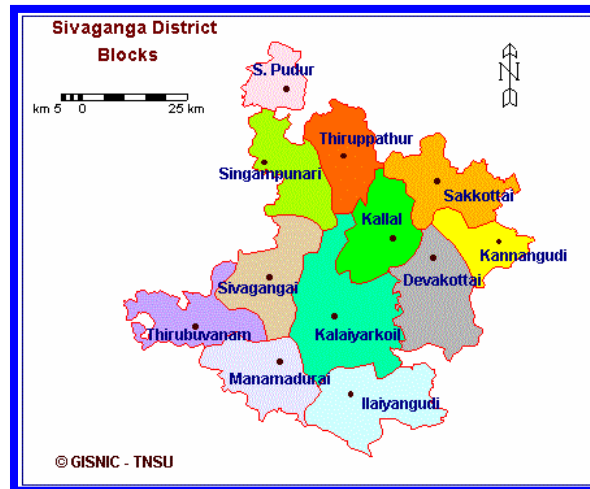


Environment Profile for Sivagangai district

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1

The Context

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

To manage the environment in a holistic manner and to develop the environment friendly sustainable development perspective, it becomes necessary to identify the gaps in the present management of resource bases. Such intervention would be realistic one when data collected from the primary/secondary sources, compiled and presented in the form of district environment profiles, provide a strong database. Thus the **AIMS Research** – a leading consultancy and research organisation has been

engaged in the preparation of such report. This report will form the basis for developing Environmental Management Plans at district levels and this will spell out specific action programs to be implemented by local/state institutions. This report provides a brief account of the manner in which the has been prepared and presented.

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

2

Background

History

The district of Sivagangai was carved out as a separate district in the year 1985 as a result of trifurcation of Ramanathapuram district of Tamilnadu State. According to the said notification, six taluks viz. Tiruppattur, Karaikudi, Devakottai, Sivagangai, Manamadurai and Ilaiyankudi were separated from Ramanathapuram district and formed a new district. Of these six taluks, the Manamadurai and Ilaiyankudi were earlier sub-taluks which upgraded into full-fledged taluks in the year 1981. At the time of creation of this district, it was named as Pasumpon Muthuramalingam, but it changed Pasumpon Thevar Thirumagan. Again, this district name was changed as Sivagangai recently. The district is comprised of six taluks, the name of which is mentioned above at present days also. As stated earlier, this district was a part of undivided Ramanathapuram, its historical past is one and the same as of its parent district.

Ramanathapuram district which was originally had an area of 12606 Sq. Km has been trifurcated into Ramanathapuram, Virudhunagar and Sivagangai districts.

2.1 Geographical Location of the district

The district of Sivagangai, extending over an area of 4468.11 Sq. Km, is situated in the southeastern portion of the state. It is bounded on the north by a small portion of Tiruchirappalli and Pudukottai districts, on the east by the district of Pudukottai and Ramanathapuram, on the south by the district of Ramanathapuram & Virudhunagar and on the west by Madurai district. The

administrative headquarters is located at Sivagangai town. The district lies between 9⁰ 61' and 10⁰ 42' north latitude and 78⁰ 12' and 79⁰ 00' east longitude. The details of the name of the taluks with the district and area have shown in the following Table:

S.No.	Name of Taluks	Area in Sq. Km.
1	Sivagangai	1007.42
2	Manamadurai	658.52
3	Ilayankudi	449.01
4	Devakottai	428.62
5	Karaikudi	1191.93
6	Thiruppathur	732.61
District Total		4468.11

2.2 Administrative arrangement in the district

The Sivagangai district comprises of Six taluks namely, 1. Sivagangai, 2. Manamadurai, 3. Ilayankudi, 4. Devakottai, 5. Karaikudi and 6. Thirupathur. Ilayankudi taluk constitutes of 56 villages in the highest number when compared to other taluks. 12 blocks and 487 Villages. As regards to the hierarchy of administrative arrangement, there are 3 municipalities, 11 town panchayats and 437 village panchayats in the district. The details regarding the number of blocks, villages, village panchayats, town panchayats and municipalities with regard to each taluk are given in Table No: 1.

2.3 Meteorological Information

Generally, the region has a spell of hot climate.

2.3.1 Temperature

Temperature is low during the month of January and the lowest mean daily temperature is 19.8⁰C. The hottest month in the district is July during which period the maximum temperature is 33.83⁰C.

