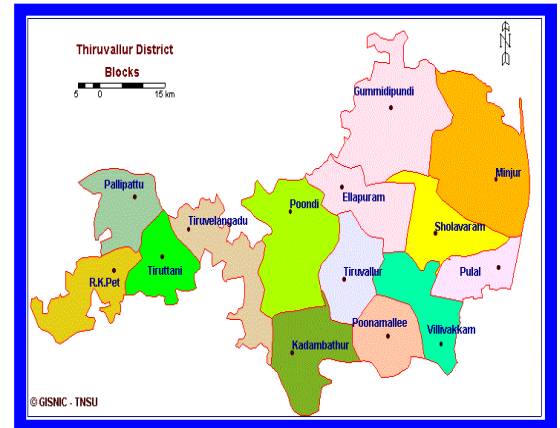
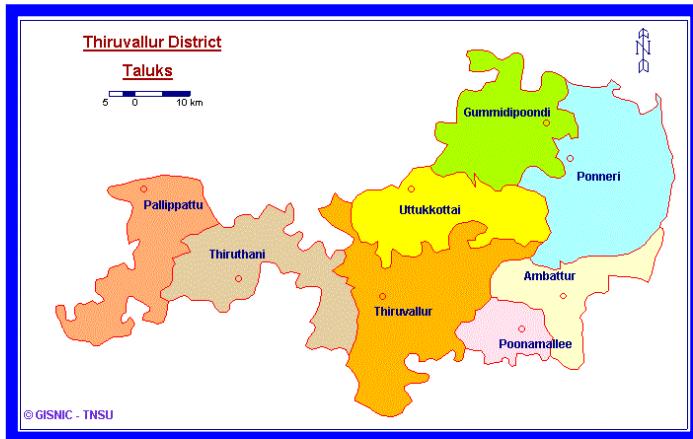


ENVIRONMENTAL PROFILE OF THIRUVALLUR DISTRICT



1. INTRODUCTION

1.1 The Context

Tamilnadu has been endowed with multitude of natural resources. It is essential to manage these resources judiciously in order to achieve a sustainable development in all sectors. The current opinion and inferences aired on environment and natural resources including land, soil, water, air, and the life support system like forests, indicate that these systems are threatened by serious levels of degradation. But information relating to individual sectors lie fragmented. To manage the environment in a holistic manner and to develop an environment friendly sustainable development perspective, it becomes necessary to identify the gaps in the present management of resource bases. This warrants a strong data-base on the environmental matters of the state.

Towards realising this goal, an initiative has been taken by the Directorate of Environment, a nodal agency for management of environment issues in Tamil nadu. The purpose of such an initiative is to collate information on resources' use in various sectors that have greater bearing on environment in general and

on the quality of life of the people in particular. It is considered appropriate to build a database on environmental status for each district, as it is a unit of administration. The Directorate has launched the project of preparation of district environmental profile with the twin objectives of

- ◆ Providing a bench mark information system to develop an environment action plan in future.
- ◆ Opening up avenues for formulating a framework for Tamilnadu's Environmental Status Report.

1.2 Aspects of the study

Environment encompasses a wide area involving almost all field of living beings and their surroundings. These aspects can broadly be brought into the following categories:

- ◆ Basic information about the district,
- ◆ District's natural resources,
- ◆ Environment factors and their status and
- ◆ Environment information.

These broad categories include the following aspects:

Natural Resources like soil and mineral resources , water, land use, flora and fauna, wet land habitats, potential hot spots, population and its characteristics

The use pattern and the trends of afforestation , population , soil and water conservation, protection of wild life and conservation of natural environment, Environment stress in respect of exploitation of resources, incidence of natural disasters, air, water and soil pollution, industrial effluents, wastes and sewage disposal, density of population, growing urbanisation and slum development, availability of drinking water, housing and toilet installations;

Environment impact on

- *ecology , environment in proportion to generation and exploitation of natural resources*
- *population, pollution, health hazards.*
- *environment and tourism development*
- *urban services, their impact on environment improvement*
- *energy development, energy consumption and exploitation , their impact on environment*
- *information about environment institutes, environment NGOs.*

1.3 Field Operation

Detailed data sheets have been prepared and provided by the Directorate of Environment for each aspect of environment to obtain secondary level data by approaching various government departments, and nodal agencies.

With the detailed data sheets, the respective departments and directorates at state level were contacted to obtain relevant data. Wherever applicable and necessary, district level offices were also contacted to obtain the required data/facts. In case of departments like meteorology, geology etc. their regional offices were visited to obtain the basic figures. During such visits, discussions with the official concerned were held on the nature and trend of the data available with them and their opinions on such trend status to accommodate genuine field level intricacies. In majority of the departments, there were procedural delays and also limitations on the data availability and access to the data. A sample level cross verification of such data collection need to be organised to ensure quality and standard in data collection.

1.4 Study Period

The period of reference for the study varies for each aspect depending upon its significance and availability. However, the aspects that are involved in trend analysis have basic data since 1951. The latest data availability period pertains to 1995-96.

2. General Profile

2.1 Historical Background

According to the historical evidence available the region which comprises the present Thiruvallur district has been under a chain of regimes commencing from the Pallavas during 7th century and ending with Nawab of Arcot during the early part of 19th century till it came under the British rule.

The early Pallava regime over this region with its seat of power at Kanchipuram extended over a wide area from river Narmada in the north to river Poniyar in the south.

With the fall of the Pallavas around 760 A.D., the region successively came under the rule of the Mysore kings and later, the Rashtrakutas. With the region coming under the Chola regime, the land (including 24 forts or Kotams) came to be called Thondaimandalam and Kulothunga's son Adondai was crowned in Thiruvallur.

The region was later over run by the Kakatiyas of Warangal around the middle of the 13th century followed by the Vijayanagar Kingdom. At the end of the battle of Talikota (near Raichur) in 1565 the region came under the rule of the

Sultan of Golkonda who entrusted the rule later to Naika who, and also had dealings with the English at Madras.

In 1687, the Golkonda rulers were defeated and the Chengalpattu region with the rest of the Carnatic came under the Moghul emperors of Delhi. Chengalpattu, Thiruvallur and other towns and villages around were the scene of Carnatic wars. Battles are said to have been fought in this region during the struggle for supremacy between the English and French.

In 1781, the Nawab of Arcot assigned the revenues of the Carnatic to the English and in 1801, this region became part of the British dominion in India. In addition to the territory thus acquired, Chengalpattu included the town of Pulicat the earliest Dutch possession in India which was ceded to the British in 1825. With this, the region came under the British rule and the foreign rule ended on the 15th August 1947 with India becoming independent.

2.2 Geographical Location of the District

Thiruvallur district was bifurcated from erstwhile Kanchipuram district on 1-12-1997.

The district Thiruvallur has an area of 3418 sqkm distributed over 816 villages. These villages are spread over 14 panchayat unions in 8 Taluks. The district lies in between 12° 10' and 13° 15' north latitude and 79° 15' and 80° 2' east longitude.

Thiruvallur is a coastal district, adjacent to metro of Chennai. It is bounded on the east by Bay of Bengal and Chennai city; on the north by State Andhra Pradesh, on the south by Kanchipuram district, on the west by Vellore district.

Along the coast, the district is mostly flat near the sea; but in other parts it is undulating and even hilly, in some places. The northern taluks Ponneri,

Uttukkottai, Gummudipundi, Pallipattu etc., do not have much to offer from the scenic point of view. In Thirutani taluk, a number of hillocks are found scattered.

2.3 Administrative arrangement

The administrative units of the district consist of both revenue villages and village panchayats besides town panchayats and municipalities. Thiruvallur district comprises 8 taluks, 14 blocks and 816 villages. As regards to the hierarchy of administrative arrangement, there are 6 municipalities, 19 town panchayats and 669 villages panchayats in the district. The details regarding talukwise number of blocks, villages, village panchayats, town panchayats and municipalities are given in Table 1.

| Taluk | Block | R.Village | Panchayats | TP | Municipalities |
|--------------|-------|-----------|------------|----|----------------|
| Thruvallur | 2 | 121 | 81 | 1 | 1 |
| Uthukottai | 2 | 161 | 102 | 2 | 1 |
| Thiruthani | 2 | 80 | 69 | 2 | 1 |
| Pallipattu | 2 | 70 | 81 | 3 | 1 |
| Ponneri | 2 | 169 | 96 | 3 | 1 |
| Gumudipoondi | 1 | 87 | 61 | 2 | 1 |
| Poonamalli | 3 | 115 | 85 | 4 | - |
| Ambathur | - | 13 | 47 | 2 | - |
| All | 14 | 816 | 662 | 19 | 6 |

2.4 Climate

The climate of the district is moderate neither too hot nor too cold but humidity is considerable. Both the monsoons occur here and in summer heat is considerably mitigated in the coastal areas by sea breeze. The months between April and June are generally very hot with temperature going up to a maximum of 40° C. During the winter (December - January) the minimum temperature is 20° C. The coastal areas receive more rains than the interior ones. The average annual rainfall in most of the places of the district is around 1108 millimetres. Generally, the north east monsoon which occurs during the

months of October, November and December brings heavy rainfall and nearly two thirds of the annual rainfall are received during this season. The district mainly depends on the seasonal rain and faces distress conditions in the event of the failure of monsoons. In recent years, the distress caused by such monsoon failures is sought to be mitigated to considerable extent, by availing ground water through installation of electric pumpsets and filter points. The normal rainfall of the district has been 1165.3mm. However during the past two decades the district has experienced rainfall below normal level. The years 1991-96 have received average annual rainfall of 1184.3 mm. During these years, there was no rainfall during the months of February and March. The heaviest rainfall in the district received was in the month October. (401.6mm) On an average, the district received rain only for 47 days in a year. The mean maximum and minimum temperature in Celsius has been 33 and 24 respectively. The relative average humidity is 76.8%. Wind velocity and wind direction for the period is given in Table 2.

