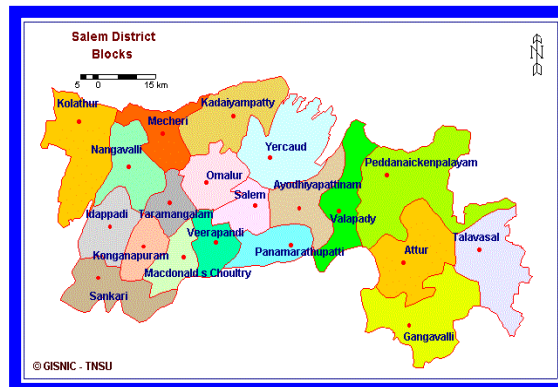
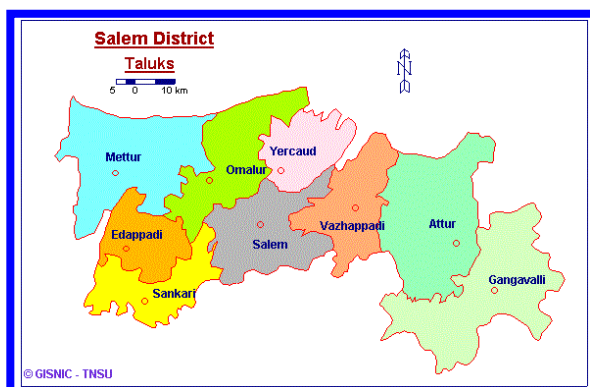


## CONTENTS



### 1. BACKGROUND

### 2. SALEM DISTRICT - A PROFILE

#### 2.1.0 Physical and Geographical Features

- 2.1.1 Location
- 2.1.2 Administrative Setup
- 2.1.3 Rainfall
- 2.1.4 Temperature
- 2.1.5 Soil

#### 2.2 Demographic Features

- 2.2.1. Population
- 2.2.2. Literacy Level
- 2.2.3. Birth Rate
- 2.2.4. Death Rate
- 2.2.5. Density of the Population
- 2.2.6. Decadal Growth Rate in Urban Centres
- 2.2.7. Population below Poverty Line

### 3. RESOURCES, AVAILABILITY, USE AND ENVIRONMENTAL STATUS

#### 3.1.0 Land Resources

- 3.1.1. Agricultural Resources
- 3.1.2. Horticulture Resources
- 3.1.3. Forest Resources
- 3.1.4. Mineral Resources

