

## Chapter

# 1

## 1.0 The Context

The **Department of Environment (DoE)** is the nodal department for dealing with environmental management of the State. The State has been endowed with multitude of natural resources, judicious management of which will ensure sustainable development in all sectors. Effective resources management calls for an in-depth assessment of their existing conditions and trends. A cursory evaluation of the present status of our environment and natural resources including land, soil, water and air, and the life support systems like forests, rivers and coastal areas indicates that the health of such systems is threatened by serious levels of degradation. Though different Government Departments / Agencies are responsible for management of resources under their jurisdiction, information relating to the individual sector lies fragmented.

To manage the environment in a holistic manner and to develop the environment friendly sustainable development perspective, it becomes necessary to identify the gaps in the present management of resource bases. Such intervention would be realistic only when the data collected from the primary/secondary sources is compiled and presented in the form of district environment profiles to provide a strong database. Thus **AIMS Research (A Joint Venture of TCW/ICICI, IDBI and ICICI)** – a leading consultancy and research organisation, has been engaged in the preparation of such a report. This report would form the basis for developing Environmental Management Plans at district levels and this would spell out specific action programs to be implemented by local / state institutions. This report provides a brief account of the manner in which the **District** has been prepared and presented.

To achieve certain degree of uniformity in the presentation of environmental data in the districts, it is considered necessary that certain standardised formats are adopted for collection and presentation of the relevant data besides interpretation of the data thus collected. Accordingly, the data compiled in the prescribed formats have been synthesised and presented in the following chapters.

## Chapter 2

### 2.0 Background

#### 2.1 History

Since the Namakkal district is a part of the Salem district, the historical background of Salem and Namakkal remains the same. After the struggle between the Cheras, Cholas and Pandiyans, the Hoysalas rose to power and had control till the 14th century followed by Vijayanagar kings till 1565 AD. Then the Madurai Nayakas came to power in 1623 AD. Two of the Poligans of Tirumalai Nayak namely, Ramachandra Nayaka and Gatti Mudaliars ruled the Salem area. The Namakkal fort is reported to have been built by Ramchandra Nayaka. After about 1635 AD, the area came successively under the rule of Muslim Sultans of Bijapur and Golkonda, Mysore kings and then the Marattas, when about the year 1150 AD Hyder Ali came to power. During this period, it was a history of power struggle between Hyder Ali and later Tippu, with the British. Tamil is the main language spoken in this district.

##### 2.1.1 Fairs and Festivals

Many festivals are celebrated in this district. One important festival is the Perumal car festival organised in Sendamangalam during February-March. The Christian and Muslim festivals are fewer in number. Rasipuram celebrates Christian festivals while Tiruchengodu and Namakkal taluks celebrate the Muslim festivals.

##### 2.1.2 Communications

The district is well served by both rail and road transports. By broad gauge line of Southern Railway, it is connected by Salem, Mangalore, Thiruvananthapuram, Bangalore, Chennai, Mumbai and Delhi, whereas NH 7 pass through most of the taluk headquarters. Other towns and most of the villages are connected by motorable roads including State highways and Major District Roads.

#### 2.2 Geographical Location of the District

Namakkal district is bounded on the north by Salem district, on the east by Attur taluk of Salem district, Perambalur and Tiruchirapalli districts, on the south by Karur district and on the west by Erode district. The administrative headquarters of this district is located at Namakkal town. The District lies between  $11^{\circ} 09'$  and  $11^{\circ} 65'$  north latitude and  $78^{\circ} 23'$  and  $79^{\circ} 45'$  east longitude. The general geographical information of the district is simple and flatted area. Kollimalai hill range occurs on the east of the district. Cauvery River is flowing in the district, which will be dry during the summer season. Namakkal District consists of Four Taluks, namely 1.Namakkal, 2.Rasipuram, 3.Paramathivelur and 4. Tiruchengode. The total geographical area of the district is 4,376.57 Sq. Km. The Namakkal District is divided into 15 Blocks. The details of the name of the taluks and area have shown in the following Table:

Sl. No.	Name of Taluks	Area in Sq.Km.
1	Namakkal	1784.09
2	Rasipuram	903.18
3	Paramathivelur	729.09
4	Tiruchengode	960.21
<b>District Total</b>		<b>4376.57</b>

### 2.3 *Administrative Arrangement in the District*

Namakkal District comprises 4 Taluks, 15 Blocks and 446 Villages. As regards the hierarchy of administrative arrangement, there are 4 Municipalities, 20 Town Panchayats and 331 Village Panchayats in the District. The details regarding the number of blocks, villages, village panchayats, town panchayats & municipalities with regard to each taluk are given in Table 1.

### 2.4 *Meteorological Information*

The monthly average rainfall in the district is worked out and it is 82.5 mm. The months of June to October receive a rainfall that is more than the annual average rainfall. The average mean maximum and minimum temperature for the district have been 34.0<sup>o</sup> C and 21.6<sup>o</sup> C, respectively. The average number of rainy days, mean maximum temperature, mean minimum temperature and mean relative humidity for the period of 1991-96 are given in Table No. 2

**Climate and Rainfall:** On account of the general dryness of the atmosphere, comparatively cool nights and the appreciable drop in temperature from June following the onset of the monsoon season, the climate of this district is more pleasant than that of the adjoining eastern and southern districts. The climate on the plateau due to elevation is generally mild and equable.

Generally dry climate prevails over major part of the year in plains. The year may conveniently be divided into four main seasons, the dry season from January to March, the hot season during April and May, the Southwest monsoon season from June to September and the Northeast monsoon season from October to December.

**Humidity:** The district on the whole enjoys a dry climate. The driest months are from January to April, the average relative humidity in the afternoon being less than 40 percent. Even during the rainy months the average humidity is appreciably below the saturation level.

**Cloudiness:** Skies are generally clear or lightly clouded, during the period January to about middle of April. The cloudiness increases from the latter half of April and after about the middle of June skies are generally heavily clouded till about the middle of December.

**Winds:** From October to March winds blow mainly from north easterly to easterly directions. In April winds from directions between south and west are also common. From May to September south westerly and wester lies predominate. The wind speeds

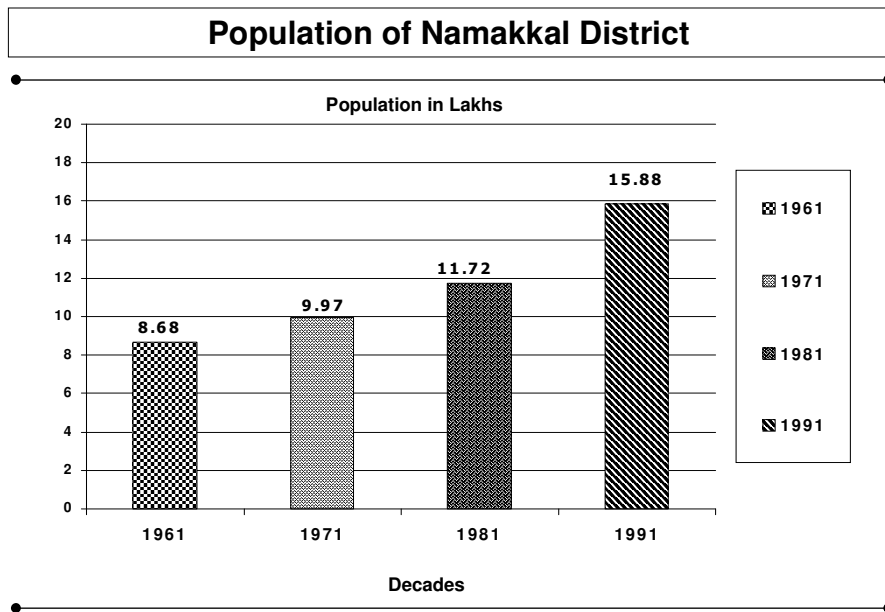
are least in October with maximum in May. It is interesting to note that the primary and secondary rainfall maxim occur in these months.