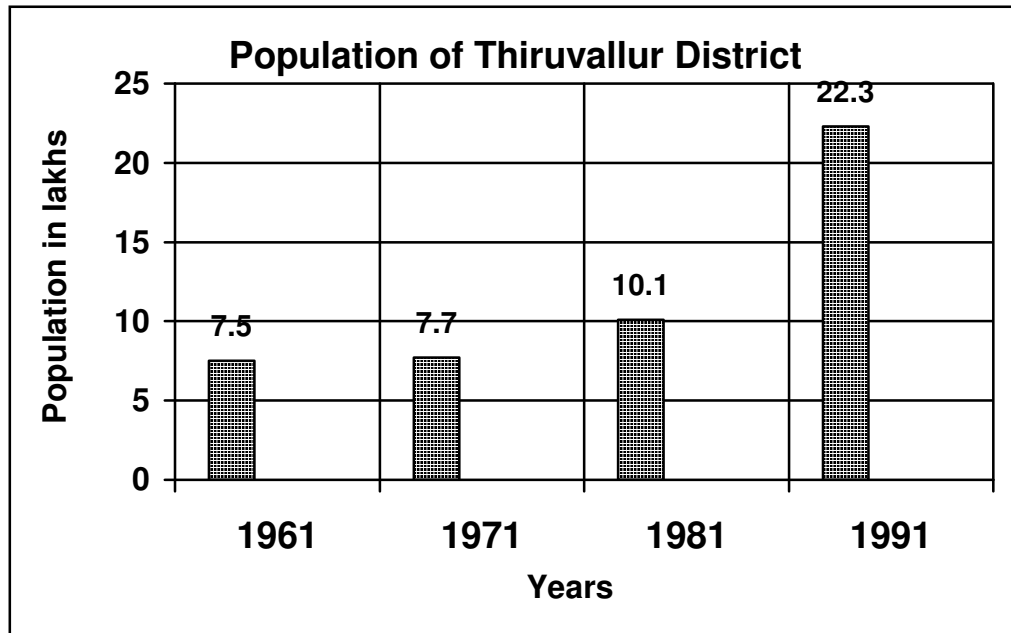
2.5 Demographic details

The population growth of Thiruvallur district over the four decades (1951-91) and the salient characteristics of the population like birth rate, death rate, infant mortality rate and literacy level are presented in the following section. Refer Table 3 and 4.

2.5.1 Population

The district's population has grown over 4 times during the period 1951-91 and it stood at 22.38 lakhs in 1991 as compared to 5.70 lakhs in (1951). In the

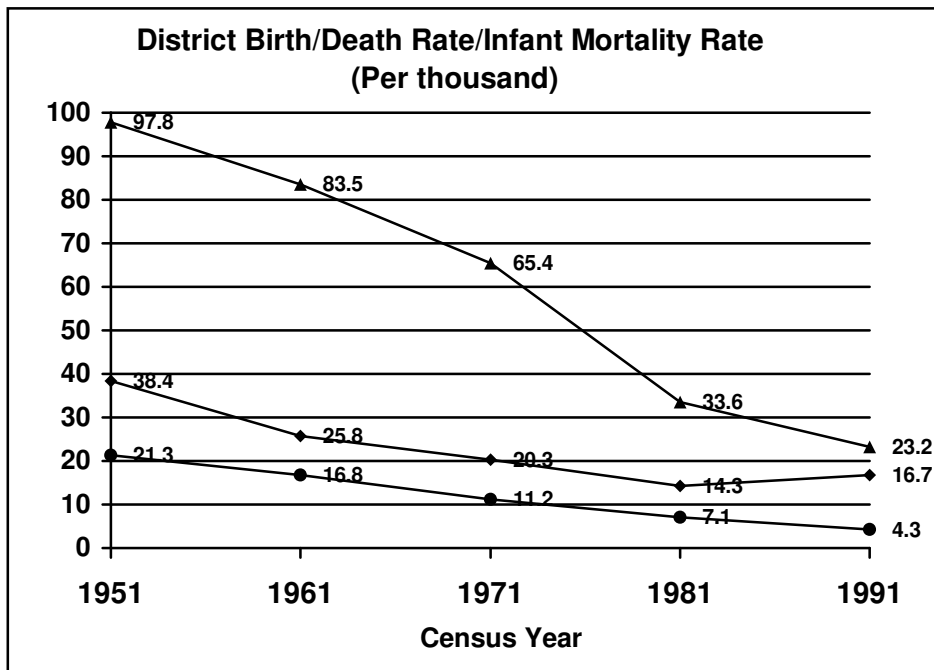
district, Ambathur, is the most populous taluk (1991)



followed by Poonamalli and Tiruvallur taluks. Gumudipoondi taluk has the least population in the district at 1.42 lakhs. Talukwise decadal population is given in Table 3.

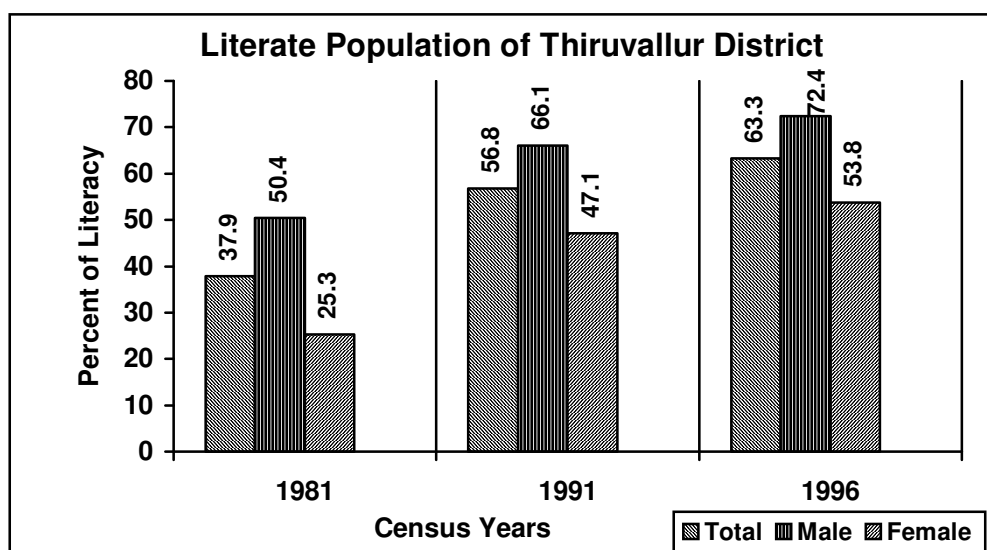
2.5.2 Trend in Birth/Death Rate and Infant mortality Rate

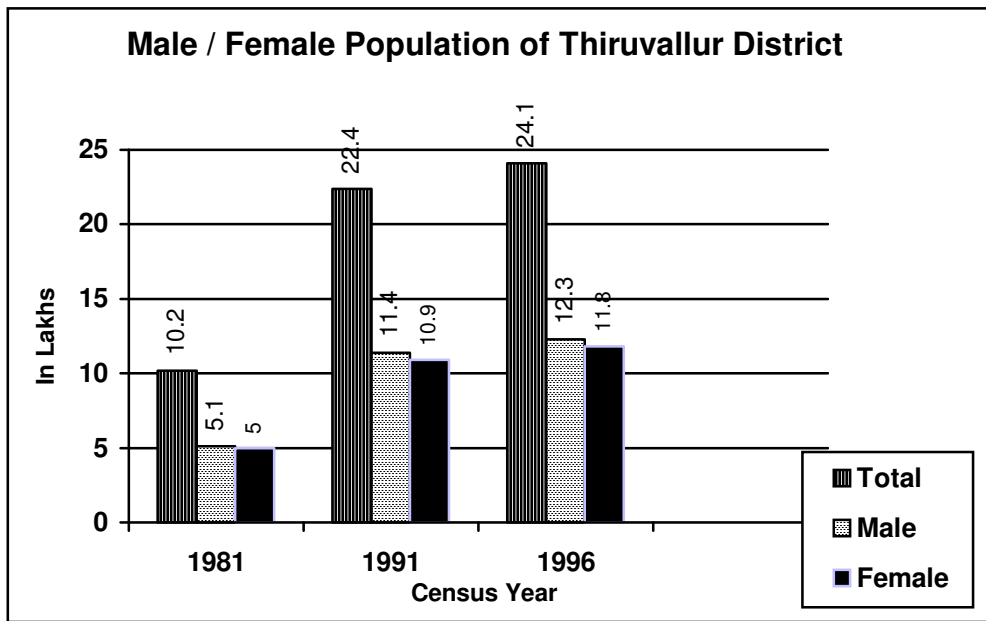
The birth rate of the district was 16.7 in 1991, which has declined by two and half times since 1951. The first three decades after independence have witnessed an appreciable decline in birth rate. But in 1991, the actual birth rate has increased over its previous decade from 14.3 to 16.7. However, in respect of death rate the decline is gradual every year and the death rate is only 4.3 in 1991, which is well below the state average 9.8. The infant mortality rate has also come down from 97.8 (1951) to 23.2 (1991). (Table 4)