#### 3.2.0 Water Resources

- 3.2.1 Rivers
- 3.2.2 River Basins and other Catchment Areas

3.2.3 Fisheries Production

**3.3. Heritage Resources**

**3.4 Energy Sources**

**4. INFRASTRUCTURE DEVELOPMENT & ENVIRONMENTAL STATUS**

**4.1.0 Urbanisation**

4.1.1 Urbanisation - Pattern

4.1.2 Urban Slum Population

4.1.3 Trend in Urbanisation and Slums

**4.2.0 Social Infrastructure**

4.2.1. Occupied Housing Units

4.2.2. Drinking Water

4.2.3. Domestic Waste Water Generation & Treatment

4.2.4. Municipal Solid Waste Generation & Disposal

4.2.5. Composition of Solid Waste Generation & Disposal

4.2.6. Medical Facilities

**4.3.0 Transportation**

4.3.1 Development of Roads & Bridges

4.3.2 Growth of Vehicles

**5. INDUSTRIAL DEVELOPMENT & ENVIRONMENTAL STATUS**

5.1 Number of Industries

5.2. Emission Inventory of Major Industries

5.3 Ambient Air Quality Status

5.4 Air Pollution Stressed Areas

5.5 Water Quality

5.6 Discharge of Effluents

5.7 Noise Levels

**6. ENVIRONMENT EDUCATIONAL INSTITUTIONS**

6.1 Educational and Research Institutions

6.2 Environment NGOs

**7. OBSERVATIONS AND CONCLUSIONS**

## LIST OF TABLES

1. Details of Administrative Units in Salem District
2. Taluk wise Population of Salem District
3. Trend in Birth / Death Rate and Infant Mortality Rate in Salem District
4. Literacy Level among Population in Salem District
5. Meteorological Information of Salem District
6. Land Utilization Details for Salem District
7. Consumption of Fertilizers and Pesticides in Salem District
8. Trend in consumption of Fertilizers and Pesticides in Salem District
9. Trend in production and productivity of important crops in Salem District
10. Horticultural and Plantation Crops in Salem District
11. Soil types in Salem District
12. Problem Soil in Salem District
13. Status of Soil and Water Conservation Programmes in Salem District
14. Forest Area in Salem District
15. Forest Types in Salem District
16. Trend in Per capita Forest Area in Salem District
17. Conservation of Biological Resources in Salem District
18. Wildlife Census in Karumapatty Zoological Park
19. Estimates of Growing Stock in the Forest area in Salem District
20. Details of Villages abutting Forest areas in Salem District
21. Tribal Villages / Hamlets in Salem District
22. Forestry area diverted for non forestry purposes in Salem under Forest cover
23. Man made Forest Plantation in Salem District
24. Trends in production of Forest Produce in Salem District
25. Rare and Threatened Species of Flora and Fauna in Salem District
26. Reserves of Important minerals in Salem District

27. Catchment Area of River Basins in Salem District
28. Basin wise status of the Ground Water Availability in Salem District
29. Details of Dams and Reservoirs in Salem District
30. Available Water spread Area in Salem District
31. Irrigated area by different sources in Salem District
32. Incidence of Drought, Flood and Cyclone in Salem District
33. Installed Power Projects above 3 MW capacity in Salem District
34. Category wise consumption of electricity in Salem District
35. Status of Electrification of Villages and Energised Pumps in Salem District
36. Non-Conventional & Renewable energy Sources Utilisation in Salem District
37. Urbanisation Pattern in Salem District
38. Density of Population in Urban & Rural Areas in Salem District
39. Decadal Growth Rates in Urban Centres in Salem District
40. Decadal Growth Rate of Population in Salem District
41. Urban Slum Population in Salem District
42. Trend in Urbanisation and Slums in Salem District
43. Urban Services in Salem District
44. Domestic Waste Water generation and treatment in urban areas of Salem District
45. Municipal Solid Waste Generation and Collection Efficiency in Urban Areas of Salem District
46. Composition of Municipal Solid Waste in Salem District
47. Progress in the coverage of Problem Villages with Supply of Drinking Water in Salem District
48. Occupied Housing Units by Water Supply System and Toilet installation by Rural and Urban District
49. Trend in Reported Cases of Water borne Diseases in Salem District
50. Facilities under the Indian Systems of Medicines in Salem District

51. Population below Poverty Line in Salem District
52. Number of Industries established in Salem District
53. Emission Inventory from major industries in Salem District
54. Progress in Development of Roads and Bridges in Salem District
55. Growth of Vehicle Population in Salem District
56. Air Pollution Stressed areas in Salem District
57. Ambient Air quality Status of Salem District
58. Water Quality of Ground Water in Salem District
59. Discharge of Industrial effluents in river basins / other water bodies in Salem District
60. Noise Levels in Salem District
61. Fisheries Production in Salem District
62. Trends in Fish and Fish Seed Production in Salem District
63. List of Protected and Conserved Monuments by ASI, State Archaeology
64. Tourist Attraction in Salem District
65. Tourist Arrivals in Salem District
66. Environmental NGOs in Salem District
67. Environmental Education / Research Institutions in Salem District

## 1. BACKGROUND

- 1.1 The Department of Environment (DOE) is the nodal agency concerned with Environmental Management in the State of Tamilnadu. Though different Government departments / agencies are responsible for management of resources under their jurisdiction, information relating to environmental matters lie fragmented.
- 1.2 With the objective of collecting the data from different Government departments / agencies at the district level, compile the data, and prepare an environmental profile of the district, the Department is engaging Consultancy agencies / Research bodies / educational institutions, etc. Accordingly, Industrial and Technical Consultancy Organisation of Tamilnadu have been engaged to prepare the environmental profile of Salem District.
- 1.3 ITCOT has prepared the profile based on the collection of relevant data from concerned departments, organization, NGOs, etc., discussion with the experts, and visit to environmentally sensitive areas.