2.3.2 Humidity

Mean humidity varies from 65% in July to 77% in November. The monthly average rainfall in the district was 75.73 mm. The months of October, November and December receive a rainfall that is more than the 3 annual average rainfall. The average number of rainy days, mean maximum

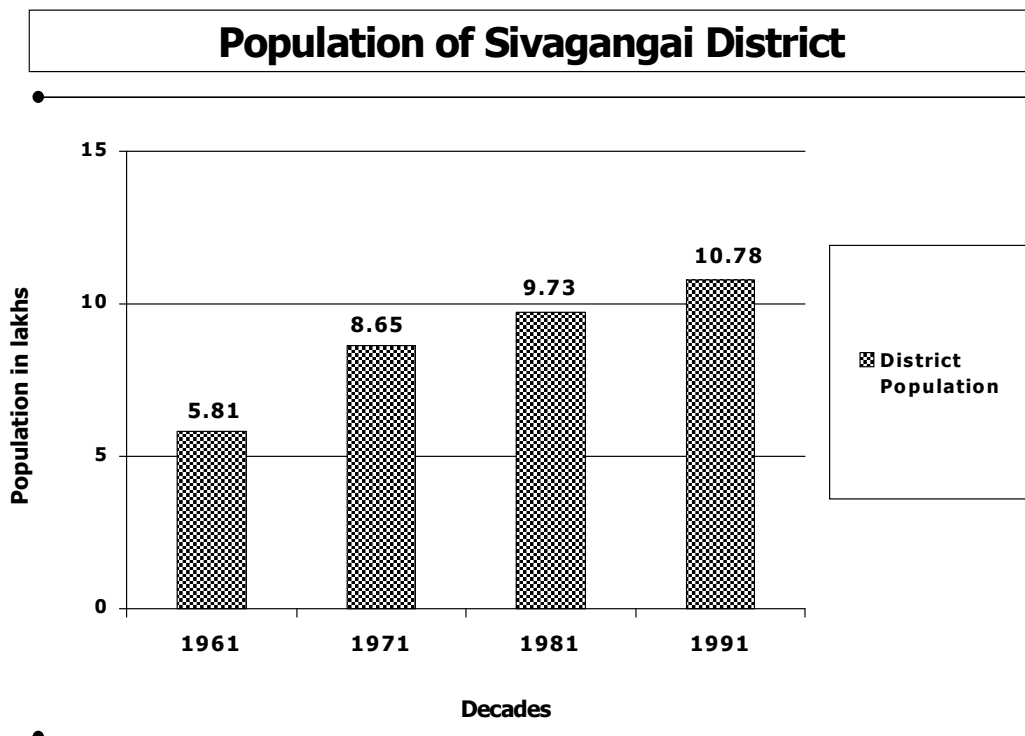
temperature, mean minimum temperature and mean relative humidity for the period of 1991-96 are given in Table No: 2.

2.4 Demographic Details

The population had increased by 24.62% during the period 1971-1991. The growth of population over the past three decades and the essential characteristics of the population for the past four decades in terms of birth rate, death rate, infant mortality rate and literacy level are given in Table Nos:3,4, and 5.