2.5.3 Literacy level among the population

The literacy rate in the district Thiruvallur as per 1981 census, was 37.9%. In the next decade the rate has increased to 56.8%. (1991 census) Similarly, the estimated figure for 1996 has also been high at 63.3%. More than half of the women in district are literates. (Table 5)





3. Resources Availability, use and Environment Status

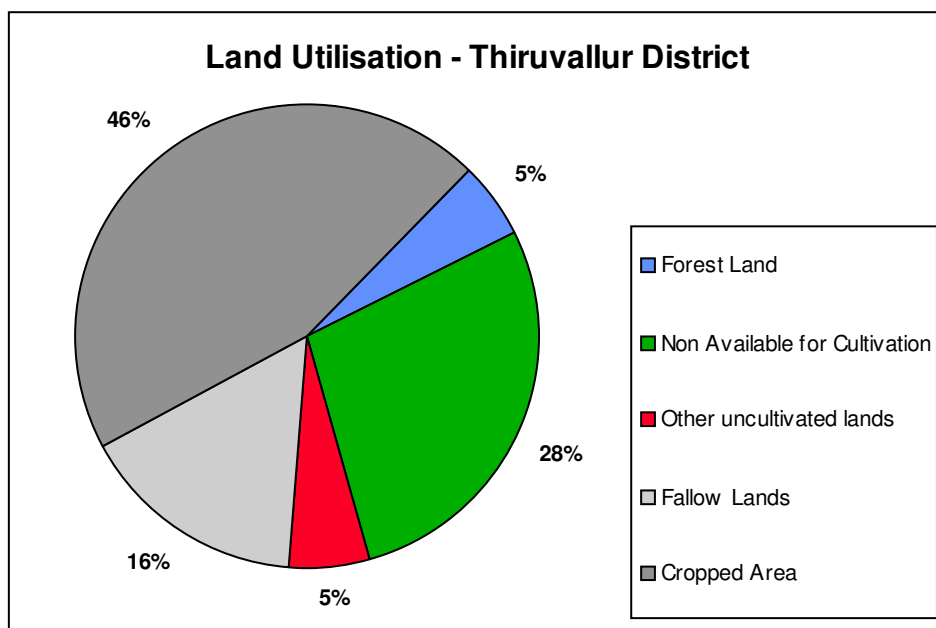
3.1 Land Resources

Thiruvallur district has a total geographical area of 3418 Sq.km. The land use pattern, available resources, their utilities and status of environment factors are detailed in the current chapter.

3.1.1 Land Utilization: Geographical and Physical Features

The district is mostly flat and dreary near the sea; but in other parts it is undulating and even hilly in some places.

The total geographical area of the district Thiruvallur is 341810 hectares. Of this total area, the cropped area accounts for 50.7% (173,409 hectares). The fallow land comprising current and other fallow constitutes 17.7% of total area spread over 60578 hectares. Nearly 31.2 % of land area to total geographical area is not available for cultivation. The forest cover in the district is 20092 hectares accounting for 5.9% of the total land area. The land utilisation pattern is pictured in the pie chart given below. (Table 6)



3.1.2 Trend in Production and productivity of important crops

Agriculture is the major source of sustenance for a majority of the population. Paddy is the major food crop in the district. The cropping pattern in the district can be classified under cereals, pulses and oil seeds. The data for agriculture

production is available only for composite district of Chengalpattu comprising both Tiruvallur and Kanchipuram district.

The rate of increase in cereals production during 15 year period between 1980-96 has been at 111% with 639.9 thousand tonnes in the year 1995-96. Pulses production has increased from 4.3 thousand tonnes (1980-81) to 9.20 thousand tonnes (1995-96). The production of oil seeds is 77 thousand tonnes in the year 1995-96. Consequently, the rate of productivity has also increased to over 5% in cereals and oil seeds where as pulses have registered an almost 10% increase in productivity for the year 1995-96. (Table 7)

3.1.3 Horticultural and Plantation Crops

The fruits, vegetables and cashew constitute horticultural crops in the district. The overall production of these crops is over 1.8 lakh tonnes. The details are presented in Table 8.

3.1.4 Consumption of Fertilizers and Pesticides

The consumption of chemical fertilizers was 41896 tonnes in 1995-96 of which 53.6% constituted the nitrogenous fertilizers. The consumption of bio-fertilizers was 124504 standard packets. Across the blocks, barring Gummidipoondy and Ponneri blocks, there is more or less uniformity in consumption of chemical fertilizers. These two blocks form the two extremes in consumption of chemical fertilizers at 3790 tonnes and 8379 tonnes, respectively. Over 23888 tonnes of urea was used during the period.

Of the pesticides, 47980 liters of liquid variety is used. The powder variety used in the year 1995.96 is 1.6 lakh kilograms. Table 9

3.1.5 Trend in consumption of fertilizers and pesticides

The usage of chemical fertilizers has increased from 31107 to 41896 tonnes over the 15 year period. The pattern of consumption observed here has been that the bio fertilizers has been used in more and more quantity over the period with nearly six fold increase in its consumption. But, the increase in use of chemical fertilizers is only by 25%. The consumption of pesticides has also reduced considerably. (Table 10)

3.1.6 Soil Types and Problem Soils

The soil of the district is mostly sandy, mixed sandy. In a few other places the soil is mixed with soda or other alkaline or stony. Rocks found in and near the surface are in detached masses. Altogether the soil of the district cannot be considered rich or very fertile. The alluvial soil - the most fertile type, is found on the banks of Kosasthalaiyar and Araniyar and other major rivers. The soil found nearer the sea coast is of the inferior type which is most suited for raising casurina.

Laterite soil is the predominant soil type in Thiruvallur district accounting for 63.2% of the total area under cultivation. Red loam and black soil account for 28% in the district soil map. Over 13.7% of soil suffer from salinity/alkalinity. 13.2% of soil are with problems of water logging and marshy land. Sands, desert/coastal soils account for 3.0%. (Table 11,12)

3.1.7 Status of Soil and Water Conservation Programs

Soil conservation works have been undertaken in 1103.553 hectares of cropping area in Gumudipoondi and Thiruvallur blocks. The soil conservation program taken up in the year 1995-96 are deepening of 3 percolation ponds. (Table 13)

3.2 Forest Resources

3.2.1 Forest Area

The forest cover spreads into 20092.47 hectares covering 118 areas. Reserve forests and reserve lands are the two legal classified forests found in the district while reserve forests form 73.4% of the total forest area. The forest types available in the district are one of tropical in nature and they fall under dry thorn and dry evergreen types. The latter constituted 75.1% of the total forest area in the district.

3.2.2 Green cover classification.

Under the green cover classification forest area the composite Kanchipuram district has more of plantation and such forests put together cover an extent of 29751 hectare. Of this three fifth of the (60.5%) area is covered by plantation. The next comes grass lands accounting for 16.3% of the forest area. Other green cover classification found here are dense and sparse forest and stony and rocky sites. (Tables 14, 15)

3.2.3 Trend in per capita forest

The population of the district over 46 years (1951-96) have grown four times whereas the forest area has remained the same at 20092.42 hectares. This has heavily impacted on percapita forest coverage and the percapita forest area is as low as 0.008 hectares. (Table 16)

3.3 Floristic composition

3.3.1 Natural forests

Much of the natural forests has been converted into man-made forests since the late 50s. However, chunks of natural forests still exist but in various stages

of degradation. Allikuli R.F still supports the original vegetation. The forest natural forests fall into the following groups accounting to H.G champion and S.K Seth (1996):

- Tropical dry evergreen (Group 7G) ----- Climatic Climax forests
- Tropical dry evergreen scrub (Group7-ds1) Degraded forests

These natural forests are being rigidly protected now and the natural regeneration is being assisted to reassert itself.

3.3.2 Tropical dry evergreen forests

These forests are unique in nature and the floristic composition are as follows.