**2.5 Demographic Details**

The Growth of population over the past three decades and the essential characteristics of the population for the past four decades in terms of birth rate, death rate, infant mortality rate and literacy level are given in Table Nos. 3,4,and 5.

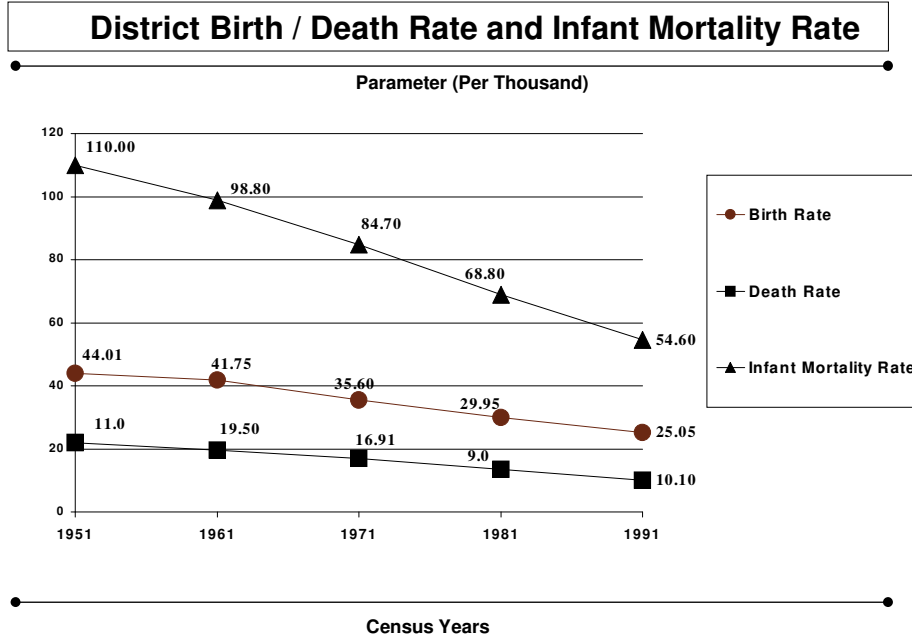
**2.5.1 Population**

The population of Namakkal District has grown from 8.67 lakhs in 1961 to 15.90 lakhs in 1991. The growth rate indicates that there has been a significant increase during the 1981-91 decade with the average growth rate being 3.54% per annum during this decade. According to the 1991 census of Namakkal taluk is the most thickly populated and Paramathivelur taluk is the least populated in the district, because of this taluk was constituted in year 1991. The details of population growth along with the Growth Rate- taluk wise are given in Table No. 3.



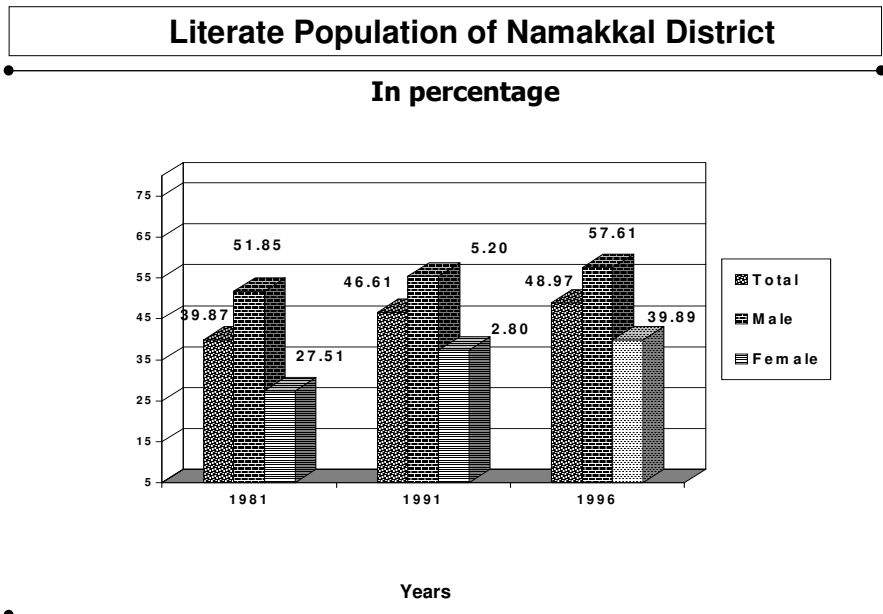
**2.5.2 Trend in Birth/Death Rate and Infant Mortality Rate**

Birth rate, Death rate and Infant Mortality rate have been reduced significantly from 44.01 in 1951 to 25.05 in 1991, 21.99 in 1951 to 10.10 in 1991 and 110.00 in 1951 to 54.60 in 1991, respectively. The details regarding these are given in Table No. 4.



**2.5.3 Literacy Level among the Population**

The literacy level of Namakkal district according to figures available for the year 1996 is 48.97% with male literacy level being more than the female literacy level. It is also observed while the male literacy level has grown steadily from 51.85% in 1981 to 57.61% in 1996, there has been a significant increase of female literacy level from



27.51% in 1981 to 39.89% in 1996. The information on literacy level of the district is given in Table No. 5.

#### 2.5.4 Education

The following table provides information on schools per ten thousand populations in towns of this district.

Name of the Towns	Number per 10000 population				
	HS /In/PUC/JC	Sec./ Metric	JS/Middle	Primary	PL / RR*
Ammapalaiyam	--	--	0.88	0.88	RR:7
Idappadi	0.25	0.25	0.25	3.73	PL:1 / RR:2
Kumarapalaiyam	0.42	0.42	0.62	0.83	PL:1
Mallasamudram UA:	1.00	1.00	1.00	5.66	PL:1
(i) Attayampatti	2.09	2.09	2.09	3.13	PL:1
(ii) Mallasamudram	0.82	0.82	0.82	7.41	--
(iii) Marulayampalaiyam	--	--	--	9.52	--
(iv) Papparapatti	--	--	--	4.62	--
(v) Seppaiyapuram	--	--	--	12.74	--
Kumarapalaiyam	--	--	--	6.69	RR:1
Namakkal	0.75	0.75	1.01	2.77	PL:1 / RR:3
Pallipalaiyam	0.30	0.30	0.30	0.61	--
Pillanallur	--	1.25	1.25	3.74	PL:1 / RR:1
Rasipuram	0.59	0.59	0.59	3.87	PL:1 / RR:2
Tiruchengode	0.37	0.56	0.74	3.34	PL:1 / RR:21
Vennandur	1.02	1.02	1.02	2.03	PL:1

\* PL / RR – Public Libraries including reading rooms.