## 2. SALEM DISTRICT – A PROFILE

### 2.1.0 Physical and Geographical Features

#### 2.1.1 Location

Salem District is one of the land locked Districts in Tamilnadu. It is bounded on the North by Dharmapuri district, on the South by Namakkal district, on the West by Erode district and, on the East by Villupuram district. The elevation of landscape generally ranges from 500 ft to 1200 ft. above MSL with the exception of Yercaud which is at 5000 ft. above MSL.

#### 2.1.2 Administrative Set up

The Geographical area of the district is 520530 Ha . The district has 4 Revenue divisions, one corporation and 3 municipalities. There are 20 Panchayat unions in the district as detailed below:. The details of Administrative Units in Salem District as on 1996-97 is given in Table - 1

Taluks	Blocks
<b>Salem</b>	01. Salem
	02. Veerapandi
	03. Panamarathupatti
	04. Ayodhiapatnam
<b>Valappadi</b>	05. Valappadi and part of Ayodhyapatnam block

<b>Attur</b>	06. Attur
	07. Peddanaickenpalayam and one firka of Talaivasal block
<b>Gangavalli</b>	08. Talaivasal
	09. Gangavalli
<b>Sankari</b>	10. Sankari
	11. Magudancha
<b>Idappadi</b>	12. Idappadi
	13. Konganapuram
<b>Mettur</b>	14. Kolathur
	15. Mecheri
	16. Nangavalli
<b>Omalur</b>	17. Omalur
	18. Taramangalam
	19. Kadayampatti
<b>Yercaud</b>	20. Yercaud (town panchayat)

### 2.1.3 Rainfall

The average rainfall for the first 5 years (1991-96) works out to 851.90 mm which is lower than the State average of 943 mm. The north east monsoon period is the major rainy season accounting for 66% of the normal rainfall, followed by southwest monsoon (30%). The rainfall details are given in the Table-5.

### 2.1.4 Temperature

The average mean minimum temperature is 32.4°C while the average mean maximum temperature is 24.20 °C. The details are given in the Table - 5

### **2.1.5 Soil**

Major soils of the district are clay, black loam, black sand, and red ferruginous and red sand. The black loam is considered most fertile. The red soil is equal to loam in Productivity in and around Attur. Black soil is due to alluvial deposits with red subsoil.

#### **Status of Soil and Water conservation programmes**

As on 96-97, 103 percolation ponds and 70 check dams have been constructed in the district benefiting about 3000 Ha. of land. The implementation of soil and water conservation programmes is significant in terms of water harvesting and arresting of soil erosion. The details are given in the Table -13.

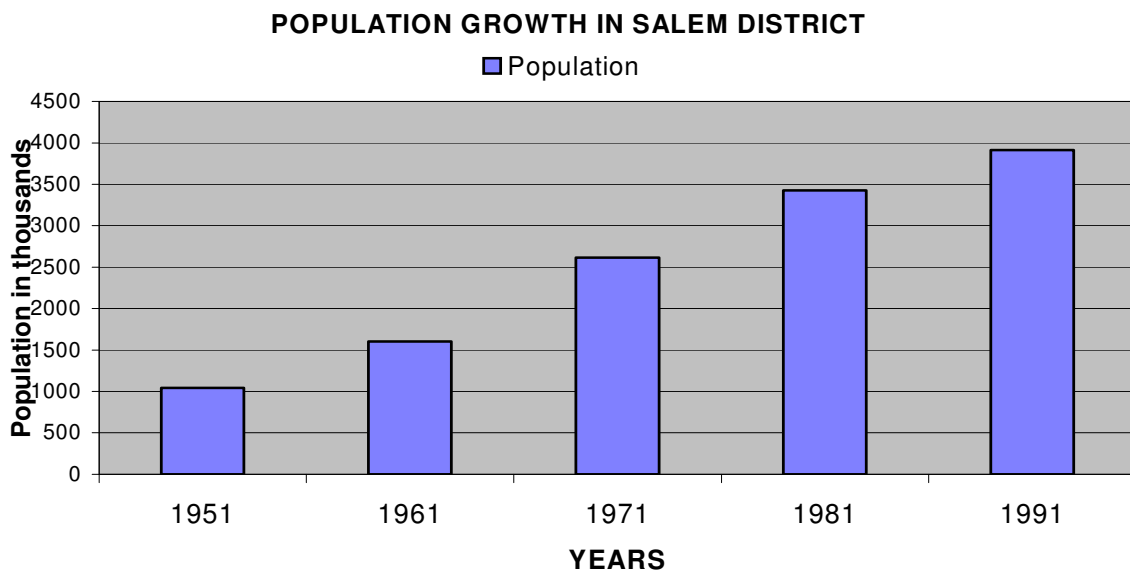
#### **Trend in consumption of Fertilizers and Pesticides**