Characteristic species

- *Manilkara hexandra*
- *Mimusops elengi*
- *Albizia amara*
- *Memecylon umbellatum*
- *Diospyros ferrea syn maba buxifolia*

Top Canopy

- *Mimusops elengi*
- *Diospyros ebenum (Occasional)*
- *Strychnos nux vomia (Occasional)*
- *Strychnos potatorum (Occasional)*
- *Diospyros chloroxylon (Occasional)*
- *Drypetes sepiarea (rare)*
- *Syzygium cumini*
- *Canthirum decocum (frequent)*
- *ziziphus glaberrima (frequent)*
- *Acacia leucophloea (frequent)*
- *Catunaregam spinosa (frequent)*
- *Buchanania lanzan (Occasional)*
- *Sapinda emarginatus (Occasional)*
- *Albizia amara*
- *Albizia lebbek*

- *Tamarindus indica*
- *Azadirachta indica*
- *Borassus flabellifer*

Under wood

- *Carissa carandas* (abundant)
- *Flacourtia indica* (locally abundant)
- *Diospyros ferrea* (frequent)
- *Grewia sp* (abundant)
- *Gymnosporia spp* (frequent)
- *Ixora arborea* (frequent)
- *Tarenna ascatica* (frequent)
- *Memecylon umbellatum*
- *Garcinia spicata*

Shrubs

- *Strobilanthus*
- *Dodonaea viscosa* (abundant)
- *Glycosmis pentaphylla*
- *Ochna squarrosa*
- *Gmelina asiatica*

Herbs

- *Hemidesmus indicus*

3.3.3 Tropical dry evergreen scrub:

These forests represent the degraded stage of the dry evergreen forests. The trees have virtually disappeared due to biotic pressures like lopping, hacking and felling. The flora essentially comprises the following species:

- *Diospyros ferrea*
- *Ziziphus glaberrima*
- *Calliea cinerea*
- *Catunaregam spinosa*
- *Carissa spinarum*
- *Albizia amara*
- *Buchanania lanzan*
- *Dodonaea viscosa*

3.3.4 Manmade Forest plantation

The manmade forest plantations have been restricted to the existing forest areas only. About 12787.22 hectares fall under this category. The plantations grown here are eucalyptus, fuelwood, casuarina, cashew, red sanders, neem, tamerind and other minor forest produces. 58% of the plantations are fuelwoods. Till 1995-96, community plantations in tank beds, plain porambokku lands and denuded hillocks have been raised by the forest department. (Table 17)

3.4 Forest Produce

Industrial wood and fuel wood are the available forest produce from Reserve Forest areas. The production of industrial wood was about 5378 tonnes and fuel wood was around 923 tonnes in the year 1996-97. The only minor forest produce in the district is cashew but its production has also declined considerably from 61.095 tonnes (1981-82) to 30.387 tonnes (1996-97) (Table 18) Some granite stone quarries are also found in Reserve Forests.

3.5 Details of villages abutting forest area

There are 6 villages located abutting forest ranges in Thiruvallur, Uthukottai, Ponneri and Poonamalli taluks forest areas in the district. The details regarding the population in villages abutting the forest area are not available. (Table 19)

3.5.1 Tribal village

There is no designated tribal village in the district Table 20.

3.6 Forest area diverted for non-forestry purposes

So far no forest area is diverted for any non forestry purpose since the inception of forest conservation Act, 1980. (Table 21)

3.7 Conservation of Biological resources, Wild Life Census Rare Threatened Species of Flora and Fauna

3.7.1 Wild Life -Natural forest.

Since the natural forests constitute negligible of the forest area and since they are in isolated pockets, the wildlife does not offer a wide spectrum of species. The following animals and birds inhabit the forest.

- *Jackal - Canis aureus*
- *Jungle cat - Felis chaus*
- *Palm squirrels - Funambulus pennanti and F.palmarum*
- *Hare - Lepus nigricollis nigricollis*
- *Common mongoose - Harpestes edwardsi*
- *Shrew - Suncus sp*
- *Pangolim - Manis crassicaudata.*
- *Pariyakite Milvus migrans govinda*
- *Brahminy kite - Haliastur indus*
- *Partridge - Francolinus pondicerianus*
- *Koel - Eudynamys scolopacea.*
- *Spotted owlet - Athene brahma*
- *Common rat snake - Ptyas mucosus*
- *Cobra - Naja naja*
- *Green whip snake - Ahaetulla nasutus.*

3.7.2 Pulicat Bird Sanctuary

The birds sanctuary at Pulicat lake at Ponneri taluk in East coast lying in north Chennai is the only biological reserve in Thiruvallur district. The area of the lake is 153.67 sq.km. This area is under unclassified forest area.

The Pulicat Sanctuary is drained by Arni river while the man made Buckingham canal brings in the city's drainage water. At the southern end is an opening on to Bay of Bengal through a shallow mouth 200 m in width.

The rest of the lake is closed by a sand bar running parallel to the Bay of Bengal in the form of the Sriharikota island.

The wetlands ecosystem is considered as among the richest areas of biodiversity. Pulicat, by virtue of the mixing of fresh water with sea water is found to be an ideal habitat for diverse life-forms. 160 species of fish, 25 species of polychaete worms, 12 of prawn, 19 of mollusk and 100 species of birds are well documented apart from a number of other aquatic flora and fauna. (Table 22)

3.7.3 Wild life census

No wild life census has been reported for the district . (Table 23)

3.7.4 Rare and threatened species of flora and fauna.

In Tamil Nadu, the nature, has given us a variety of flora such as those existing in coastal forest in the plain mild and high elevation forest tracts on the hills. In this district five species of plants are identified as possibly extinct, endangered or vulnerable. The details of category, name of the species and location are given in the Table 24. The threatened species of fauna are specific reptiles and birds.

4. Mineral Resources

The recoverable mineral resources available in the district is different varieties of silica sand, gravel and blue metal stones. The actual production and value details are given in Table 25.

5. Water Resources

5.1 River basins

Araniyar, Kusasthalaiyar, Adyar and Cooum are the four rivers in the district. Araniyar and Kosasthalaiyar originate in Andhra Pradesh, whereas Cooum and Adyar originate from surplus courses of Cooum of tank in Thiruvallur taluk and Chembarambakkam tank in Sriperumpudur taluk respectively. The length and area of the basin for each river are given in detail in Table 26. In respect of basinwise ground water availability the average annual rainfall of the four river basin is 1039mm. The river basinwise geographical area, rainfall gross recharge etc. are given in Table 27.

5.2 Dams and reservoir

The only dam in the district is across the river Kosasthalaiyar river named as Sathiyamoorthi sagar and was constructed in 1994. The designed capacity of the dam is 97.98MCM. There are three reservoirs at Red hills, Cholavaram, Chembarambakkam with the capacity of 93.46, 25.30, 103.23 MCM respectively. Water at Sathiyamoorthy dam and all the three reservoirs are used for only chennai city water supply. (Table 28)

5.3 Irrigation by different sources.

The main sources of irrigation in the district are wells, tanks and canals in that order. The gross area irrigated under these sources are 75649,37468 and 3375, hectares respectively. On an average nearly two third (67.1%) of the total cropped area are irrigated. Of the 14 blocks in the district, 8 blocks avail irrigation sources for over 75% of the total cropped area. The blockwise details are given in Table 29, 30.

5.4 Incidence of Drought, Flood & Cyclone

No data are available on drought, Flood & Cyclone for the years 1985-96. However, the available information obtained from the section dealing nature calamities in district collectorate regarding the compensation during heavy monsoon period reveals that all the 6 taluks and 14 blocks availed relief fund. The details are given in Table 31.

Generally flood occurs during north east monsoon when there is heavy rainfall coupled with cyclonic storm formed in Bay of Bengal. Floods often occur in the basins of Kosasthalaiyar, Araniar, Cooum and Adyar and its tributaries.

6. Fisheries Resources

The combined district of Kanchipuram and Thiruvallur districts have a coastal line of 87 km. The inland fresh water area spreads over 75006 hectares and estuaries and brackish water area are 14841 hectares. Marine fishing is practised in 39 fishing villages of the district. Marine and inland production has increased both in quality and value from 1991 to 1996. A comparison of fish production indicates that the coastal production is slightly higher than the inland fish production during 1995-96. The details on fish production for composite Chengalpattu district comprising Thiruvallur and Kanchipuram district are presented in Tables 32,33.

7. Heritage Resources

7.1 Protected and conserved monuments

In Thiruvallur district the Department of Archaeology maintains only one ancient monument, the Visleeswarar temple at Vilakanampoondi at Thiruthani taluk. (Table 34)

7.2 Places of Tourist Attraction

As per Tamilnadu Tourism Directorate there are seven places of tourist attractions. A brief account of some of the places in the district which are famous for their historical, religious and archeological importance is given below. (Table 35)

7.2.1 Thiruthani

The place was transferred to Tamilnadu from Andhra Pradesh in 1960 as per Pataskar Award. Thiruthani is one of the six famous hill abodes of Lord Subramania. The festival during Adi-Kritigai (July-August) attracts huge

crowds from all parts of the state and neighbouring state too. The temple is on a small hillock.

7.2.2 Pulicat

Pulicat lake is also a beautiful spot on the east coast. Lying north of Chennai. There are facilities for swimming and fishing here. It was a site of old Dutch settlement. The Dutch founded a factory at this site in 1600 A.D. A fort by name "Geldria" was built by them and now it is in shambles. There is an old lighthouse here in a nearby island.