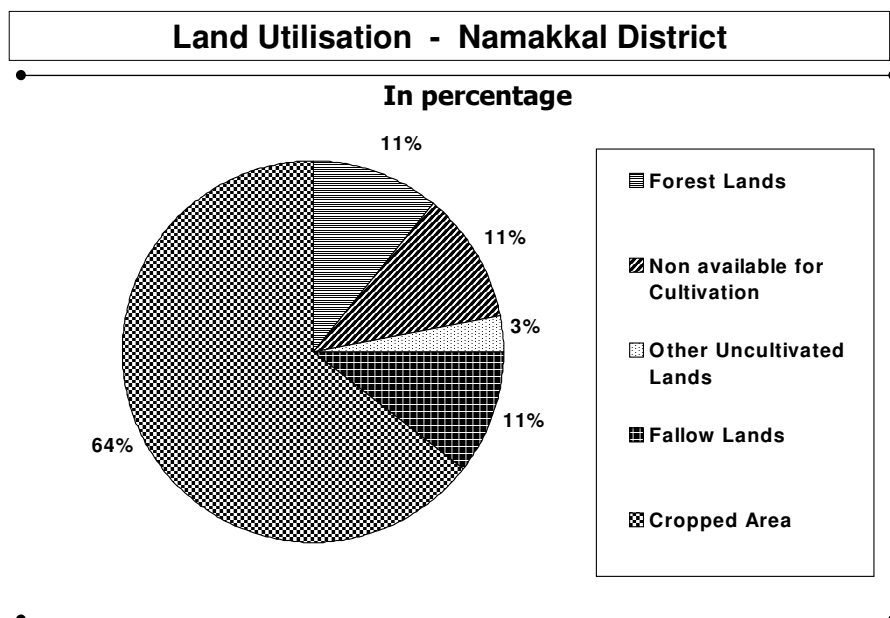
**Chapter**  
**3****3.0 Resources - Availability, Use and Environmental Status****3.1 Geography and Physical Features**

The district is extensively covered with hilly ranges and rocks with undulatory plains. The Kollimalai range with peaks 1219 metres runs along the east of Namakkal and Rasipuram taluks. The parent district Salem has fairly extensive forest area of considerable value. The main products from the forest are sandalwood, bamboo, timber/(silver oak and similar varieties) and firewood. The main source of revenue from the forests is from the Sandalwood trees, which occur naturally in abundance in the plateau and hilly ranges.

**3.1.1 Agriculture and Irrigation**

The main occupation in the district is agriculture. The cultivation generally depends on monsoon rains, wells and tanks. Nearly 90 percent of the cultivated area is under food crops. The principal cereal crops of this district are paddy, cholam, cumbu and ragi. Panivaragu, Kuthianally, Samai Varagu and Thinai are some of the Millets cultivated. Among pulses, the major crops are redgram, blackgram, greengram and horsegram. Among oil seeds groundnut, castor and gingelly (sesame) occupy important places. Of the commercial crops, sugarcane, cotton and tapioca are some of the important crops. Tapioca is used for the manufacture of sago.

The total geographical area of the district was 4376.57 sq.km. in 1995-96. Cropped area accounts for about 64.34% of the total area. Forestlands cover about 10.78% of the total land. However the forestlands accounted in revenue records are at variance with the data on actual extent of forest blocks available with the forest Department. A significant portion 21.92% of the land falls under the category of 'non available for cultivation' and 'fallow lands'. About 2.96% fall under the category of other uncultivated land. The land utilisation pattern in Namakkal District (Block-wise) is given in Table 6.



### **i. Trend in Production and Productivity of Important Crops**

Cereals, Pulses and oil Seeds are observed to be the three important crops produced in the district. The productivity pattern indicates that the productivity of Cereals, Pulses and Oil Seeds have fluctuations over 15 years. The area under production for Cereals, Pulses and Oil Seeds have also fluctuations in the years 1991-96. However, productivity of all groups of crops have shown an increase in the year 1996 as compared to that of 1991 which is in the order of 25.7%, 36.7%, 69.4% for cereals, pulses and oil seeds, respectively. This trend reflects the overall improvements in the agricultural practices of the district. The details on the productivity performance of the district in relation to the above important crops for the past 6 years are given in Table No.7.

### **ii. Horticultural and Plantation Crops**

There were Fruit Crops with a yield of 53590 tonnes, Vegetables Crops of 10100 tonnes and Plantation Crops of 79740 tonnes cultivated in 3242 ha., 19691 ha. and 9211 ha. respectively in the years 1995-96. The details pertaining the crops are given in Table No.8.

### **iii. Consumption of Fertilisers and Pesticides**

About 35439 metric tonnes of Chemical Fertilisers were used in 1995-96, out of which around 50% constitute the nitrogenous fertilisers. There has also been an intensive use of Bio-Fertilisers (326800 pockets) in the district, followed by Pesticides in 1995-96. Moreover, 38406 tonnes of Urea were used in the district. The details on the total of consumption with District details of Chemical Fertilisers, Urea, Bio-Fertilisers and Dust and Liquid Pesticides are given in Table No. 9.

#### **iv. Trend in consumption of Fertilisers and Pesticides**

The usage of Chemical Fertilisers, Bio-Fertilisers and Liquid Pesticides was 35439 tonnes, 326800 Pockets and 2934 litres respectively in the years 1995-96. Other than the small reduction in the consumption of bio-fertiliser during 1991-92, its use has registered a remarkable increase every year indicating that the role of bio-fertiliser in agricultural production has come to be widely acknowledged. The details with regard to the trends in the consumption of fertilisers and pesticides over the past 15 years are given in Table No. 10.

#### **v. Soil Types**

Red Loam and Black soil are the predominant Soil types in this district accounting for 59.26% and 11.95% respectively followed by Sandy Alluvium for 4.84%. The details of other types of soils given in Table No. 11.

#### **vi. Soil Problems**

About 1.92% of the total land is suffering from Salinity/Alkalinity and Prone to Soil Guilled, Ravinous Land accounting for 0.95% and 0.97% to the total land, respectively. Sand, desertic soil problem data was not available in the concerned department. The details in this regard are given in Table No. 12.

#### **vii. Status of Soil and Water Conservation Programs**

Soil and water conservation works were being undertaken in 99968 Ha. of cropping area. Number of wells for irrigation of 105441 and construction of check dams/Stop dams for 46 in covered by the cropping area of the district. Predominance of wells meant for Irrigation suggests that this constitute the major source of irrigation in the district (about 105400 Ha.) The details are given in the Table No.13.