The consumption of chemical fertilizers and bio-fertilizers are put at 84712 tons and 50168 tons., respectively. The analysis of the trend in consumption of fertilizers and pesticides indicate that consumption of both chemical fertilizers and bio-fertilizers are increasing. From 34716 tons in 1980-81, the chemical fertilizer consumption has more than doubled in 1995-96 to 84712 tons. The consumption of bio-fertilizers also increases steadily.

## **2.2. Demographic features**

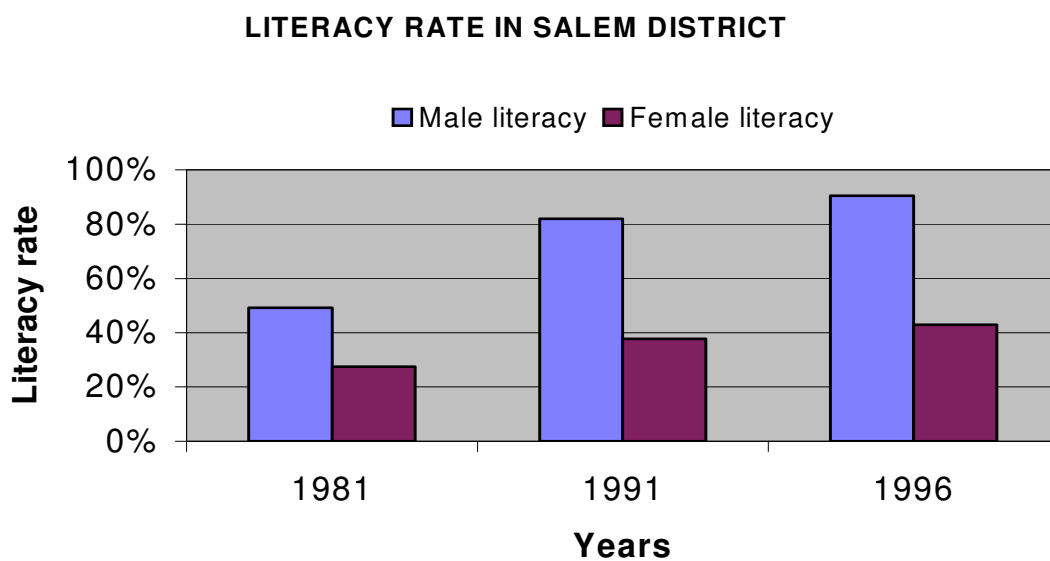
### **2.2.1 Population**

The total population as per 1991 census is 2547367. The proportion of male and female in the total population works out at 52.44%, and 47.56% respectively. Out of total population nearly 68% live in rural areas and 32% live in urban areas. The taluk wise population is given in Table - 2.