7.2.3 Tourist Arrivals

There has been a gradual increase in tourist arrivals between 1993-1995-96. (Table 36)

8. Energy Resources

8.1 Installed Power Projects

There are two power projects available in this district. The first is Ennore Thermal Power Station. And the other is North Chennai Thermal Power Station. The total installed capacity is (1996) 1080 MW. The total actual generation of electricity is 8897 million units. The details are given in Table 37.

8.2 Consumption of Electricity

The figures available represent the combined districts of Kanchipuram and Thiruvallur. There were 548384 electrical connections with a total consumption of 6214118.741 kwh as on 1995-96. Agriculture sector is the maximum consumer accounting for 75.8% of the total consumption. On industrial sector, the electricity consumption for high tension units were more than double as

compared to low tension units. The category wise consumption of electricity is given in Table 38.

8.3 Electrification of Villages

Thiruvallur district has achieved cent percent electrification as on date. A total of 57072 pumpsets are energised (1998). The details are given in Table 39.

8.4 Non-conventional & renewable energy sources utilisation

In respect of non-conventional & renewable energy sources, solar voltaic pump (SVP), bio gas and improved chulah are the prevailing methods under utilization in the district. The biogas plants which are 300 in numbers (1995-96) are able to generate over 80% of its installed power capacity. (Table 40)

9. Infrastructure

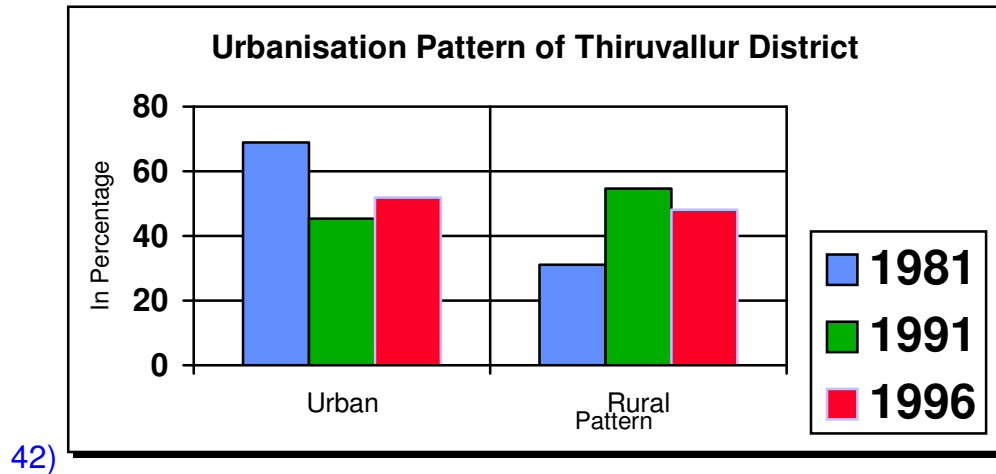
9.1 Urbanisation Pattern

The proportion of urban population to total population has shown fluctuations over the decades in the district. It was 68.9% of the total district population in 1981 and then it came down to 45.4% in 1991. However, the estimated figure for the year 1996 has registered an increase in the share of urban population and the percent urban population to total population was 51.9%. The urban areas in the district comprises six municipalities and 19 town panchayats with a population of 12.5 lakhs. The municipal population accounts for 66.3% of the total estimated urban population in 1996. The urbanisation pattern of the district is given in Table 41.

9.2 Density of Population

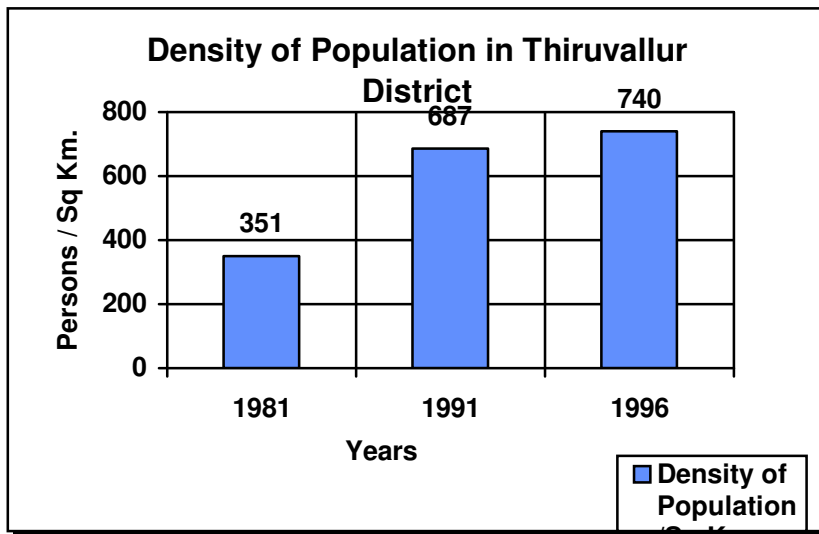
The overall density of urban population per sq.km. for the district has increased to 12725 from 10744 between 1986 and 1991. Similarly there is an apparent increase in density of rural population during the same period (ie)

from 112 to 367 per sq.km. (Table



9.3 Decadal Growth Rates in Urban Centres

The urban population has increased from 0.9 lakh (1951) to 12.5 lakhs. The decadal growth rate indicates that during the period 1971-81, the number of urban centres have increased in the district. In respect of municipalities, the only municipality available in 1951 was Thiruvallur, but in 1991, there are six municipalities. Similarly, the number of town panchayats have almost doubled during the period 1951-91. This resulted in 101% increase in 1971-81 urban population. The next decade 1981-91 has also witnessed increase in urban population at the rate of 45% (Table43,44)



9.4 Urban Slum Population

The proportion of slum population to urban population has been more or less static during the years 1981-96. However the inflow of population into slums is enormous causing special problems and as a result the slum population density per sq.km has almost doubled over the years 1981-96. The increase in slum population between 1981 and 1991 was over 33,360 with an average immigration of 3836 persons per year. (Table 45)

9.5 Trend in Urbanisation and Slums

Urban population has continued to increase during the period 1981-96. However, the trend reveals that there is a decline in proportion of urban population to total population during the period from 68.9% to 51.9%. In the corresponding period, the slum population has also remained around 10% of the total population. The percent of slum population to urban population has registered both an increase and decrease over the period 1981-96 both in municipalities and town panchayats. The details are given in Table.46.

10. Infrastructure services and Environmental Status

10.1 Occupied Housing Units

The total number of occupied housing units has increased from 1996-97 for both rural and urban areas. There has been an increase in the number of households accessing piped water supply connection and toilet facilities in both rural and urban areas. The details on occupied housing units are given in Table 47

10.2 Urban Services

Ground water is the major source of protected water supply in the district and the designed capacity is 267.61 lakh liters. This is a major source for 4 municipalities and 11 town panchayats. Surface water is the only source of protected water supply to Avadi and Tiruvotriyur municipalities. Six town panchayats also derive protected water supply from surface water. The average percapita water supply is 37 lpcd for the district. The average percapita water supply exceeds 50 lpcd for sub-urban areas like Tiruvallur, Valasaravakkam and Maduravayal. On an average 61.1% of the total urban population are provided with protected water supply. Details in water supply services are given in Table 48.

10.3 Domestic Waste Water Generation and Treatment

The estimated sewage generation is at 284.67 mld in urban centres with a break up of 202.42 mld for municipalities and 82.25 mld for town panchayats. There is no treatment plant in the district and therefore there is no organised disposal of sewage. Underground drainage systems are partially available only

in Tiruvottriyur municipality and Tiruverkadu and Maduravayal town panchayats. The status on domestic water generation and disposal is given in Table 49..

10.4 Municipal Solid Waste Generation.

Overall solid waste generated in the district adds up to 422.6 tonnes with a break-up of 366 tonnes in municipalities and 56.6 tonnes in town panchayats. The solid waste generation is highest in Ambathur among municipalities and in Porur among town panchayats. The over all collection efficiency is 88 % with of 344 persons engaged in solid waste management. The details are given in Table 50.

10.5 Composition of Solid Waste

Thiruvallur municipality alone has furnished the details on solid waste. The primary component of the waste is compostable matter constituting 90% in the total waste. The composition details is presented in Table 51.

10.6 Coverage of Problem Villages

Of the total 793 settlements in the district, 757 settlements are provided with drinking water. The balance are problem settlements. The details by block are given in Table 52

10.7 Reported Cases of Water Borne Diseases

Over a period of 10 years between 1987-96, largely reported water borne cases have been diarrhoea, cholera, typhoid, jaundice and malaria. Reported incidence of death due to the above diseases have shown fluctuations. (Table 53)

10.8 Facilities under Indian systems of Medicines

Of the Indian medicine systems, hospital facilities are available for siddha and unani medicines. There are only registered private practicers for other forms of Indian medicines. Details are presented in Table 54.

