sukla Sapthami day, Skandasashi (Surasamharam), Karthigai Deepam, Dhanur Pooja (Thiruvathirai), Poosam and Pongal. Of these, the 'Thirukalyana Utsavam' during the month of Chithirai is the most important one, which attracts a large congregation of devotees from the neighbouring villages, taluks and districts. An Executive Officer and a single hereditary trustee appointed by the Hindu Religious and Charitable Endowments Board are managing the affairs of the temple.

A famous Roman Catholic pilgrim centre is located at Velankanni, six miles south of Nagapattinam. The church here is dedicated to 'Our Lady of Health' draws thousands of pilgrims including people of other faiths also. The annual festival is held in the first week of September and continues till 8th September, the day of Saint Mary's birthday. Pilgrims mostly Catholic Christians from all over India throng the place to complete their vows and seek holy blessing.
Among other things, the church maintains a museum which is worth visiting due to a number of rare gift articles mostly in silver and other presentations offered to the lady of Health by the devotees in lieu of getting cured of their diseases of having got the fulfilment of their cherished wishes and desires. Other famous churches in the district are at Tranquebar town known as the Jerusalem Church, the Zion church and the church of Our Lady of Rosery. Apart from the religious places of historical importance mentioned above, other places of interest for the tourists are Bird and wild life sanctuary at Point Calimere and Manora fort.

Point Calimere, an important tourist place and a heaven for bird-watchers, is situated in Tirutturaippundi taluk about 120 kms. From Thanjavur and is northern point of the Palks bay. The sanctuary here is noted for its incredible congregation of black bucks, spotted deer, wild pig, wild ponies and heavy concentration of migratory waterfowl. Twenty to thirty thousands of flamingoes can be seen here at one time during the winter months. During spring when the trees and shrubs are laden with wild fruits, thousands of birds like the green pigeons, mynas, barbets etc. can be seen. A bath in the sea at Kodikkarai, a sacred place nearby, is considered holy especially on the new moon day of Thai, Adi and Purattasi. Manora fort is located in the village of Sethubaba Chattiram on the eastern coast 16 kms. off Peravurani. The fort facing the Bay of Bengal is an eight storeyed victory tower built by the Maharaja Serfoji, the then ruler of Thanjavur, in 1814 to commemorate the victory of the British over Napoleon Banaparte in the War of Waterloo.

The tower has steps in a circular way, which looks enchanting, and one can have a panoramic view of the green surroundings and the sea from this 30 metres high tower. This place is presently under the care of the Central Archaeological Department as a protected monument. Of late, it has become a picnic spot and people do come to enjoy their weekends here.
Kavirippoompattinam, known in classics has Poompuhar, was one of the chief cities and an important seaports of the Chola Kingdom. The original city port was submerged in the sea and at present there is only a small village. It is a sacred bathing place, being the confluence of the Mother Cauvery with the sea. The place is also birthplace of Saint Pattinathar, the poet and Kovalan and Kannagi.

The temple of Pallavaneeswara immortalised by the saint Sambandar actuated here. It is a sight for such tourists who would like to wander amidst history. The ancient glory of the place has been revived to some extent by the government of Tamil Nadu and it has been made a place of tourist importance. An Art Gallery depicting scenes from the Tamil Epic, Silapathigaram of Kannagi and Kovalan was opened in 1972. Monuments on the Nedungal Mandram, the Pavai Mandram, the Elango Mandram and the Kotrapandal are also at display.

Mayuram is an important pilgrim centre. Mayuram means a peahen and the legend say that Lord Siva turned His consort Parvati into an apeahen because of her disobedience. She was blessed with her original form only after repentance, when she worshipped and bathed in the Mayilamman tank. Pilgrims from all parts of the state congregate at the annual Thula festival in October-November. On the occasion the holy Ganges is believed to mingle here with Mother Cauvery and a dip in these waters is believed to purge off the sins of devotees. The festival is popularly known as Kudamuzhukku Vizha.

2.10 Settlement and Infrastructure

Urbanisation pattern: The proportion of urban population to total population has increased during the decade 1981-91 and is estimated at about 26.79 per cent during the year 1996. The proportion of municipality population to the total population has decreased from 16.38 per cent in 1981 to 16.23 in 1996. But the proportion of town
panchayats population to the total population has increased steadily from 6.68 per cent in 1981 to 10.56 percent in 1996. Among the urban areas, municipalities account for a greater share of urban population when compared to the other urban areas.

2.11 Density of Population

The overall density of the district has increased from 646 persons / sq.km., in 1981 to 770 persons / sq.km. in 1996. The density in urban and rural areas has increased from 2817 persons/sq.km. in 1981 to 3456 persons/sq.km., in 1996 and from 525 persons/sq.km. in 1981 to 600 persons/sq.km. in 1996 respectively.