### 2.2.2 Literacy Level

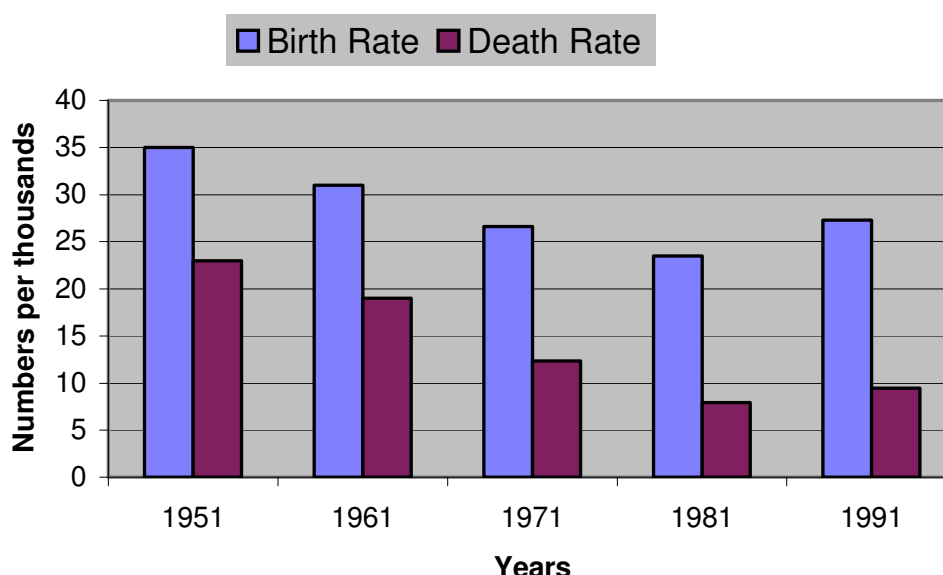
Literacy level has increased considerably from 38.69% in 1981 to 65.78% in 1991. However there is a cause for concern in case of female literacy, which is put at 37.70%. The details are given in the Table-4.



### 2.2.3. Birth Rate

The analysis of the trend in birth rate indicates that there had been considerable decline during 1971-1981. From 314.30 per thousand in 1971, the birth rate had come down to 179.10 per thousands in 1981. However, during 1981-91 the birth rate

**BIRTH RATE & DEATH RATE IN SALEM DISTRICT**



has considerably increased, from 179.10 per thousand to 207.90 per thousand. The details are given in Table – 3.

### 2.2.4 Death Rate

The death rate in the district had come down considerably during the period between 1961-71 and 1971- 81, from 111.30 per thousand to 60.30 per thousand respectively. However there has been an increase during 1981-91, which is put at 71.83 per thousand. Infant mortality rate has also been declining steadily. From 636.40 per thousand in 1961-71, the rate had come down to 335.60 per thousand in 1981-91. The details are given in the Table-3.

### **2.2.5 Density of Population**

The overall density of population in the district has increased from 398 persons per sq.km in 1981 to 507 persons per sq.km. in 1996. The population density in both urban and rural areas has shown considerable increase. It has increased from in 1981 to 3375 persons per sq. km. in 1996, in urban areas. In rural areas the density in put at in 1996. The details are given in Table – 38.

### **2.2.6. Decadal Growth rate of population**

The population of the district has grown from 16.04 lakhs in 1961 to 43.86 lakhs in 1996. The decadal growth rate indicates that there has been a considerable growth in rural as well as urban population. The decadal population growth rate both for Urban and Rural areas over the past four decades is furnished in Table No. 39 & 40.

### **2.2.7. Population Below Poverty Line (PBPL)**

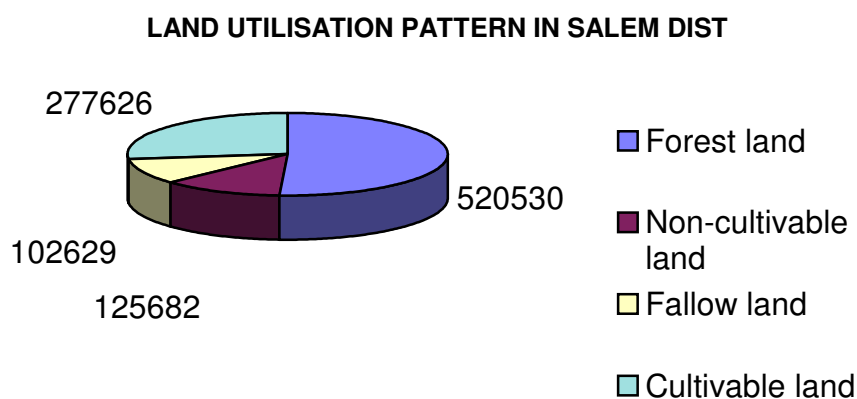
The analysis of Population Below Poverty Line(PBPL) indicate that the percentage is higher in rural areas than in urban areas. While the percentage of PBPL in rural areas works out to 28.06% of total rural population, in urban areas it works out to 30.19% of total urban population. The details are given in Table – 51.