2.4.1 Population

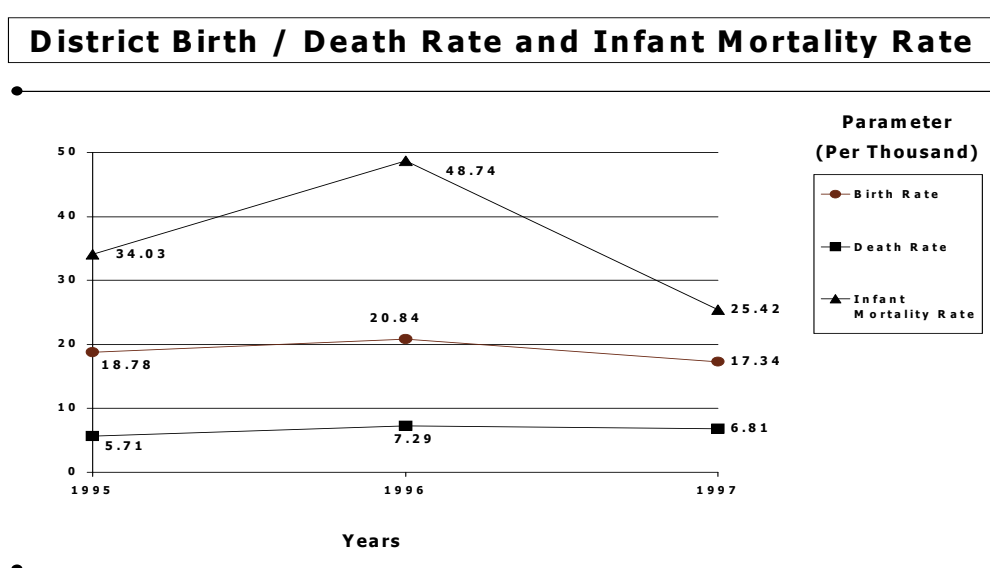
The population of Sivagangai district has grown from 581594 in 1961 to 1078190 in 1991. The growth rate indicates that there has been a significant increase during the 1981-91 decade with the average growth rate being 9.78% during this decade. According to the 1991 census, Sivagangai is the most



thickly populated taluk and Ilaiyankudi is the least populated taluk in the district. The details of population growth along with the growth rate- taluk wise are given in Table No: 3.

2.4.2 Trend in Birth/Death rate and Infant mortality rate

Birth rate, death rate and infant mortality rate have3 reduced significantly from 18.78 in 1995 to 17.34 in 1997, 5.71 in 1995 to 6.81 in 1997

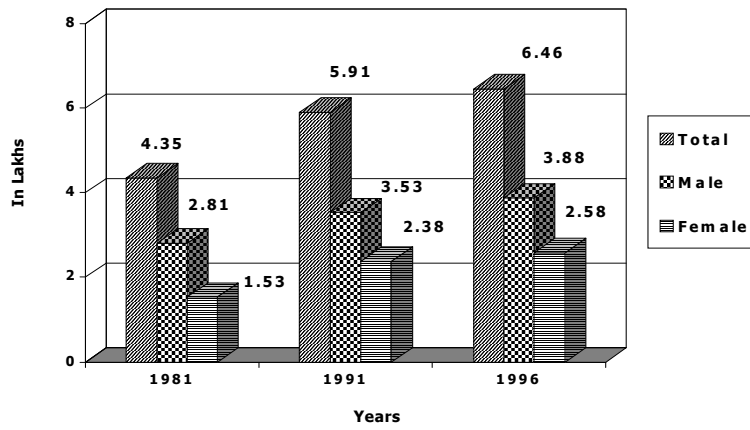


and 34.03 in 1995 to 25.42 in 1997 respectively. The details regarding these are given in Table No.4.

2.4.3 Literacy level among the population

The literacy level of Sivagangai district according to figures available for the year 1996 is 66.79% with male literacy level being more than the female literacy level. It is also observed while the male literacy level has grown steadily from 59.17% in 1981 to 66.79% in 1996, there has been a significant increase of female literacy level from 30.88% in 1981 to 44.34% in 1996. The information on literacy level of the district is given in Table No: 5.

Literate Population of Sivagangai District



3

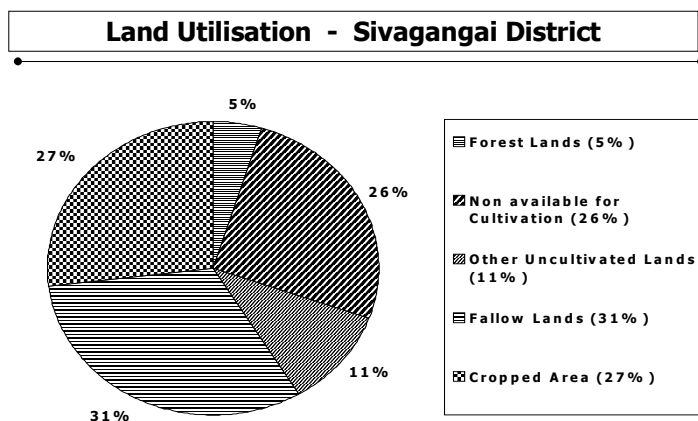
Resources - availability, use and Environmental status

3.1 Land resources

This district is predominately drought prone district. Insufficient rain, poor soil quality are the basic causative factors for the prevailing drought. Resources of the district, their availability, use and environmental status is discussed in the following chapters.