### **3.1.2 Forest Resources**

The Kollimalais: - This range of hills occupies the eastern portion of the district and form a compact blocks lying, like the Shevaroy's in Salem district, roughly parallel to the direction of the monsoon winds. The elevation of this hills varies from 1000 M to 1500 M. above mean sea level, and the plateau which is roughly 16 Kms. by 13 Kms. in extent occupies an area of about 190 Sq. Kms. Kulivalavu Forest Bungalow, at an elevation of 1331 M. (4368 feet) is one of the most conspicuous points on the plateau. Though the plateau of the Kollimalais is under cultivation by the local inhabitants, the Malayalee Tribals, which is however of a much less sophisticated kind than the coffee estates of the Shevaroy's. The Reserved Forests on this plateau are Ariyurshola, Karavalli Extn. (Kolli hills block-I) Puliansholai extn. Shelur extn. Valavardhinadu block-I, Valavandinadu Block-II, Shelur nadu Block-I and Devanurnadu Block-II were recently declared as Reserved Forests, besides ten other blocks, covering an area of about 1600 ha. are under various stages of the forest settlement. These reserves form the part of Kolli hills (Special) Range. The hill slopes are often quite steep, forming several narrow and deep valleys, in some places rising abruptly from the plains and generally is sharply – defined. The boundary between Rasipuram and Namakkal Taluks, which is also the boundary between Rasipuram and Namakkal ranges, passes across the Kollimalais dividing it into two portions. The northern portion, consisting of the northern, north-western and north-

eastern slopes of the Kollimalais comprise some of the reserves of Rasipuram Range while the southern portions contains most of the reserves of Namakkal Range extending over the western, southern and eastern slopes. The Kollimalais form the catchment area of two streams, the Periacombai and Ayyar which irrigate the crops in some villages in Musiri taluk of Tiruchirappalli district and localities near Thammampatti in Athur taluk of Salem District in the gap between the Kollimalais and Pachamalais respectively.

**The Cauvery Padugais:** - These are the small isolated bits of Reserved Lands and Un-reserved lying all along on the left bank of Cauvery river, from Jedarpalayam to Mohanur. There are 10 bits covering an area of about 150 Ha. transferred to the Forest Department in 1953 and are under the various stages of Forest settlement. Most of the areas in these bits are under water erosion along the Cauvery River.

#### **i. Forest Area**

There are 68 forest areas in Namakkal District constituting a total area of 60600.03 (606.00 Sq. Km) Ha. 42 block fall under the Reserve Forest category with 53140.10 (531.40 Sq. Km) Ha. 26 under Reserve Land category with 7459.93 (74.60 Sq. Km.) Ha. The details regarding the classification of forest area with their extent are given in Table No. 14a.

#### **ii. Green cover classification**

Composite Salem district comprising of erstwhile Salem forest Division, total area of forest was 167156 Ha. Dense and sparse forest areas are 37966 and 25522 Ha, respectively. There is no grassland in this region. Degraded forest area cover is 3525 ha. The given figures are composite figure of both Salem and Namakkal districts (Refer Table No. 14b)

#### **iii. Trend in Per Capita Forest Area**

The forest area 60600.03 Ha. were during 1961-96 period. There has been a continuous change in the percapita forest area from 1961 to 1996 and the decline in percapita forest area was decreased from 0.070 ha. in 1961 to 0.034 ha. in 1996 which is due to the steady increase in population. The details are given in Table No. 15.

#### **iv. Man Made Forest Plantations**

The Man Made Forest Plantations have been restricted to the existing forest areas in Namakkal district. About 5320.52 Ha. of Man Made Forest Area are available in the district. Eucalyptus, Wattle, Teak, Softwood, Fuel wood, Sandal and Neem are the man made forest plantation in the district. Necessary details are given in Table No. 16.

#### **v. Trends in Production of Forest Produce**

Industrial wood and all minor forest produces are the production of forest produce in Namakkal District. The details are given in the Table No. 17.

#### **vi. Details of Villages Abutting Forest Area**

There are 42 blocks of Reserve forest area located in two taluks of the district. Name of the Revenue villages abutting forest areas and their populations are not available in the district (Refer Table No. 18). The figures in respect of the tribal population abutting the forest areas are not made available (Refer Table No. 19).

**vii. Forestry area diverted for Non Forestry purposes**

There has been no forest area diverted for non-forestry purposes in Namakkal district (Refer Table No. 20).

**viii. Conservation of Biological Resources, Wild life Census, Rare/Threatened Species of Flora and Fauna**

Tigers infested nearly all the forests of the composite Salem district in the olden days. But they have now entirely disappeared. Panthers, leopards, jungle cats, Civet cats and other feline are the representative of carnivores used to be found all over the district. They are however now rare.

Reptiles: - Snakes are represented by several species. None of these are peculiar to the district, but Large shielded pit viper (*Trimeresurus macrolepis*) has hitherto been recorded from South India – Nilgiris, Palani, Shevaroy, Travancore, Anaimalais and Neelampalli hills. It has been found at the altitude of 2100 m. Only three species of poisonous snakes are common, namely, the cobra, "Naga-raja", the Russell's viper, *Vipera ruasellis* and the common green viper *Trimeresourus malaharicus*. The Krait, *Bungarus candidus* is less common than elsewhere, the other poisonous species are rare. Some of the harmless species bear an extra ordinarily close resemblance to some of the deadliest, for example, the young python or "Rock snake" and sand Boa, *Eryx conicus* to the Russell's viper; the rat snake, *Zamenis mucous* to the cobra; and some of the wolf snakes *Lycodons* to the dreaded Krait; the harmless species in each case being much more numerous than the poisonous ones. Monitor lizards, Garden lizards also are found.

In the open shrub forests and grassy country of the plains and lower hill slope, the characteristic birds include the Large Grey Babbler, the Jungle Babbler, the Redvented Bulbul and the white checked Bulbul, the Pied Bushchat, the Indian Robin, the Baybacked, the Rufous-shanked shrikes, the Black Drongo (king crow) and occasionally the Ashy Swallow-Shrike, the Tailor Bird, the Pied Wagtail, the white Wagtail and the Grey Wagtail in winter, the Indian Pipit, skylarks and finch-larks, the Pied Crested Cuckoo, the Koel, the Indian Roller, the Common and chestnut headed and Blue bearded Bee eaters, Green Bee eaters, the Common Indian Nightjar, the Kestrel, the Merlin, the white-eyed Buzzard, the Black winged Kite, the Shikara, harriers, the spotted Dove, the Red Turtle Dove, the Stone Curlew, the Grey Partridge and quails, and the common Bustard-Quail. Other birds prefer more or less well-wooded tracts; these include the spurfowl, the Grey Jungle fowl, the Emerald Dove, the Green Pigeon, the Crested Serpent Eagle, the Great Horned Owl, the Grey Hornbill, the Jungle myna, the Chestnut headed Bee eater, the Blossom headed Parakeet, the Crow-Pheasant, the Sirkeer, the Green billed Malkoha, the Large Green Barbet, the Pitta, the Orange and Small Minivets, the Cuckoo-shrikes, the wood shrike, the Paradise Flycatcher, the Fantail Flycatcher, the Verditer Flycatcher, the whistling Thrush, the Scimitar Babbler, Jerdon's Chloropsis, the Chestnutbellied Nuthatch, the Fairy Bluebird, the Grey Tit and the Tree Pie.

Birds found in association with water, in rainfed tanks, lakes and ponds, and in marshy localities or moist ground include the Dabchick, the Pintail, the Blue winged Teal, the Common Teal, the Large and the Little Egrets, the Grey Heron, the Openbilled stork, the

Darter, cormorants the Blackwinged Stilt, Sandpipers, the white breasted Kingfisher, and the white breasted Waterhen. Most of these water birds are commonest in winter (November to January) when the tanks, lakes and ponds contain water, and many of them are migrants.

#### **Flora:**

Rare species – *Crotalaria digitata*, *crotalaria scabra* and *Indigofera barberi*; are the rare species identified in the area of Kolimalais and Bodamalais.