### 3. RESOURCES, AVAILABILITY, USE AND ENVIRONMENTAL STATUS

#### 3.1.0. Land Resources

#### 3.1.1 Agricultural Resources

Out of the total geographical area of 520530 Ha, the net-cropped area accounts for 53.39%. In places where irrigation sources are good, paddy, sugarcane, and turmeric are cultivated. Cash crops such as cotton, groundnut, tapioca, gingelly, tomato are also find significant place in the cultivation. The land utilisation details are



given in table-6.

#### Trend in Production & Productivity of important crops

The total area under cultivation of cereal is placed at 1,10,708 Ha in 95-96. The area under cultivation is fluctuating year to year depending on the rainfall. The average productivity of cereals per Ha. works out to 2.11 Ton in 1995-96. The analysis of productivity of Cereals during 1986-89 to 1995-96 indicate that it is highly fluctuating. While the highest productivity is 4.80 ton/Ha during 1989-90, the lowest was 1.12 ton/Ha during 87-88. The area under cultivation of pulses and oil seeds is put at 48478 Ha and 86935 Ha respectively. The productivity of pulses and oil seeds

is also fluctuating year to year. The fluctuation is attributed to the vagaries nature of rainfall. The details are given in Table –9.

### **3.1.2 Horticulture**

The district finds significant place in the cultivation of Horticulture and plantation crops. The agro climatic conditions are well suited for the horticulture and plantation crops. The total area under Horticulture and plantation crops is put at 32600 Ha. Mango, banana, coconut, tomato, brinjal, are the import crops cultivated in the district. The details are given in the Table-10.

### **3.1.3 Forest Resources**

The area under forest cover is put at 46284.98 Ha, of which 95% is reserve forest category, 4.50% is reserve lands and 0.5% is unclassified forests. The area under encroachment is put at 3057 Ha, which works out to 7% of total forest area. The per capita forest cover is coming down which indicate the decline of forest cover. The details are given in the Table – 14 & 16.

### **3.1.4 Mineral Resources**

Salem district finds very important place in the mineral map of Tamilnadu. Bauxite, Dunite, magnetite, quartz, limestone, soapstone, granite are important minerals available in the district. Mining of minerals causes considerable air pollution. Besides, dumping of 'rejects' and other waste materials also pose environmental problems. The details of availability and exploitation of important minerals are given in the Table-26.

## **3.2.0 Water Resources**

### **3.2.1 Ground Water**

Ground water is the major source of irrigation in the district. The district has maximum number of home wells in Tamilnadu. In many blocks over exploitation of ground water is noticed. Due to this, water table is going down remarkably. Though, watershed programmes and yielding positive result, towards improving water table, it is observed to be not adequate. The details are given in the Table - 28.

### **3.2.2 Rivers**

Cauvery, Thirumanimutharu, Sarapangandhi are the important rivers in the district. Except Cauvery, other rivers flow only during rainy seasons.

### **3.2.3 River Basin & Other Catchment Areas**

Cauvery basin is the major river basin in the district. The total area of Cauvery basin in the district is put at Ha. which works out 81.26% of total basin of the district. The details are given in Table – 28

### **3.2.4 Fisheries**

The annual production of fisheries is put at 428 tons. Main source of fish production is Mettur Dam and PWD tanks. The details are given in Table - 62

### **3.3 Heritage Resources**

Yercaud, which is popularly known as “Poormen’s Ooty” is an import hill station in the district. The growing construction activities in Yercaud affects the ecological balance. Mettur Dam also finds important place as a natural heritage centre. The details are given in Table – 67.

### **3.4 Energy Resources**

The district has one thermal power station and two hydro electric power stations. The total installed capacity is 110 MW. The contribution of non-conventional energy

sources is meeting the power requirements is very limited. The details are given in the Table – 34.