3.1.1 Agriculture and Horticulture

Large portions of Thiruppathur and Sivagangai taluks especially the sedimentary rock area are covered by a capping of hard red laterite. This is a poor soil and the large tracts of thorny jungles and is not suited for cultivation. The area comprising Thiruppathur taluk and the northern portions of the Sivagangai can be classified under the red soil region and is known as Chettinad. Some portions of Sivagangai are plains, and has black cotton soil or regar locally known as `Karisal'. This soil is mostly used for growing cotton and cultivation of dry crops. The familiar landscape is of palms and acacias. Except Piranmalai in Thiruppathur taluk, no significant hills are found elsewhere in this district.



Paddy is the important food crop of the district. It is grown on wet lands irrigated by rivers, channels, tanks and wells; Cumbu, Cholan, Ragi, Varagu, Samai and Kudiravali are the millets produced in the district. Of the commercial crop of the district, the most important is cotton, which is grown in the area having black cotton soil.

i. Land utilisation

The total geographical area of the district was 4468.11 Sq. Km in 1995-96. Cropped area accounts for about 26.91% of the total area. Forestlands cover about 4.82% of the total land. A significant portion (25.83%) of the land falls under the category of 'non available for cultivation' and 31.65% under 'fallow lands'. About 10.79% fall under the category of other uncultivated land. The land utilisation pattern in Sivagangai district (Block-wise) is given in Table No: 6.

ii. Trend in production and productivity of important crops

Cereals, pulses and oil seeds are observed that are the three important crops produced in the district. The productivity pattern indicates that the productivity of cereals and oil seeds has increased and of pulses has fluctuations over five years. The area under production for cereals, pulses and oil seeds has increased in the years 1992-93. The details on the productivity performance of the district in relation to the above important crops for the past five years are given in Table No: 7.

iii. Horticultural and plantation crops

There were fruit crops with a yield of 30880 tonnes, vegetable crops of 8020 tonnes and plantation crops of 10 tonnes cultivated in 1603 ha. 100 ha. and 29 ha. respectively in the year 1996-97. The details pertaining the crops are given in Table No:8.

iv. Consumption of Fertilisers and Pesticides

About 6522 metric tonnes of chemical fertilisers were used in 1996-97, out of which more than 45% constitute the nitrogenous fertilisers. There has

also been an intensive use of bio-fertilisers in the district, followed by pesticides in 1997-98. Moreover, 675 tones of urea were used in the district. The details on the total of consumption with block wise details of chemical fertilisers, urea, bio-fertilisers and dust and liquid pesticides are given in Table No:9.

v. Trend in consumption of Fertilisers and Pesticides

Consumption of fertilisers has increased every year, though it is not in proportionate to the total quality of production of crops. Comparison is made between Table 7 and Table 10 and figures for the year 1993-94 and 1994-95 is made, the increase in production is not proportionate to the increase in the utilisation of chemical fertilisers. The usage of chemical fertilisers, bio-fertilisers and dust and liquid pesticides was 7197 tonnes, 99240 pockets and 8180 kg and 949 litres respectively in the years 1995-96. The decrease in percentage of the bio-fertilisers and pesticides in the years 1994-96. The details with regard to the trends in the consumption of fertilisers and pesticides over the past 3 years are given in Table 10.

vi. Soil Types

Black soil and Red loam are the predominant soil types in this district accounting for 47.04% and 35.58% followed by lateritic soil for 19.39%. The details of other types of soils are given in Table No: 11.

vii. Soil Problems

About 0.278% suffers from salinity/alkalinity and 0.025% is degraded non-forestland. The details in this regard are given in Table No: 12.

viii. Status of Soil and Water Conservation Programs

Construction of new wells for irrigation was done in all the blocks of the district. There have been no check dams / stop dams and soil conservation works of cropping area. Sakkottai block was at the maximum of 470 new wells and Ilayankudi block was at minimum of 20. The details are given in Table No: 13.

Animal husbandry: Cattle, buffaloes, sheep, goats are the main livestock found in this district apart from poultry birds. There are many veterinary hospitals, dispensaries and sub-centers within the district. One district livestock farm is located at Chettinad where life breeds of Tharparkar, Jersey crosses and Murrah are maintained.