2.12 Decadal Growth rate in Urban Centres

The urban population of the district has grown from 1.76 lakhs in 1961 to 3.43 lakhs in 1996. The decadal growth rate indicates that there is a considerable growth both in Municipalities and Town Panchayats in the district. Nagapattinam has registered the maximum growth rate among the municipalities and Vedaranniyam has the maximum growth rate among the Town Panchayats. The details of decadal growth rate are given in Table No: 40. The decennial growth rates both for Urban and rural population over the past four decades is furnished.

2.13 Urban Slum Population

There has been a steady increase in the percentage of slum population to total municipal population from 1981 to 1996. It has increased from 37.80 per cent in 1991 to 42.81 percent in 1996. However slum population details for town panchayats are not available.

2.14 Trend in urbanisation and slums

The trend in Urbanisation in Slums indicates that though the urban population has increased, the percentage of slum population to the urban population has decreased
from 1981 to 1996. The percentage of urban population to total population has increased and the percentage of slum population to total population has fluctuated marginally from 1981 to 1996.

2.15 Domestic wastewater generation and treatment

The estimated sewage generation is 123.75 lakh liters among municipalities and 45.57 lakh liters among town panchayats. The towns of the district do not have any treatment plant and hence there is no organised disposal of sewage. Nature of disposal and quantity through river water is 123.75 lakh liters in Municipalities and 45.57 lakh liters in Town Panchayats. The district also lacks underground drainage system.

2.16 Municipal Solid Waste Generation

The solid waste generation is highest in Nagapattinam among municipalities and Vedaranniyam among town panchayats. Overall the solid waste generated adds up to 37.16 tonnes with a collection efficiency of 75.22 per cent with manpower of 111 for Solid waste management. The workers for solid waste management per thousand populations had shown only 0.32. There is no recycling process of manure in the district. The availability of compost yards is 3 in municipalities and 2 in town panchayats.

2.17 Composition of Solid Waste

On the basis of the figures furnished by Nagapattinam municipality, it was observed that 85 per cent of the solid waste is compostable on wet basis and 15 per cent of rags; plastics, etc. are not compostable in the district.

2.18 Coverage of Problem Villages / Settlements

It has been identified that about 1614 settlements out of the total 2253 settlements in the district have had problems with regard to the supply of drinking water.
However 639 problem settlements have been covered during the VII five-year Plan (1992-97) and Plan Schemes are under implementation. The data do not hold well since no problem villages have become problem villages at any time because of the failure of water supply failure. The data given are the composite Nagai- Quaide- Milleth district comprising bifurcated Tiruvarur district.

2.19 Reported cases of water borne diseases

Gastro-enteritis and Dysentery are the most commonly reported water-borne diseases in the district. Incidence of Gastro-enteritis was very high during 1994-95. Cases of Cholera and Jaundice were also reported in the district. In some instances the Gastro-enteritis has also proved to be fatal. Deaths of gastro-enteritis are reported from 1985 to 1996. The maximum deaths of 100 were reported during the year 1992-93 due to gastro-enteritis. Deaths of Jaundice and Meningitis were also reported during the year 1991-93 and 1993-94 respectively.

2.20 Facilities under Indian system of Medicines

Allopathy is the most commonly practised system of medicine in the district and facilities for medical treatments are also available. In addition, there are a few Siddha and Homeopathy Hospitals available and other systems of medicines are totally absent. The details on the facilities available under Indian Systems of Medicines, and also the types of medical institutions available in the district.

2.21 Industries

The district is deprived of any major industry but it is a flourishing centre of cottage industries and handicrafts alike. The district is equally well known for its pith articles consisting of beautiful models of Hindu idols, temples, mosques, flower garlands, bouquets, parrots and peacocks. The flower garlands and bouquets are much
in demand during Christmas days. Pith is grown on the beds of tanks in the Sirkazhi, and Mayuram taluks. The making of musical instruments of jack wood like the veena, the tambura, the violin, the mridangam, the tabla and the kanjara exhibit excellent taste, knowledge and workmanship. The jack wood has special quality for producing musical sounds. Government has established an industrial training institute at Nagapattinam. This is to promote industrial development in the area. With a view to improve the condition of the weavers, the State Government like housing schemes has also initiated various welfare measures, introduction of group insurance etc.

Madras Refineries Limited (MRL), a major refinery in South India with an exemplary track record, has been conscious of its role in maintaining the Eco-Balance through a number of environmental control measures. Cauvery River Basin refinery at Panangudi in Nagapattinam, MRL refines 0.5 Million Metric Tonnes Per Annum of crude. MRL, ever since its inception, has been methodically planning and implementing several environment relative projects to contain pollution within the Minimal National Standards (MINAS) on several fronts.