Endangered species – The following endangered species are located in Kollimalais and Bodamalais. They are *crotalaria clavata*, *crotalaria longipes*, *Hildegardia Populifolia* and *Venonia shevaroyensis*. Rare animals identified in the district are Panther and Civet cat.

There has been no area specially set apart for conservation of biological resources and rare & threatened species of flora and fauna in the district other than the overall population given to flora and fauna in from of forest management; Therefore. Information was not available for wildlife census in the District. (Refer Table 21,22 & 23).

#### **3.1.3 Animal Husbandry**

Namakkal district being an agricultural and pastoral tract, animal husbandry acquired special importance. The main livestock found in the district are cattle and buffaloes, sheep, goats, horses and ponies, and pigs. Poultry development has been rather phenomenal in the around Namakkal. The Animal Husbandry Department has undertaken measures to improve the quality of animal wealth in the district.

#### **3.1.4 Mineral Resources**

The District is constituted of rocks of the gneiss or metamorphic series of the crystalline peninsular complex, traversed by numerous dykes. The underlying rock formations belong to the oldest group of rocks in Archaean system and comprise of metamorphic rocks of para and or the type and plutonic igneous masses like granite and dyke rocks. The rock types met within the District are so varied that the geology of composite Salem district may be considered to be almost an epitome of the geology of the central peninsula. The District as a unit forms one of the most important geological horizons of the country and has received constant attention from the geologists and industrialists owing to its rich mineral wealth.

The rock types met within the district have been broadly classified as follows in order of increasing age: Basic dykes, granite, syenite, charnockites, foliated granite, gneiss, amphibolite, ultramafic rocks of the anorthosite dunite suite and older metasedimentary and basic metamorphic rocks.

The oldest of these are the basic metamorphic rocks comprising Hornblende – gneiss, epidiorite, amphibolite, Bio-titerchist and Hornblende – schist. These are surmised to have been formed due to metamorphic of the ancient basic intrusive and lava's and are found as bands almost throughout the District.

Meta-sedimentary rocks such as banded magnetite, quartz, quartzite, calciphyre, cale-gneiss, limestone and crystalline limestone form the next in the geological series. These have been formed due to the breaking up of the older rocks and deposition of the

materials as sediments and chemical precipitate, in inland basins of water and later transformed to form quartzites and lime stones. Magnetite bearing quartzites from thick beds in the Kanjamalai, Godumalai hills. Crystalline limestone and calc-gneiss occur as persistent linear bands around Sankaridurg. The calc-gneiss, calc-granulites and calciphyre and limestone which grade into one another are also noticed south-east of Tiruchengode and Kumaramangalam and Pillakalathur, Pudupalaiyam and Toppur in Namakkal taluk.

Magnesite, Bauxite, Talc, Quartz and Feldspar are the minerals produced in the district. Only the actual production has been shown in the Table No.24. Data on the recoverable mineral resources are not available.

## **3.2 Water Resources**

### **3.2.1 Rivers, Canals and Waterways**

Cauvery is the main river of this district as well, which forms its natural boundaries on west and southwest directions. The Vasishta Nadhi and Sweda Nadhi, which flow across Attur taluk of Salem and Cuddalore district, drain the area between the Kalrayan hills, and the Panchaimalai and Kollimalai ranges. Sirabanga Nadhi and Tirumanimittar are the other important rivers in the district. However, data on the Cauvery River system are not made available.

#### **i. Catchment Area of River Basins**

The Catchment Area of River Basin in the district is Thirumanimutharu Minor basin, Musiri Minor basin and Suvatha Minor basin. Data for only the Musiri Minor River Basin area was made available (2406.89 ha.). The details have shown in the Table No. 25.

#### **ii. Basin wise status of the Ground Water Availability**

A total ground water recharge of 173671 ha.m. was recorded in the district. There is net ground water of 123514 ha.m. And Balance ground water available for development is 24106 ha.m. (Refer Table No. 26).

#### **iii. Details of Dams and Reservoirs**

There has been no dams/reservoirs in the district (Refer Table No. 27).

#### **iv. Availability Water Spread Area**

There have been 13 system tanks and 56 seasonal/rainfed tanks maintained by Public Works Department in Namakkal district. Available water spread area in the district with blockwise details is given in Table No. 28.

#### **v. Irrigation by Different Sources**

The total cropped area is 281591 Ha. and the irrigated area to cropped area is 46.23%. The gross area irrigated by tanks is 6148.62 Ha. Erumapatty block has the maximum of 1207.47 ha. irrigated by Tanks. The details on irrigated area by different sources are given in Table No. 29.

#### **vi. Incidence of Drought, Flood and Cyclone**

Information was not available for incidence of Drought, Flood & Cyclone (Table No. 30).

### 3.2.2 Fisheries Production

The value of fish production has steadily increased from Rs. 240.36 lakhs in 91-92 to 405.00 lakhs in 1996. There has been corresponding increase in the volume of fish production (Refer Table No. 31).

#### i. General Fish Seed Production

The Fish Seed production of Standard Fry fluctuates from 1991 to 1996 and the highest production was in the year 1994-95. The inland fish production has also fluctuated between 1991 and 1996 in the district. There has been an increasing trend in inland fish production in the district between 1991 and 1996. The details on fish and fish seed production are given in Table No. 32.

### 3.3. Heritage Resources

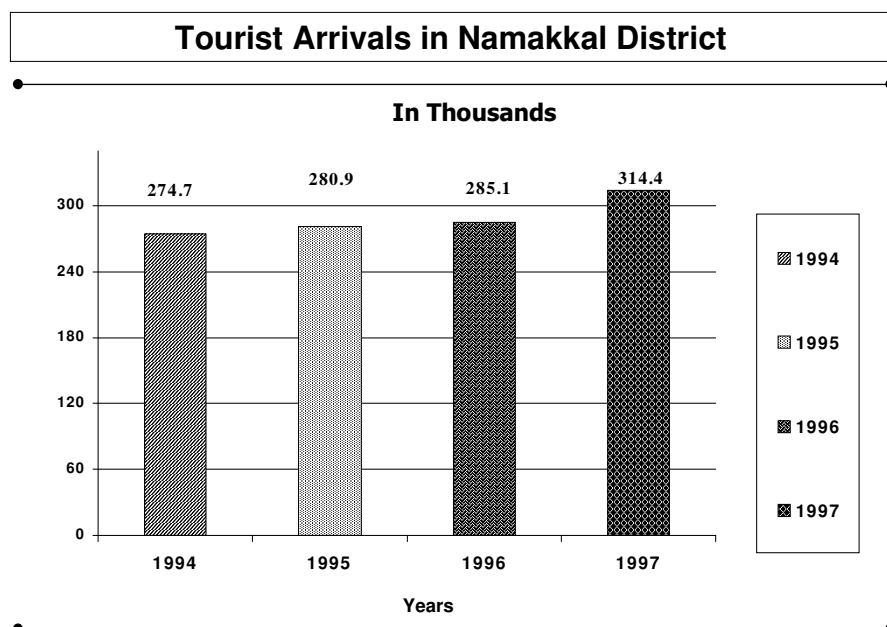
The Namakkal Fort is said to have been built during the Madurai Nayak regime and is famous for the Sri Narasimhamurthy temple. The mythology of this temple is that after destroying Hiranya Kasipu, the demon ruler, Sri Narasimhaswamy (in the form of man & lion) was in a ferocious mood. After he cooled down, Sri Anjaneya brought him to this place, so as to stay with his consort Mahalakshmi who was doing penance there. A colossal idol of Sri Anjaneya, 18 feet in height has been installed here facing east with folded hands worshipping Sri Lakshmi Narasimha. Another place of attraction is the Ardhanareeswarar temple of Tiruchengodu. The temple is at the top of a hillock at a height of 900' above MSL and can be reached by a flight of steps. The mythological history behind the temple is the Lord Siva gave this consort Uma His left half so as to be inseparable. The deity is known by the name Ardhanari (half female). Kolli hills in Namakkal taluk is being developed into a district excursion centre.