Trade, commerce and export: The chief wholesale trading centre in the district is Karaikudi where trading in pulses and food-grains are done. Tiruppattur is the main marketing centre. The following table provides town-wise break-up of most important commodities manufactured, imported and exported in and from the towns of this district.

3.1.2 Forest resources

i. Forest area

There are 88 forest areas in Sivagangai district constituting a total area of 17611.68 hectares. 60 areas fall under the Reserve forest category with 10680.52 hectares and 28 under Reserve land category with 6931.16 hectares. The details regarding the classification of forest area with their extent are given in Table No: 14.

ii. Green Cover Classification of Forest

The forest under Green Cover Classification was 22149 hectares. Dense forest and sparse forest areas are 742 hectare and 538 hectare respectively. There is no land and degraded forest area covering this region (Table No.14b).

iii. Trend in per capita forest area

There have been 17611.68 ha. of forest area in the year 1961-96. There was no change in the percapita forest area from 1961 to 1996, but there was a decrease in percapita forest area from 1961 to 1996. The details are given in Table No: 15.

iv. Man made forest plantations

The man made forest plantations have been restricted to the existing forest areas in Sivagangai district. About 4625.72 hectares of man made forest

area are available in the district. Casuarina and Sandal were in 1673.84 ha. and 1671.7 ha. respectively. Cashew and eucalyptus were in 805.25 ha. 425.95 ha. respectively followed by teak (40.71 ha.) and red sanders [8.3 ha.]. These are the man made forest plantations in the district. Necessary details are given in Table No.16.

v. Details of villages abutting forest area

Abutting forest areas are located in Tiruppathur and Sivagangai taluks in the district. Information about revenue abutting forest areas is not available (Refer Table No.17).

Vi. Tribal villages

There are no designated tribal villages in this district. Table No.18.

Vii. Forestry area diverted for non forestry purposes

There have been 3 cases of forest areas (38 hectare) are diverted to non-forestry purposes of irrigation projects in Sivagangai district (Refer Table No.19).

viii. Trends in production of forest produce

The reserve forest has various trees, which show a declined trend in the production of forest produce in Sivagangai district. Industrial wood and fuel wood is the produces of the reserve forest in the district. Trend in production of forest produce is decreased from 1992-1995 period (Refer Table No: 20).

ix. Conservation of biological resources, Wild like census, Rare/Threatened species of flora and fauna

Sanctuary including a bird sanctuary is the only protected area in 38 ha. in the district. There have been no wild life census and no conscious effort by the district administration to conserve the rare and threatened species of flora and fauna in the district. Necessary information is furnished in Table Nos. 21, 22 & 23.

3.1.3 Mineral resources

The minerals graphite of 303.46 tonnes, quartz of 125.62 tonnes, Brick-earth of 70.25 ha, Gravel of 10 ha, Rough stone of one ha and Sand of 204.86

ha have been the recoverable resources available in the district Refer Table No.24.

3.1.4 Water Resources

Virasuti River or Manimutta Nadi, and Pambar run through the Chettinad area, flowing from northwest to southeast. The river Vaigai and Thenar also passes through the district.

i. Catchment area of river basins

Viruliyar, Manimuthar and Sangari are the catchment areas of river basins, which have the place of origins of Murukkanmai, Thirupathur and Alagarkottai in the district. Area of the basin within the district rivers' length has shown in the Table No:25.

ii. Basin wise status of the Ground Water Availability

Net ground water of 8036 (ha.m), ground water recharge of 64252 (ha.m) and balanced ground water available for development of 56016 (ha.m) are the availability status of ground water in the district. (Refer Table No:26).

iii. Availability water spread area

There have been 1210 system tanks and 2003 panchayats tanks maintained by Public Works Department in Sivagangai district. There were no seasonal/rainfed tanks available in the district. Available water spread area in the district with block-wise details is given in Table No: 27.

iv. Details of Dams and Reservoirs

No information was available about dams/reservoirs in the district (Refer Table No: 28).

v. Irrigation by different sources

The total cropped area is 120237 hectares and the percentage of irrigated area to cropped area is 61.73. The gross areas irrigated by tanks and wells are 64983 hectares and 9236 hectares respectively. Tiruppathur block has at maximum of 6613 ha. Irrigated by tanks and Thirupathur has at maximum of 700 ha. irrigated by wells. The details on irrigated area by different sources are given in Table No: 29.

vi. Incidence of drought, flood and cyclone

There are 6 taluks and 12 blocks in the years 1985-96 in the district. It has been ascertained from the available information, 6 taluks of 12 blocks were affected by drought in the period of 1990-97, that only 2 taluks and three blocks were affected by flood in the period of 1995-96. There were no informations on cyclone in the district during the period of 1990-97. The details are given in Table No: 30.