10.9 Population Below Poverty Line

115,673 families are reported to be below poverty line in the combined district for the year 1991 Data for other years are not available. (Table 55)

10.10 Transportation

10.10.1 Development of Roads and Bridges

National highways runs across the district for a length of 100 kms. In respect of state highways an additional length of 19 kms have been laid during the period 1981-91 adding to a total length of 35 kms. There were also major development in other district roads and there total length was 1135 kms in 1996. Major bridges and new culverts were constructed in the district between 1991-96. Relevant information is provided in Table 56.

10.10.2 Growth of Vehicle Population

The vehicle population in general has increased in Tiruvallur district during the period 1986-96. Four wheelers have registered a four-fold increase. Similarly two wheelers have increased in numbers from 7077 to 18477 for the period. The details are presented in Table 57.

10.11 Industrial Development and Environmental Status

10.11.1 Number of Industries

There are a total of 1367 industrial units in Tiruvallur district of which large industrial units are 87 and medium units 234. The balance are small units. These units are further classified into Red, Orange, and Green on the basis of their intensity of pollution. The details are given in Table 58.

10.11.2 Hazardous Waste Management

For the disposal of hazardous solid waste management the TNPCB identified a site at Manalur in Tiruvallur district. Rapid environmental impact assessment study has been conducted for the site.

10.11.3 Common Effluent Treatment Plants

There is a common effluent treatment plant for tanneries at Madhavaram namely CETP Company, Madhavaram. It is serving for 14 local units.

10.11.4 Emission Inventory of Major Industries

The following are the problem units identified by Tamil Nadu Pollution Control Board in Tiruvallur district.

- *Madras Fertilizers Ltd. Manali*
- *E.I.D Parry & Kothari Industries Corporation, Ennore*
- *Shaw Wallace, Avadi*
- *Ennore. Thermal Power station*

The Tiruvallur district pollution control board monitor periodically the emission rate for various industries. The 10 major industries located in Manali, Ambathur and Ponneri are listed and value of Emission is presented in Table

59. However, it is seen that average emission levels for various pollutants are found to be within permissible limits.

10.11.5 Ambient Air Quality Status/Air Pollution Stressed areas

There are eleven air quality monitoring stations in the district. Of these, eight are located in rural areas. The other three are urban and they are residential, commercial and industrial, monitoring stations. The technical details are presented in Tables 60 and 61.

Manali, Ennore and Avadi areas are identified as air pollution stressed areas in the district. The major pollution sources are chemical and fertilizers industrial units, breweries and power stations.

10.12 Water Quality

Tamilnadu Pollution Control Board is monitoring the quality of water in Adyar, Buckingham canal, and Cooum and Oteri nulla. The details of value of each parameter along with tolerance limit are presented in Table.62

10.13 Industrial Discharge of Effluents Details

There are four major industrial units identified by Tamil Nadu Pollution Control Board whose effluents are discharged in rivers. Among the four units, Madras Fertilizers Ltd. discharge its effluents in Amullavoyal canal. The other three, Madras fefineries,. Tamilnadu Petroproducts and Ennore Foundaries Ltd., are discharging their wastes in Buckingham canal. The quality of effluents, treatment status and distance of the recipient water body are mentioned in Table 63.

10.14 Noise Levels

Noise level has been measured by Tamilnadu Pollution Control Board in four locations in different category areas. For industrial area, the location is at MRL

gate, for commercial area, the noise pollution testing is located at Moolakadai junction. For noise level in residential areas, the testing locations are Amulavayal and Sadayankuppam. It is seen that maximum recorded noise level is exceeding its permissible limit in all locations. The level of noise measured in these locations are presented in Table 64.

10.15 Environmental Status of Coastal Eco-system

Data on the status of coastal eco-system are not available for the district. (Table 65)

10.16 Aqua Culture Activities

The aqua culture activities practiced in this district have been of semi intensive and conventional types. There are 25 conventional type units covering 132 hectares and 52 semi intensive type units covering 326 hectares of farms . The details are given in Table 66.

10.17 Wetland Habitats, Their Use and Problems

According to Tamil Nadu Pollution Control Board there is no such wetland habitat in Tiruvallur district. Table 67

10.18 Potential Hot Spots Along the Coast

The pulicat brackish water lake of Bay of Bengal in Ponneri block is a potential hot spot along the coast. It was a site of old Dutch settlement. There are facilities for swimming and fishing here. Migratory birds from various countries flock here every year between December and February.

Among the most spectacular is the flamingo-a tall gaunt, white-coloured bird with a touch of pink on the wings, pink beak and legs, seen feeding in shallow

water. The squal, large-billed grey pelican with gular pouch and a number of ducks are commonly seen. Flocks of sea gulls and terns circling in the sky and bobbing up and down on the water are an added attraction at Pulicat. Besides, there are a number of waterside birds and waders such as curlews, stilts, plovers, sand pipers, lapwings, redshank, etc. Egrets, herons, kites etc., are some other birds found here. The lake is also home to crabs, clams, mussels, Oysters, snails, fish worms, insects, spiders, sponges, anemone, prawns, plankton etc. including rare endemic species like gilded leech, an unidentified blood red fish, etc.,

Threats - uncontrolled unsustainable fishing by seafood export companies which even harvest brood stocks of hatchery is one of the main reasons of biodiversity loss.

Unscientific aquaculture for gross commercial gains, pumping out the lake water and discharging it back as polluting effluents is another cause for concern. The effluents reduce the number of aquatic organisms and interfere with bird breeding.

Rapid siltation has also caused loss of biodiversity. It is seen that mangrove pollen is found on Sriharikota island indicating their existence some years back. Loss of mangroves may be one of the reasons hastening siltation, reducing biodiversity and hence depriving fisherfolk of their livelihood. Table 68.

10.19 Environment Education and Research Institution

No such institution is in this district. Table 69

10.20 Environment NGOs.

There is no such NGOs reported in Thiruvallur District. (Table 70)

13 Environmental Impact

13.1 A perusal of the district's resources, their availability and use pattern along with environmental issues has already provided a framework to infer on current environmental pressures in the district. Thiruvallur district has plenty of water resources as it is one of the highest rainfall regions in Tamilnadu. This has helped to increase agricultural production and food security. The increase in quantities of bio-fertilizers used, the reducing quantum of pesticides used

and the practice of recycling of wastes have all contributed towards sustainable agricultural development.

13.2 Of course, it is true that the forest cover has remained the same at 5.8% of the total land over the period but the most gratifying feature here is that there had been little diversion of forest area for other purposes. The natural calamities are also a few and far between during the period and there is no natural disaster.

13.3 On the other hand, there is a heavy shift in characteristics of the population. The proportion of urban population has increased rapidly during the last two decades and this has resulted in cramming of population in urban centres, especially in slum areas where the sanitary facilities are very limited. At the same time, these town areas have not been adequately provided with water and sewage systems. The available percapita water is also low.

13.4 The migration to urban centres as well as creation of new industrial areas are on the increase in the district. As the district's urban centres are close to Chennai metro, these centres are expected to almost absorb the metro's pressure on land and other utilities. As a result, in Poonamalli, and Ambathur taluks a number of new industrial units and parks sprung very recently. On the other hand, the environmental monitoring units/stations have not been increased with same pace and consequently there is absolutely no clear information on environment stress experienced in the district. The rapid increase in vehicular traffic had a telling impact on noise and air pollution. However, no facilities are available in the district to measure these pollution levels.

13.5 One fact that needs attention here is that it is necessary for the district officials to augment and maintain basic environment information that have a

great bearing on environmental status, particularly on climate, pollution levels, effluent and waste treatment. Coordinated, well planned and systematic efforts on the part of different agencies will help in maintaining basic information for monitoring environmental stress. It is suggested that the Directorate needs to develop a concurrent monitoring unit to collate information periodically.

13.6 Issues that need immediate attention and some suggestions

There are some issues that need immediate attention of the government, public and the NGOs and they are indicated in the paras that are follow.

13.6.1 Pollution by major industries

The Madras Fertilizers Ltd. located near Manali, through has a treatment plant, lets off the effluent into Amullavoyal canal. Though there is a treatment plant, it has to be ascertained when the effluent discharged into the river pollutes the soil and sub-soil water.

This issue is equally applicable to the public sector units Madras refineries, Ennore Foundaries Ltd., and Tamilnadu Petro Products Ltd., thier effluents are discharged into the Buckingham canal pollutes the soil and sub-soil water.

13.6.2 Garbage

Garbage collection and disposal still continue to be a major problem faced by panchayats and Municipalities and composting of degradable solid wastes is rarely done. This has to be tackled on a war footing.

The growing menace of non-biodegradable wastes in the form plastic and polythene materials need to be tackled. This can be achieved through the co-operation of NGOs and environmental education and awareness campaigns.

13.6.3 Sewage

Treatment of the sewage by treating it and separating of sullage (solid deposit after treatment) and effluent treated water deserves immediate attention of all the municipalities and town panchayats. The sullage can be used as manure and the recycled water after being made safe can be used for raising fodder and tree crops. It is upto the local bodies to secure funds from Funding Agencies like LIC to instal treatment plants.