## **4. INFRASTRUCTURE DEVELOPMENT AND ENVIRONMENTAL STATUS**

### **4.1.0 Urbanisation**

#### **4.1.1 Urbanisation Pattern**

The analysis of the trend in Urbanisation Pattern shows that there has been considerable increase in urbanisation. From 28.5% in 1981, the urban population has increase to 32.4% in 1991. The details are given in the Table - 37.

#### **4.1.2 Urban Slum Population**

There has been a steady increase in the percentage of urban slum population.. It has increased from 26.25 % in 1991 to 31.29% in 1996. This causes severe pressure on the provision of civic amenities. The details are given in table-41.

#### **4.1.3 Trend in urbanisation and slums**

The trend in Urbanisation in Slums indicates that the urban population has considerably increased. The percentage of slum population to total population has also increased from 1981 to 1996. The trend in urbanisation in the slum is given in Table No.42.

### **4.2.0 Social Infrastructure**

#### **4.2.1 Occupied Housing Units**

The total number of occupied housing units as on 1991 is estimated at 966700. 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 - 48.

#### **4.2.2 Supply of Drinking Water**

River and ground water are the major source of drinking water in the district. Salem Corporation, Idappadi and Mettur Municipalities and a good number of town panchayats are covered by Cauvery water schemes. Also about 60% of villages are covered by water schemes. Thus round the year water supply is ensured. Out of 3730 villages, 1409 villages are having water problem as on 1995 – 96. The details are given in the table-47.

#### **4.2.3 Domestic Waste Water Generation & Treatment**

The estimated sewage generation is 325.75 MLD among corporation and municipalities and 55.75 MLD and town Panchayats. Except in Salem corporation, water treatment facilities have not been established and hence there is no organized disposal of sewage water. Nature of disposal and quantity through river water is 123.75 MLD in Municipalities and 29.47 MDL in Town Panchayats. The district also lacks underground drainage system except Salem Corporation. The details on domestic wastewater generation, treatment in the district are given in Table - 44.

#### **4.2.4 Municipal Solid Waste Generation & Disposal**

Solid waste generation in urban bodies is increasing day by day. Among urban bodies Salem Corporation accounts for more than 50% of total solid waste generation, followed by municipalities (32.5%). Solid waste disposal poses severe environmental pressure in view of space occupation and air pollution. Scientific disposal so far has not picked up. It is understood that Salem Corporation is taking steps for scientific disposal of solid waste. The statistical details are given in the Table – 45.

#### **4.2.5 Composition of Solid Waste**

The analysis of the composition of solid waste indicate that 65% forms compostable matters, followed by rugs (13%) and bricks and stones (10%). The details are given in Table – 46.

#### **4.2.6 Medical Facilities**

There are 11 Government hospital and 70 Primary Health Centres (PHCs). The total admission capacity of Hospitals in the district is put at 862 beds. There are 1501 registered medical practitioners in the district. All the villages are having access to medical facilities. The details are given in the table-50.

#### **4.3.0 Transport Infrastructure**

Salem district is the finds significant place in the transport vehicle population. Bus facilities are provided for every revenue villages in the district.

#### **4.3.1 Development of Road & Bridges**

The district has Good net work of National Highways and State highways. NH-47 & NH-7 are passing through the district to a distance of -98 Kms. Almost all villages are connected by roads and provided bus facilities. Overall the road infrastructure in the district may be termed as “Very Good”. The statistical information has been provided in the Table – 54.

#### **4.3.2 Transportation Facilities**

There has been significant increase in two, three and four wheeler vehicles in the district over the past 10 years. Growth of vehicle population has affected air quality

particularly in Salem Corporation. This also pose severe traffic problems. The details on the growth of vehicle population are given in Table – 55.

## **5. INDUSTRIAL DEVELOPMENT & ENVIRONMENTAL STATUS**

### **5.1 Number of Industries**

The district has 120 medium and large scale industries 8250 registered small scale industries. Among the industries over 500 is classified under red category and 2000 is put under orange category. Red category industries are mostly chemical, sago processing, mineral pulverising and dyeing units. The details are given in Table-52.