3.1.5 Fisheries production

Fishing depends mainly on rainfed ponds and (Kanmays) yeris or lakes. Therefore fishing has not grown considerably. There have been no coastal line, inland fresh water area, estuaries & brackish water area and marine fishing. The fish production fluctuates both in quantity and values. The details are given in Table 31.

i. General fish seed production

There have been no fish seed production of standard fry and coastal fish production. The inland fish production has fluctuations between 1991 and 1996 in the district. The details on fish and fish seed production are given in Table No: 32.

3.1.6 Heritage resources

i. Protected and conserved monuments

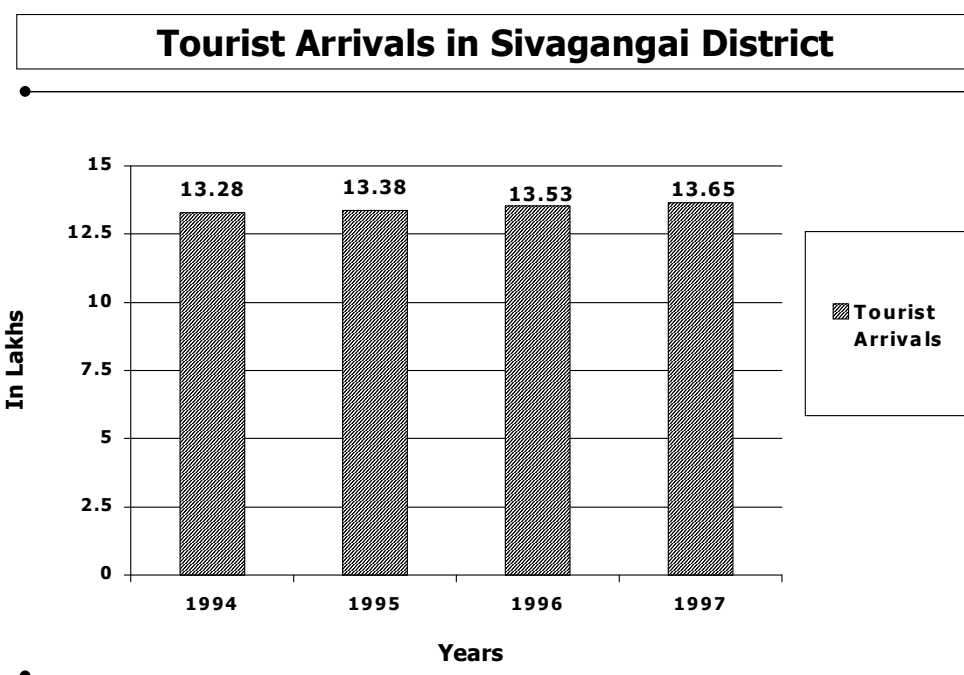
One village of Sivagangai taluk and another one village in Karaikudi taluk have a monument namely Aranmanai Siruvayal maintained by the Department of Archaeology. The details are given in Table No:33.

ii. Places of tourist attraction

Rameswaram and Srivilliputtur are the places of tourist importance, which attract large number of persons from within the district and outside. These two places are nearby to this district and are considered equally important for the people of Sivagangai district as well. The Gandhamadhana Parvatham, Dhanushkoti, Coral reef, Kurusadai Island and Mandapam are other

nearby places famous for tourists.

There are seven tourist places located at 12 villages/towns in the historical / cultural / natural heritage area. The special significance of the area are Palace, Hindu temples, Sanctuary, Kamber samathi, burial of Pari vallal



and burial of Maruthu brothers. There have been available tourists visitors of Ramanathapuram and Sivagangai composite district in the years 1994-97. (Refer Table No: 34 & 35).