13.6.4 River and canal pollution

Adyar river which skirts the Southern boundary and Cooum river are highly polluted due to discharge of sewage and the mushroom growth of slums all along the banks. Similarly, Buckingham canal is heavily silted up and polluted emitting a stretch. The government departments, local bodies and agencies concerned have to co-ordinate their activities and act in unison to eliminate this environmental hazard.

13.6.5 Greening

Public places like government offices, schools and colleges, village common surrounds of temples etc. Can be planted with pollution tolerant trees like Neem, Tamarind, Arasu, Aal, Pungan etc. Another significant step will be to encourage planting of trees along field bunds by the farmers.

Shelter belts Casuarina, Cashew, Paimyra, Odai, Udiyan, Punnai etc. Can be along the sea coast to reduce the velocity of cyclone winds and drifting of coastal sand by wind erosion. The shelter belt of Casuarina has proved to be very beneficial in Orissa and Andhra Pradesh in Cuddalore in Tamilnadu.

11 Summary of Observations

The key observations of the environment profile of Thiruvallur district are briefed below.

14.1 Demographic details

1. The district population has grown over 4 times during the period 1951-1991. As per 1991 census Ambathur and Poonamalli taluks are the most populous taluks.
2. The birth rate had decreased by 2.5 times from 1951-1991.
3. As per 1991 census the district literacy level increased considerably than the previous decade.

14.2 Land and resources

1. The utilisation of land area in Thiruvallur district is upto 50% only. About 31% land are not available for cultivation.
2. Across the blocks, the usage of chemical fertilizers is uniform. But the usage of bio-fertilizers has increased significantly.
3. About 14% of the soil is reported to be suffering from salinity / alkalinity and 13% of soil are with problems of water logging and marshy land.
4. Three percolation ponds were constructed under soil conservation programme.

4.3 Forest and other resources

1. Forest occupy only 5.87% of the total land area, but remain intact without being diverted for non-forestry uses. The percapita availability of forest is diminishing.
2. The main source of irrigation in the district are tanks and wells. On an average 67.1% of the total cropped area are irrigated by these sources.
3. The recoverable mineral resource available in the district is different variety of silica sand.

14.4 Energy Resources

1. Ennore Thermal Power Station and North Chennai Thermal Power station are two power project available in this district.
2. There were 548384 electrical connections.
3. Agriculture sector in the maximum consumer accounting for 75.8% of the total electricity consumption.

14.5 Urban infrastructure

1. The urban population has increased from 0.9 lakhs in (1951) to 12.5 lakhs in 1996.
2. There has been a steady increase in slum population.
3. The trend in urbanisation continues to show an increase. However, in municipalities, the slum population has registered both an increase and decrease over the period 1981-96.

4. Ground water is the major source of protected water supply in the district and the designed capacity is 267.61 lakh liters. The urban settlements suffer from inadequacy of underground sewerage and treatment.
5. Overall solid waste generated in the district adds upto 422.6 tonnes. Organised disposal by way of composting is lacking in many urban centers.
6. The vehicle population in general has increased in Thiruvallur district during the period 1986 - 1996.

5.7 Industries growth and Environment

1. Industrial growth is picking up in the district with new industrial growth centers around Ambathur, Manali and Thiruvallur etc.
2. Madras Fertilizers Ltd., Manali, E.I.D Parry & Kothari Industries., Ennore, Shaw Wallace., Avadi and Ennore Thermal Power Station are identified as problem units by TNPCB. 10 Major industries are monitored periodically by Tamilnadu Pollution Control Board. However, it is seen that average emission levels for various pollutants are found to be within permissible limit.
3. Eleven air quality monitoring stations are monitored by Tamilnadu Pollution Control Board both rural and urban. Of these, Manali, Ennore and Avadi are identified as air polluting stressed areas by fertilisers and chemical units.
4. Periodical water quality testing has been carried out by TNPCB in three locations of Buckingham canal, Cooum and Otteri Nulla.
5. Four major industries are identified by TNPCB, whose effluents are polluted Adyar, Buckingham and Cooum rivers.
6. Noise levels has been measured periodically by TNPCB in three category of locations. i.e., Industrial, Commercial, residential.
7. Pulicat brackish water lake of bay of Bengal in Ponneri taluk is a potential hot spot along the east coast

8. These are rich treasures, which unfold the history, and art of over 1200 years set in nature's unfathomable sky and boundless sea. They have withstood the exposure to natural elements, through they lost some of their original and pristine quality.

Mahabalipuram represents the Pallava traditions of art of the seventh century AD. Once a flourishing sea and naval base of Narasimha -I Mamalla (630-658 AD) Mahabalipuram developed during the Pallava period into a great center of art.

The Pallava rulers with their capital Thiruvallur (a great temple City of south India) during their reign extending over 400 years (550-980 AD) were great patrons of art and letters. They built temples to commemorate their victories in battle and developed a distinct style of architecture, typically Dravidian. Many of these temples may also be considered as public works programmes of the period, which provided jobs for sculptors, handicraftsmen etc.

The rock temples of Mahabalipuram reflect the glory of the period, a monument for the artistic excellence and the royal patronage to art. Each of the fifteen rules of the dynasty contributed something or other to art and architecture, through a good part of credit for such heritage goes to Narasimhas Varman I - Mamalla narasimha Varman ii - Rajasimha.

ii. Protected and Conserved Monuments

In Thiruvallur district The Department of Archaeology maintained several ancient monuments. There are eleven monuments spread in four taluks and eleven villages consisting of ancient temples having historical importance are maintained. The details of villages, taluks are given in the table 67.

iii. Places of Tourist Attraction

.A brief account of some of the places in the district which are famous for their historical, religious, archeological importance is given below.

i. Thiruvallur

Situated at a distance of about 75 km south-west of Madras city, Thiruvallur or “Kanchi” as is popularly known, is the present headquarters of the district and also of Thiruvallur Taluk. A historically famous temple city, it was the Seat of Pallava administration in the 7th Century A.D. and it later passed into the hands of the Cholas and Vijayanagar Kings. It is an important religious center frequented by pilgrims. The Kamashi temple which is the largest in the town, contains many inscriptions. Its tower is said to have been built by Krishnadevaraya, the well known Vijayanagar King. The Kailasanatha temple, one of the oldest was built in 700 A.D. The Vishnu temple of Lord Varadaraja is also a famous shrine and its annual Garudotsavam in May-June every year attracts huge crowds. The city is a famous centre for artistic silk sarees and printed textiles and is also known for its handlooms and handicrafts.

ii. Mamallapuram

It is a place of architectural interest and lies on the east coast, 55 km. South of Madras. It is an important tourist center. The shore temple and the monolithic chariots, known as the “Five Rathas”, Arjuna’s peanace, the Krishna Mandapam, Mahishasura Mandapam, the elephant etc., are all magnificent pieces of sculpture which attract hundreds of tourists throughout the year. The place is also known as the Seven Pagodas and along with the sea-shore and its temple provide a beautiful picnic spot abounding in natural beauty. There is also a lighthouse here. A training center for sculpture has been set up by the Government here and students are imparted training.

iii. Tirukalukkundram

Also known as “Pakshitheertham” lies 12 km. South-east of Chengalpattu town on the southern trunk road. There is a rock-cut temple here, atop a hill of about 500 feet high, and it is dedicated to lord Siva (known as Vedagiriswarar here). Everyday two white vultures come here regularly around noon (between 11 a.m.-12 noon n) and consume the holy prasadam offered by the priest. The belief is that the birds come from Banaras. The hill is considered a sacred one and there is a flight of steps in cut stone to reach the temple atop. The place is also an important weaving centre.

iv. Vedanthangal

This place lies about 10km. West of Madurantakam. It has become famous on account of its birds sanctuary. After the rainy season a variety of birds belonging to different species flock to this place from far and near. They breed on the huge trees here near the lake Bird-lovers assemble here in large numbers and watch the bird varieties. The place has acquired a name and has become a center of tourist attraction.

v. Sriperumbudur

This is the headquarters town of Sriperumbudur Taluk and is about 40km. To the west of Madras

on the Madras-Bangalore National Highway. It is an important religious center. The great Vaishnavite Philosopher, Ramauja was born here. There is a famous shrine here, the Adikesavaperumal Temple. The annual festival in the temple attracts a big concourse of people.

3.4 Energy Resources

I. Installed Power Projects

The only power project available in the district of Thiruvallur is the atomic power plant located in Kalpakkam. Its installed capacity and actual power generation are given in the table below.