### **5.2 Emission Inventory of Major Industries**

There are 12 industries under large and medium category and about 100 mineral crushing units under SSI category have been identified with highest emission rate in terms of SPM, SO & NO. Tamilnadu Pollution Control Board is taking steps to control the emission rate by encouraging the units to install pollution control equipments. Details of emission inventory of important industries are given in the Table – 53.

### **5.3 Ambient Air quality Status**

There is no data available for ambient air quality status in the district.

### **5.4 Air pollution stressed area**

The area in and around mineral pulverizing and cement factories is identified as air Pollution Stressed area. The details are given in the Table - 56.

### **5.5 Water Quality**

The analysis of characteristics of water in the district shows that the presence of dissolved oxygen, PH, Chloride, etc are above permissible level. The details are given in Table –58.

## **5.6 Discharge of Effluents**

The discharge from major industries such as Chemplast , MALCO, Mettur Thermal Power Station, etc. are let into Cauvery river. The discharge from Sago and dying units in Salem, Attur, Valappadi taluks are also affecting the environment to a great extent. The details are given in Table –59.

## **5.7 Noise Levels**

The data pertaining to noise level in the district it is not available.

## **6. ENVIRONMENT EDUCATIONAL INSTITUTIONS**

### **6.1 Educational & Research Institutions**

The district has a environment office at Salem under Tamilnadu Pollution Control Board (TNPCB). It conducts perodic tests on water, soil and samples collectd from various villages of the district. Apart from this, there is no institution of repute in the district. The details are given in the Table - 68

### **6.2 Environment NGOs**

There are 6 Non Governmental organisation (NGOs) involved in dissemination of environmental related information. However their coverage is mainly concentrated in urban areas. Hence more organisations needs to be encouraged in rural areas.

## 7. OBSERVATIONS AND CONCLUSION

Based on the foregoing analysis the following observations can be made in respect of environmental status of Salem district.

1. The Population Growth Rate in Salem District is declining in the past three decades. Out of total population, 68% live in rural areas and 32% in urban areas. The ratio between rural and urban population remains almost the same level. The birth and death rate has declined considerably.
2. The Literacy level in the district has increased considerably over the years. However, the female literacy is very low compared with the male literacy. Hence, women should be actively involved in non-formal educational programmes.
3. The area under cultivation keep fluctuating year to year due to vagaries nature of the rainfall. The productivity of major agricultural crops is also fluctuating to a great extent year to year. The application of Chemical fertilizer and pesticide are on the increase. Steps need to be taken for the increased usage of bio-fertiliser and bio-pesticides thereby reducing the ecological problems.
4. The area under forest cover is declining . The per capita forest area has come down to 0.037 Ha in 1997 from 0 .048 Ha. in 1981. Diversion of forestland for mining and other purposes is also exists in the district. There is a great potential to increase the forest cover in non-forest wastelands.
5. Over exploitation of ground water is observed throughout the district. Due to this water table is going down at a faster rate. Salem district has more number of bore

wells when compared with the other districts of the State. Though water harvesting programmes

implemented by the Government is giving good result towards improving the ground water table, the momentum is observed to be slow.

6. The effluents discharged out of Sago , dying and Chemical units, pose severe environmental problems. Stringent measures needs to be undertaken to attack to the water pollution by these units.
7. Municipal solid waste pose severe environmental problems. Scientific disposal of municipal waste needs to taken up to save the land.
8. Air pollution is also high in the district particularly in Salem and Sankagiri taluk due to be presence of small scale mineral pulverising units without pollution control measures. Steps needs to be taken to exhort the units to install air pollution control devices.
9. The vehicle population in the district is increasing at a very faster rate. The road and transport infrastructure is well developed in the district. The growth in vechile population affects traffic flow besides causing air pollution.
10. Diversion of lakes for Housing in Salem corporation areas and municipalities affect rain water storage to a great extent thereby paving the way for faster ground water depletion.
11. The almost all the villages are electrified except few villages in Yercaud Taluk. The proportion of electricity consumption in industrial sector is increasing steadily.