3.1.7 Energy resources

i. Installed power projects

There have been no installed power projects in the district (Refer Table No:36).

ii. Consumption of electricity

There were 173372 electrical connections with a total consumption of 2922118 kW/h as on 1995-96. Domestic consumption has the maximum accounting for 33.94% of the total consumption, followed by the industrial

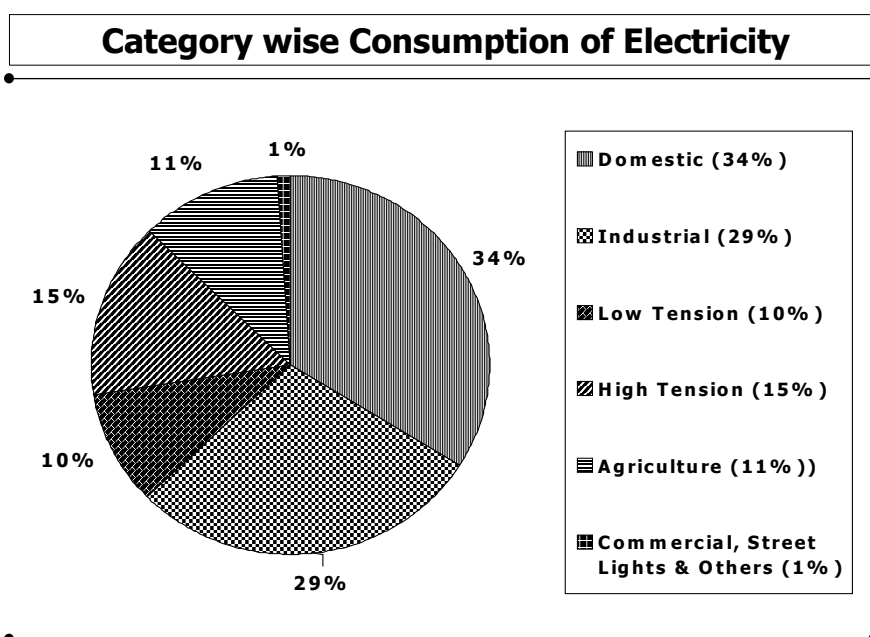
consumption 28.74%. The category wise consumption of electricity is given in Table No: 37.

iii. Electrification of Villages

Sivagangai district has achieved 94.25% in 1986, 97.95% in 1991 and 100% electrification in 1996. All 487 villages in the district are electrified. The electrification of the energised pumps was 8763 in the year 1996 (Refer Table No: 38).

iv. Non conventional & renewable energy sources utilisation

Bio-gas and improved chullah are the methods of non-conventional energy utilised in the district. The biogas plants are however able to generate around 15.38% of their capacity. The details are given in table no 39.