#### i. Protected and Conserved Monuments

Attur, Sankagiri and Namakkal taluks have monuments maintained by the Government Museum in Namakkal district. The details are given in Table No. 33.

#### ii. Places of Tourist Attraction

There are 6 tourist places located at 3 villages/towns in the historical area. The special significance of the area is Arthanareeswarar Temple, Hanuman temple, Namakkal Fort, Arapalleswarar Temple, Agaragamgai Falls. Tourist arrivals both from domestic and foreign destinations have been steadily increasing from 1990 to 1996. These tourist spots are visited throughout the year and are included in the tourist circuits identified by the tourism department. (Refer Table No. 34 & 35).



### 3.4 Energy Resources

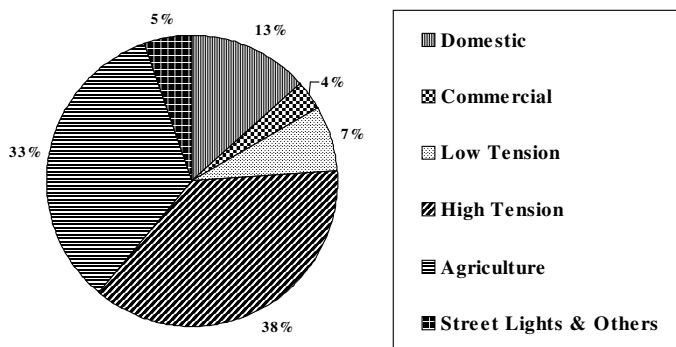
#### i. Installed Power Projects

There have been no power generation projects in this district (Table No. 36).

#### ii. Consumption of Electricity

There were 505821 electrical connections with a total consumption of 10828.78 MW/h as on 1995-96. Industrial sector is the maximum consumer accounting for nearly 45% of the total consumption. The category wise consumption of electricity is given in Table 37.

### Category wise Consumption of Electricity



#### iii. Electrification of villages:

Namakkal District has achieved 100% electrification prior to 1980, All 446 villages in the district are electrified. The number of pumpset connections in all the taluks are not available in the district (Refer Table No. 38).

#### iv. Non Conventional & Renewable Energy Sources Utilisation

Bio-gas and improved chullah are the two methods of non conventional energy sources utilised in the district. However, there are only around 159 and 8400 units respectively. (Refer Table No. 39).

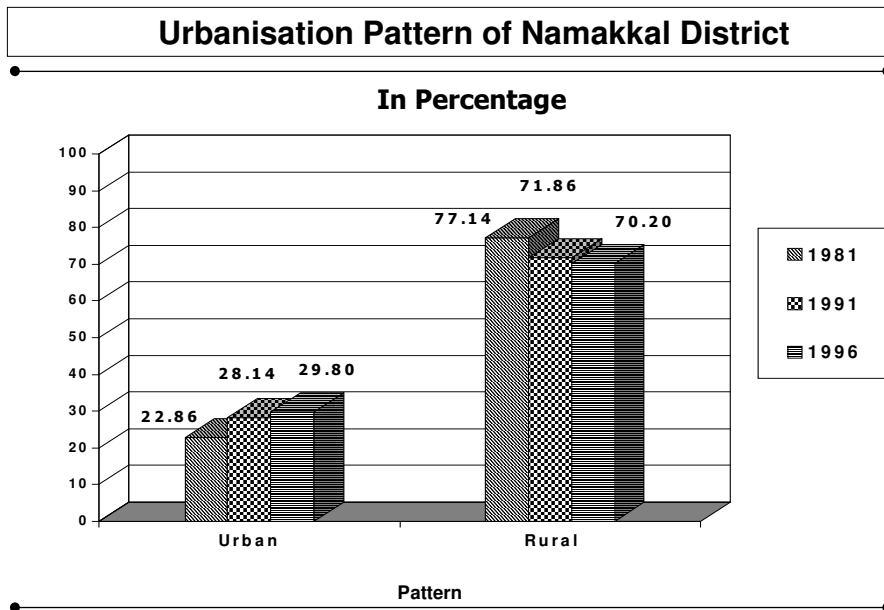
**Chapter**  
**4**

**4.0 Infrastructure**

**4.1 Urbanisation**

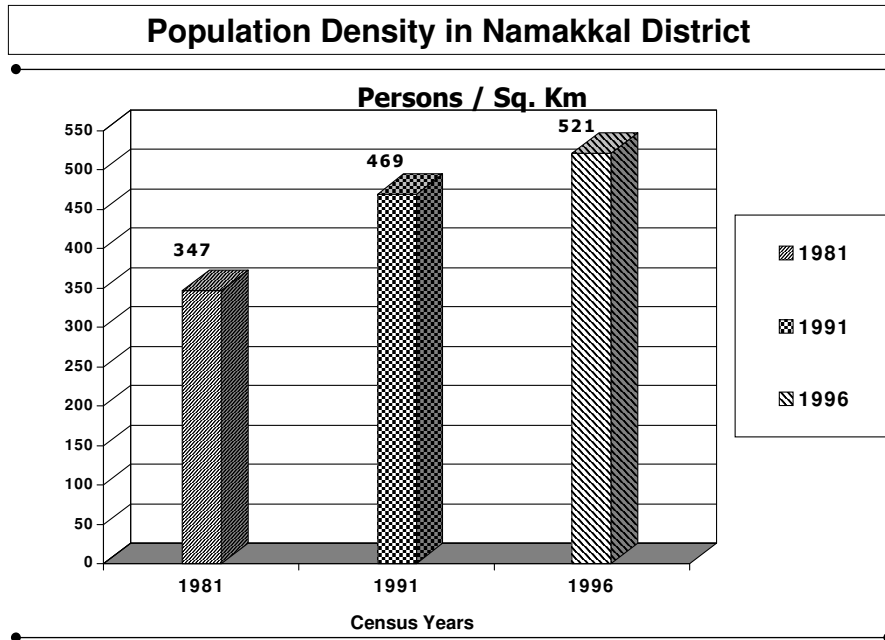
**4.1.1 Urbanisation pattern**

The proportion of urban population to total population has increased during the years 1981-96 from 22.86% to 29.80% and the increase is about 17.45% during 1991-96. Among the urban areas, Tiruchengode Municipality accounts for a greater share of urban population when compared to the other urban areas. The proportion of Rural Population to Total Population decreased from 77.14% to 70.20% during the years 1981-1996. The urbanisation pattern of the district is given in Table No. 40.