MRL has been working on reducing air pollution on two fronts: at it own Plants as well as in vehicles using Petrol or Diesel. At it plants, MRL has switched over to LSHS fuel far less polluting than the high sulphur fuel used earlier. A Sulphur Recovery Unit has been installed at MRL, resulting in substantial reduction of sulphur dioxide emission. Taking its activities beyond he greening of MRL and its environs is another fact of environmental conservation. Planting and maintaining thousands of trees and shrubs form a Greet Belt around MRLÂ’s Plant in Panangudi. This mitigates fugitive emission dilutes accidental releases and balances Eco-Environment-besides beautifying the surroundings.
Environmental protection is becoming an issue of great importance for the present and future generations. Releasing this national priority, the R and D Centre has established a separate group for environmental studies and research, leading to effective measures to minimise air and water pollution. A mobile unit to generate baseline data monitors the ambient air regularly.

Taking its activities beyond Manali, MRL has commissioned a new grass-root refinery with a 0.5 million tonnes capacity per annum at Panangudi in the Cauvery River Basin together with a gas sweetening and LPG separation unit producing 16,000 tonnes of cooking gas. MRL’s Effluent Treatment Plants are operating to achieve MINAS. The Tertiary Sewage Water Treatment Plant of MRL, the first of its kind in Indian Refineries, augments water supply to the refinery complex. Also, MRL is working towards zero discharge.

There are 490 industrial units situated in the composite Thanjavur district, of which, 4 sugar units, 1 petroleum refinery, 1 distillery, 1 thermal power plant are coming under highly polluting industry. M/s. ONGC has explored crude oil and natural gas in Nagapattinam District. The crude oil is made available for Madras refineries limited whereas natural gas is utilised as fuel in ten nos. of sodium silicate units. Also this gas is utilised as a fuel for one thermal power generation unit (2X5 MW) by TNEB in this area. One SIDCO Industrial Estate is located at Nagapattinam. The industrial units in these estates are non-polluting or less polluting in nature.

2.22 Water quality

Ground Water contamination is observed in certain locations due to Sea Water Intrusion. In several places along the coast either the ground water is naturally saline or it is artificially made saline by over extraction and consequent intrusion of seawater into the land aquifers. The area mainly affected from seawater intrusion into the land
acquires, are Kuttam area in Nagapattinam District. Further information was not available for water quality in the Nagapattinam district Under MINAR's Scheme; TNPCB is monitoring the quality of water from 16 places of Cauvery River bed. As per the test, the quality of water is normal. In Kollidam, sampling station falling within the composite Nagapattinam district, TDS and Chloride content of water is exceeding the standard value, because of more water evaporation and influence of backwater. PH of water is slightly more than the standard. Disposal of sewage and drainage water into the Cauvery river are the main reasons to affect the biological quality of water.

2.23 Aqua Culture Activities

An Extensive water sample analysis carried out in over half-a dozen villages of Sirkali taluk, in the aquaculture belt of Nagapattinam district by the Gandigram Rural University as reported in Indian Express dated October 9, 1994 has revealed a disturbing deterioration in the quality of the only source of potable water ground water.

An independent study made by the Bhagawati Environment Development Institute recently has established that hardness, chloride and alkalinity levels of water collected at 17 different points in Sirkali taluk of Nagapattinam District spread over the seven villages of Niethalvasal, Mehendrapalli, Keelaiyur, Pudukuppam, Eranjimedu, Thirunagari and Radhanallur are in excess of the prescribed tolerance limits for drinking water.

Prawn culture and shrimp farming are done in coastal districts of Chengalpattu, Cuddalore, Thanjavur, Nagapattinam, Tiruvarur, Pudukkottai, Ramanathapuram, Tuthukudi and Kanyakumari. There are about 1200 such aquaculture farms in Tamilnadu. The effluents let out of these farms containing biodegradable wastes are not properly treated in many cases and hence pollute groundwater in adjoining areas, even upto a distance of 6 km. affecting agriculture. Added to this, a majority of the prawn
farms have been flouting environmental guidelines by discharging untreated effluents into the neighbouring Poromboke lands.

There are about 648 Aquaculture units, which are occupying the areas of about 1484 hectares. The estimate on wastewater generation from these units is also not available. There have been no aquaculture activities along the coastal line of the districts as per the report of fisheries department.

2.24 Wetland Habitats, their use and problems

The only Wetland habitat in the district is deltaic in character and water spread area covers 1,236.77 Hectares. The major problem identified in the wetland habitat is siltation.

2.25 Potential Hot Spots along the coast

Vedaranyam is the only potential Hot spot along the East Coast in the district. The coastal areas of district are of marine origin since they are in contact with sea, backwaters, lagoons, swamps, etc. the area around Vedaranyam is especially of very poor quality in nature. The highly saline and brackish water occurs at all levels partly by the influence of swamps and partly due to the deeper cretaceous formation. In the N-E portion of the district, heavy extraction of groundwater through filter points has resulted intrusion of salt water from the nearby marine deposits. These are noticed in the villages of Mangaimadam, Kollur and Tirunaganai of Sembanarkoil blocks.