I. Consumption of Electricity

There were 548384 electrical connections with a total consumption of 6214118.741 kwt as on 1995-96. Agriculture sector is the maximum consumer accounting for 75.8% of the total consumption. The category wise consumption of electricity given in Table 34.

iii. Electrification of Villages

Thiruvallur district has achieved almost cent percent electrification as on date. With an exception of only one village all the other 1855 villages are electrified. Over a lakh of prospects are energised upto the year 1996. The details are given in the Table (T.35)

iv. Non-conventional & Renewable Energy sources utilisation

Non-conventional & Renewable Energy sources utilisation solar voltaic pump (SVP), Bio mass and improved chulah are prevailing methods of non-conventional energy sources utilized in the district. The biomes plants which are 300 in numbers (1995-96) are able to generate over 80% of its installed capacity of power. The details are presented in the profile (T.36)

4. Infrastructure

4.1 Urbanisation Pattern

The proportion of urban population to total population has increased over the decades in the district. Over the period 1981-91 and is at 35.7 during 1991. The estimated and Urban population for the year 1996 is 1114574 of which municipalities constitutes 56.4%. The urbanisation pattern of the district is given in Table No.39.

4.2 Density of population

The over on density of urban population per square km. of the district has increased to 1912 from 1206 (1981). The details on density are given in the table.

The density of rural population as well as the total density for the district have also increase. But the acceleration in density of population is felt heavily in urban population

CHART

4.1.3 Decadal Growth Rates in Urban Centres

The urban population has increased from 3.2 lakhs (1971) to 11.2 lakhs in 1996. The decadal growth rates indicate that during the period 1981-91, the urban centers have increased in the district adding enormously on the urban population. This reoled in 121% increase in 1971-81 urban population.

Rough not at the same striking rate, the decade 1981-91 has also witnessed the increase in urban population at the rate of 43.3%

4.1.4 Urban Slum Population

There has been a steady increase in slum population during the years 1981-96. However its density has experienced mixed directions over the period ultimately resting at 1891 sqkm. in 1996.

4.1.5 Trend in Urbanisation and Slums

The trend in urbanisation continuous to show an increase. However, in municipalities, the slum population has registered both an increase and decrease over the period 1981-96. In 1981, it is hardly 18% of the total population and it has increased to 26% in 1991, only to fall later in 1996 accounting only 23.6% of total population. In contrast, this slum population has witnessed a study declined during the period 1981-96 from 10.2% to 7.8% in respect of town panchayats population. The details are presented in the table 41.

4.2. Infrastructure Services and Environmental Status

4.2.1 Occupied Housing Units

Table not available

4.2.2. Urban Services

Ground water is the major source of protected water supply in the district and the designed capacity is 404.4 lakh liters. The average percapita water supply is 37 LPCD for the district. Only Maduranthagam and Alanthur municipalities and eleven other town panchayats exceed this district average. Details on water supply services are given In table No.43.

4.2.3 Domestic waste water generation and treatment

The estimated sewage generation is at 230.7 lakh liters per day in urban areas with a breakup of 117.8 lakh liters per day for municipalities and 112.9 lakh liters per day for town panchayats. The district is not equipped with any treatment plant and hence there is no organised disposal of sewage. Underground drainage system is partially available only in Thiruvallur, Maraimalainagar and Uthiramerur under category. The details on domestic waste water generation, treatment in the district is given in the table.44

4.2.4 Municipal Solid Waste Generation.

Overall solid waste generated in the district adds up to 437.14 tonnes with a break-up 379.00 tonnes in municipalities and 58.14 tonnes in town panchayats. The total workers involved here has been 1128. The recycling by manual are done in Tambaram and Chengalpet Municipalities. The details are given in the Table no.45.

4.2.5 Composition of Solid Waste

Thiruvallur municipalities alone has furnished the details on solid waste. The primary component of the waste is compostable matter giving 86% in the total waste. The compost details is presented in the Table. (T.46)

4.2.6 Coverage of Problem Villages

Of the total 303 villages in Thiruvallur district drinking water is provided to all population in 1971 villages and the rest is partially covered (April 1999) (Reference Table No.47)

4.2.7 Reported cases of water borne diseases

Over a period of 10 years between 1987-96, the repeated by reported water brone cases have been diarrhoea, cholera, typhoid, Jaundice and Malaria, Tuberculosis, other than diarrhoea the other diseases was not all reported in the latest year (1995-96) Table No.49.

4.2.8 Facilities under Indian system of Medicines

Of the Indian medicine systems, hospital facilities are available for siddha and homeopathy medicines. There are only private registered practioners for other forms of Indian Medicine system like Ayurved and Unani Allopathic Medicines are practiced in Hospitals and PHCs.

4.3 Transportation

4.3.1 Development of Roads and Bridges

A comparison of length of roads between 1981-1996 renews that the length of National highways and major district roads have come down due to bifurcation of the district. However, there was major developments in other district roads whose total length is 1507.15 km in 1996. Panchayats roads and roads laid by urban local bodies have been 7950 km and 1239.4 km respectively. Relevant interaction is provided (Table No.53)

4.3.2 Growth of Vehicle Population

The vehicle population in general has increased in Thiruvallur district during the period 1986-96. Buses and Vans have grown for times whereas trucks ubled in its member. The two wheelers have increased in its population more than 12 times in a period of 10 years. The details are presented in the table (Table No.55)

4.4 Industrial Development and Environmental Studies

4.4.1 Number of Industries

There are totally 2050 industrial units in Thiruvallur of which large industries are 125. The medium industries are 339. The rest are small units. These industries are further classified into applied industries and polluting units. The details are given in the table

4.4.2 Hazardous Waste Management

For the disposal of hazardous solid waste management the TNPCB identified a site Siruseri in Thiruvallur district. Rapid environmental impact assessment study has been conducted for the site.

4.4.3 Common Effluent Treatment Plants

There are two common effluent treatment plants functioning in the district. One in Pallavaram Tanners industrial Effluent treatment company LTD treated for 125 units in Pammal, and another one is Ayyampet and Muthialper Bleaching and dying effluent treatment company served for 65 units.

4.4.4 Problem Units in Thiruvallur district

Mohan Breweries and Distilleries Ltd. Vedanarayanapuram possible contamination of Chengalpattu water supply scheme at the down stream of the distillery unit during monsoon period.

Dust pollution arising from the stone crushing units located in Kundrathur, Thirisoolam, Thiruneermalai, Erumaiyur and Omanancherry.

4.4.5 Emission Inventory of Major Industries

As per Thiruvallur district pollution control board, No separate Ambient Air quality Station fixed in the district.

4.4.6 Ambient Air Quality Status / Air Pollution Stressed areas.

As per Thiruvallur district pollution control board, No separate Ambient Air quality Station fixed in the district.

4.4.7 Water Quality

Tamilnadu Pollution Control Board is monitoring the quality of water in Palar river. The details of values of each perametre along with tolerance limit is presented in the table 58.

4.4.8 Regarding Industrial Discharge of Effluents details - data are not available

4.4.9 Noise Levels

No Noise level has been measured in Thiruvallur District.

4.5.1 Environmental Status of Coastal Eco - system

Data not available for this district

4.5.2 Aqua culture activities

The only aqua culture activity practised in this district has been semi intensive units. There are 22 such units covering 136 hec. The details are given in the table 64.

4.5.3 Wetland Habitats, their use and Problems

According to TNPCB There is no such wetland habitats in this district

4.5.3 Potential Hot Spots along the coast

According to TNPCB There is no such area in this district

4.5.4 Environment Education and Research Institution

No such institution in this district

4.5.5 Environment NGOs

There are eight environment NGOs dealing with environmental awareness creation and cleaning campaign. The names and address are given in the table 70.

CHAPTER

5

5.0 Summary of Observation

The key observation of the environment profile of Thiruvallur district are briefed below.

5.1 Demographic details

1. The district population has grown over 2.6 tonnes during the period 1951-1991. As per 1991 census Sriperupudur and Saidapet taluks are the most populous taluks.
2. The birth rate is two and half times decreased from 1951-1991.
3. As per 1991 census the district literacy level increased considerably than the previous decade.

5.2 Land resources

1. The utilisation of land area in Thiruvallur district is upto 70% only.
2. Accross the blocks the usage of chemical fertilizers is uniform. But the usage of Bio-fertilizers and pesticides has increased marginally.
3. About 30% of the soil condition in Thiruvallur district are to be reported as poor.

4. There have been no wells under soil conservation programme. But 3 percolation ponds constructed under this programme.

5.3 Forest Resources

1.The increase in forest area over 3 decades is 150%, however, the area compared to the population growth of the district is very negligible.

2.To main source of irrigation in the district are tanks and wells. On an average over three fourth of the total cropped area are irrigated by these source.

3.The recoverable mineral resources available in the district in different variety of silica sand.

5.4 Energy Resources

1. The only power project available in the district of Thiruvallur is the atomic power plant located in Kalpakkam.

2. There were 548384 electrical connections.

3. Agriculture sector in the maximum consumer accounting for 75.8% of the total consumption.

5.5. Urban Population

1. The Urban population has increased from 3.2 lakhs (1971)
to 11.2 lakhs in 1996

2. There has four a steady increase in slum population.

3. The trend in urbanisation continues to show an increase. However, in municipalities, the slum population has registered both an increase and decrease over the period 1981-96.
4. Ground water is the major source of protected water supply in the district and the designed capacity is 404.4 lakh litres.
5. Overall solid waste generated in the district adds upto 437.14 tonnes.
6. The vehicle population in general has increased in Thiruvallur district during the period 1986 - 1996.