**4.1.2 Density of Population**

The overall density of population has increased from 347 persons / sq.km. in 1981 to 521 persons / sq.km. in 1996. The density in urban area has increased from 2776 persons/sq.km. in 1981 to 3164 persons/sq.km. in 1996 and the density of rural area has also slightly increased from 275 persons/sq.km. in 1981 to 384 persons/sq.km. in 1996. The details on density are given in Table No. 41.



#### 4.1.3 Decadal Growth rate in urban centres

The decadal growth rates in Four Municipalities have increased in the years 1961 to 1996. The population of the district has grown from 8.67 lakhs in 1961 to 15.90 lakhs in 1996. The decadal growth rate indicates that there is a considerable decline in growth over the previous decade in the Municipalities of the district. Namakkal Municipality has registered the maximum growth rate. The details of decadal growth rate are given in Table No. 42. The growth rate for both Urban and Rural population has been slightly higher than from 1971 to 1991. The details are shown in the Table No. 43.

#### 4.1.4 Urban Slum Population

There has been a steady increase in the percentage of town population to total population from 1981 to 1996. No information was available for slum population in the district. (Refer Table No. 44).

#### 4.1.5 Trend in urbanisation and slums

The Urban population has increased from 22.86% in 1981 to 29.80% in 1996 period. Data on identified slum population of Namakkal district is not made available. The details are given in Table No. 45.

### 4.2 Infrastructure Services and Environmental Status

#### 4.2.1 Occupied Households

The total number of occupied households in urban and rural area is about 966750. There has been number of households accessing piped water supply connection and toilet facilities in both urban and rural areas. The details on occupied households are given in Table No. 46.

**4.2.2 Urban Services**

Surface water and ground water are the major sources for protected water supply system in municipalities and town panchayats, respectively. The percapita water supply for municipalities and town panchayats is 51.75 LPCD and 39.99 LPCD respectively. The average water supply is around 45.87 LPCD for the district. The Municipality of Tiruchengode has the highest consumption of 40 lakhs litres, while the town panchayat of Pallipalayam has 27.49 lakhs litres. The municipality of Namakkal has 15% at the maximum and Tiruchengode Municipality has 5% at the minimum percentages of population uncovered for water supply. Details on water supply services are given in Table No. 47.

**4.2.3 Domestic waste water generation and treatment**

The estimated sewage generation is 90.11 Lakh Litres among municipalities and 86.09 Lakh Litres among town panchayats. The district does not have any organised disposal of sewage. Nature of disposal and quantity through river is 90.11 Lakh Litres in Municipalities and Nature of disposal and quantity through land is 48.49 Lakh Litres in Town Panchayats. The Town Panchayats have complete open drainage system and the Municipalities have under ground pipe systems. The details on domestic wastewater generation and treatment in the district are given in Table No. 48.

**4.2.4 Municipal Solid Waste Generation**

The solid waste generation of municipalities and town panchayats are 128.5 tonnes and 124.30 tonnes respectively. The solid waste collection in municipalities and town panchayats are 98.1 tonnes and 113.50 tonnes respectively during 1995-96 period. Overall the solid waste generated adds up to 252.80 tonnes with a collection efficiency of 83% with a manpower of 663 on Solid waste management. The availability of compost yard in municipalities is four and two in Town Panchayats and the details have been given in the Table No. 49).

**4.2.5 Composition of Solid Waste**

The maximum composition of municipal solid waste generation in Namakkal town is compostable matter (60% to the total generation of solid waste.) and followed by Rags and Bricks & Stones generation which contribute 10% each to the total generation of solid waste. The composition of municipal solid waste generation in this town is Metal (1%) to the total generation. The details have shown in the Table No. 50.

**4.2.6 Coverage of Problem Villages**

It has been identified that about 623 villages out of the total 2287 villages in the district have had problem with regard to supply of Drinking Water. Maximum of 281 villages identified as problem villages in Kollihills block. 263 problem villages have been covered during the VII Five Year Plan (1987-92) and 320 villages covered during the VIII Five Year (1992-97). Necessary details are given in Table No. 51.

**4.2.7 Reported cases of water borne diseases**

Gastro-enteritis, dysentery, cholera and jaundice are the most commonly reported water borne diseases in the district. Incidence of gastro-enteritis and dysentery were very high during 1985-96 period and deaths of gastro-enteritis, dysentery, cholera and jaundice cases were reported in the district. The details are given in Table No. 52.

**4.2.8 Facilities under Indian system of Medicines**

Allopathic is the most commonly practised system of medicine in the district and facilities for medical treatments are also available. In addition, there are few Siddha hospitals available in the district. Information on hospitals, beds, dispensaries and registered practitioners are given in Table No. 53.

**Medical**

The table given below furnishes information on types of medical facility available in the towns of this district including that of bed facility:

<b>Name of the towns</b>	<b>Medical institutions</b>	<b>(with number of Beds)</b>
Ammapalayam	--	
Idappadi	Hospital (1)	6
	Dispensary (1)	6
	Others (1)	--
Kumarapalayam	Hospital (1)	18
Mallasamudram – Urban Agglomeration :		
(i) Attayampatti	Health Centre (1)	--
(ii) Mallasamudram	Hospital (1)	6
(iii) Marulayampalayam	--	--
(iv) Papparapatti	--	--
(v) Seppaiyapuram	--	--
Kumarapalayam	--	--
Namakkal	Hospitals (1)	71
Pallipalayam	--	--
Pillanallur	Family Planning Centre (1)	2
Rasipuram	Hospitals (1)	28
	Others (2)	8
Tiruchengodu	Hospitals (1)	40
	Family Planning Centre (1)	--
	Others (1)	--
Vennandur	Hospitals (1)	20

**4.2.9 Population below poverty line**

As per the population Below Poverty Line survey done in 1992, No. of families below poverty line in the district are 73866 (Refer Table No. 54).

**4.3 Transportation****4.3.1 Development of Roads, Bridges**

The district has 63.000 Km of National Highways, 21.610 Km. of State Highways, 442.800 km. of Major District Roads, 1606.762 km. of other district roads and 2575.540 Km. of panchayat roads in 1996. Over and above, there are 23 major bridge and 3009 minor bridges and culverts in the district in 1996. Relevant information is provided in Table No. 55.

**4.3.2 Growth of Vehicle population**

Two, three and four wheeler vehicles in the year 1996 were 61925, 375 and 7792 respectively. The growth of two wheelers has increased 25007 in 1986 to 61925 in 1996. The details of growth of vehicle population have shown in the Table No. 56.

**4.4 Industrial Development and Environmental Status****Industries**

Namakkal is an underdeveloped district as regards to the industries are concerned. However, taking advantage of the rich mineral deposits, the tempo of industrial development in the district, is picking up. The following are the major minerals found in this district.

**Bauxite:** Bauxite is a hydroxide of aluminium. It occurs mainly in the Kolli hills. The total reserves of Bauxite in Kolli hills have been estimated to be around 2.75 million tonnes.

**Limestone:** Limestone is a carbonate of calcium containing 56 percent of CaO, 44 per cent of CO<sub>2</sub>. The major portions of the limestone deposits occur around Shankridung in Sankari taluk and in certain areas in Tiruchengodu taluk. The reserves have been estimated to be around 50-55 million tonnes.

**Quartz:** Quartz is an oxide of silica and occurs mainly in certain parts of Tiruchengode and Namakkal taluks. Most of the deposits have been leased out to private firm. The quartz in this area is used for the ceramic and glass industry.

**Feldspar:** Feldspar is alumino silicate of potash and soda. It is mainly used for the ceramic industry. Feldspar also occurs along with quartz in the form of pegmetities in parts of Namakkal taluk.

**Soapstone:** Soapstone is composed of Talc and stealite, which is a hydrated silicate of magnesium. It occurs in parts of Rasipuram taluk.

**Handloom Industry:** The handloom industry flourishes mainly in the taluks of Rasipuram, Namakkal and Tiruchengodu and in a few other villages. Handspinning is also found in some of the villages of Tiruchengodu taluk. The major items of production in the district are cotton sarees and dhoties of 40, 60, 80 and 100 counts, besides towels and spun sarees woven with silk, and cotton bedsheets. Marketing of handloom goods is done through the various outlets of Co-optex. The state government is taking steps to promote and cultivate this industry further.

#### Trade, Commerce and Export

The following table provides information on most important commodities manufactured, exported from and imported in the towns of this district :

Name of the towns	Most important commodities			
	Manufactured	Exported	Imported	Banks
Alampalaiyam	Textile	Textile	--	--
Idappadi	Rayon	Sugar	Cotton	6
Kumarapalaiyam	Dhothies	Handloom Textiles	--	5
<b>Mallasamudram Urban Agglomeration :</b>				
Attayampatti	Artsilk	Handloom Fabrics	--	2
Mallasamudram	Towels	--	--	1
Marulayam palaiyam	--	Handloom Fabrics	--	--
Papparapatti	--	Powerloom cloth	--	--
Seppaiya puram	--	Dhothies	--	--
Kumarapalaiyam	Cloth	Textiles	--	2
Namakkal	Ayurvedic Medicines	Groundnut oil	--	10
Pallipalaiyam	Staple fibre cloth	Staple fibre cloth	Staple fibre	2
Pillanallur	Handloom cloth	Handloom cloth	Yarn	1
Rasipuram	Sago	Groundnut	Ragi	6
Tiruchengodu	Power loom Cloth	Groundnut	Paddy	8
Vennandur	Cloth	Cloth	Oil	1

#### 4.4.1 Number of Industries

There have been 29 Red Category, 20 Orange Category and no Green Category Industries in large scale which are classified, based on the nature of hazard by

TNPCB. Red category industries are mostly chemicals, textiles and pharmaceutical industries. The details on the number of industries for composite Salem district are given in Table No. 57.

#### **4.4.2 Emission Inventory of Major Industries**

There are 5 Major industries has been identified for Emission inventory in the district, at different locations with the highest emission rate of SPM ( $225 \mu\text{g}/\text{m}^3$ ), SO ( $10.8 \mu\text{g}/\text{m}^3$ ) and NO ( $11.7 \mu\text{g}/\text{m}^3$ ) while the emission take of CO & HC are BDL from authorities. All the five industries in the district are found to be having the emission rate will under the set standard. The details had been shown in the Table No. 58.

#### **4.4.3 Ambient Air quality Status**

Ambient Air quality status of Industrial category in location of Air quality monitoring station at Tiruchengode, Mohanur and Pallipalayam. The Average Pollutants of SPM highly  $132 \mu\text{g}/\text{M}^3$ , SO  $8.6 \mu\text{g}/\text{M}^3$  and NO<sub>x</sub>  $8.05 \mu\text{g}/\text{M}^3$  respectively. (Refer Table No. 59).

#### **4.4.4 Air pollution stressed area**

Pallipalayam, Tiruchengode and Mohanur are the air pollution stressed area with the major air pollutant being smoke and chemical (like SPM, SO and NO). The details have been shown in the Table No. 60.

#### **4.4.5 Water quality**

Under MINAR'S scheme TNPCB is monitoring the quality of water from 16 places of Cauvery riverbed. As per the test, the quality of water is normal. pH of water is slightly more than the standard. Dissolved Oxygen content and coliform content of water are exceeding the Standard value. Disposal of sewage and drainage water into the Cauvery River is the main reason to affect the quality of water (Refer Table No. 61).

#### **4.4.6 Discharge of Industrial effluents**

Effluents from 5 industries in the district discharge through the Public Works Department (PWD) canal, Municipal drainage, Land for irrigation and open uncovered drainage. Regarding industrial effluent details of Namakkal district has been shown in the Table 62.

#### **4.4.5 Noise levels**

Data on residential noise levels were not available (Refer Table No. 63).

**Chapter**  
**5****5.0 Environmental Institutions****5.1 *Environmental Education and Research Institutions***

There has been no Environmental Education and Research Institution in the district. (Refer Table No. 64).

**5.2 *Environmental NGOs***

There has been five NGOs dealing with environmental related issues in the district (Refer Table No. 65).

# Chapter 6

## 6.0 Summary of Observations

The key observations of the Environmental Profile of Namakkal District are briefed below:

### Demographic details

- ❖ During the period of 1981-91, there has been an increase in the growth rate of population at about 3.54% per annum.
- ❖ It is interesting and encouraging to note that the percentage of female literacy level has been significantly increased for the past 15 years.

### Land resources

- ❖ 64.34% of the land area in Namakkal District is utilised for cultivation.
- ❖ The utilisation of chemical fertilisers and bio-fertilisers in the district is high.
- ❖ Red Loam (59.26%), Black Soil (11.95%) and other types (22.00%) are the soil types of Namakkal District.

### Forest resources

- ❖ The Forest area in Namakkal district is about only 10.78% as reported in Land Use Statistics. Apart from Reserve Forests, Reserve Lands occupy 12.31% of the total forest lands.
- ❖ The main sources of irrigation of the district happen to be tanks and wells. The tanks irrigate only 40.33% of the total cropped areas.
- ❖ There have been 6 tourist places in the district. Domestic tourist arrivals have increased from (242629 to 6250525 in 1996) 1994-1997 is 274561 to 314167.
- ❖ The fishing potential area in the district is limited to the inland waters. The fish production both in quantity and value has increased for the past 6 years. The inland fish production and seed production have no major fluctuations. The inland fish production has meagrely increased from 2313 in 1991-92 to 2924 in 1995-96.

### Urbanisation

- ❖ Urbanisation process in Namakkal district has been taking place at a higher rate. However, certain essential needs of urban areas like drinking Water, Electricity, Public Convenience, drainage, approach Roads and Health Centre have not increased keeping the pace with the process of urbanisation.
- ❖ Urban services like Drinking Water and Solid Waste Management in the district is not promising and therefore efforts to create better urban services have to be initiated.

### Transportation

- ❖ There has been an increase in the use of two, three and four wheeler vehicles in the district.

**Industrial development**

- ❖ The Red, Orange and Green categories are identified by TNPCB according to the extent of hazard. There are only few large red category industries in the district.

**Environmental institution**

- ❖ There has been no environmental Research institute in the district of Namakkal.
- ❖ Environmental NGOs may be involved in protecting environment of the district for which action plans for better environment shall be made with NGOs participation.
- ❖ Participative planning for Environment Management, Creation of a Management Information System, Environment Management Training to officers of the stake-holding government departments would go a long way in the environment planning efforts of the **Directorate of Environment, Government of Tamilnadu** in fulfilling its corporate objectives.