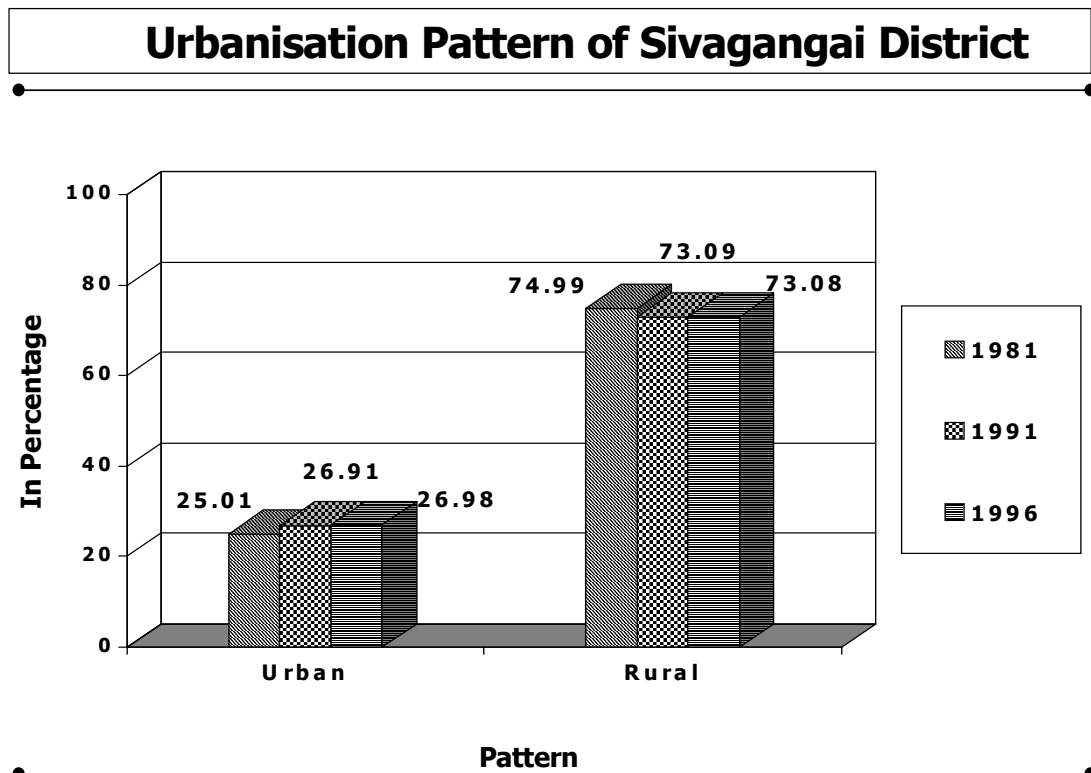
4

Infrastructure

4.1 Urbanisation

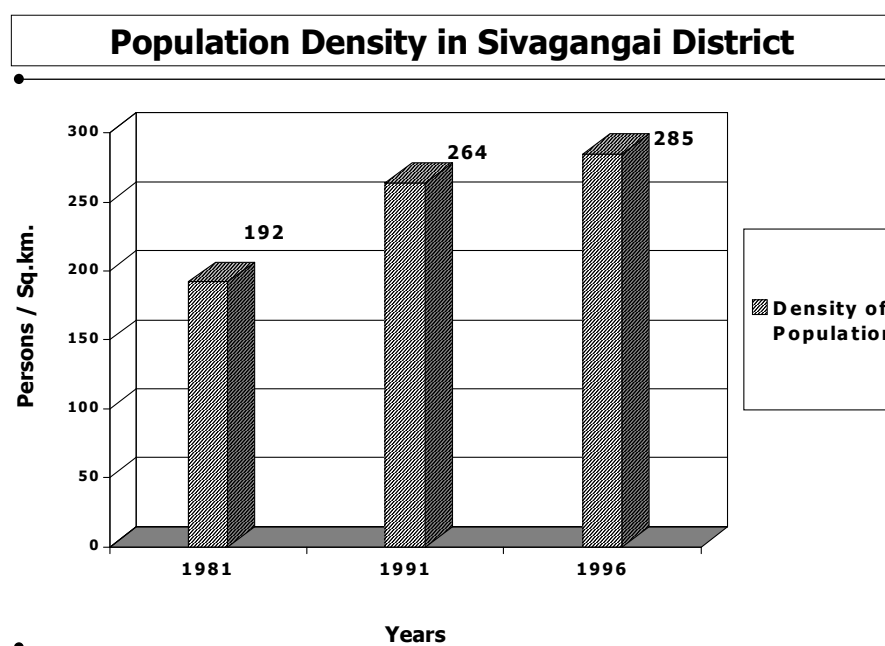
4.1.1 Urbanisation pattern

The proportion of urban population to total population has increased during the years 1981-96 from 25.01% to 26.98% and has increased at about 2% during 1991-96 period. Among the urban areas, Karaikudi municipality accounts for a greater share of urban population when compared to the other urban areas. The proportion of rural population to total population has decreased from 74.99% to 73.02% during the years 1981-1996. The urbanisation pattern of the district is given in Table No: 40.



4.1.2 Density of population

The overall density of population has increased from 192 persons / sq.km. in 1981 to 285 persons / sq.km. in 1996. The density in urban area has increased from 1413 persons/sq.km. in 1981 to 1732 persons/sq.km. in 1996 and the density of rural area has decreased from 149 persons/sq.km. in 1981 to 218 persons/sq./km. in 1996. The details on density are given in Table No: 41.



4.1.3 Decadal growth rate in urban centres

The decadal growth rates in three municipalities have increased in the years 1961 to 1996. The population of the district has grown from 1.67 lakhs in 1961 to 3.14 lakhs in 1996. The decadal growth rate indicates that there is a considerable increase in growth over the previous decade in the municipalities and town panchayats of the district. Karaikudi municipality and Thirupathur town panchayat have registered the maximum growth rate. The details of decadal growth rate are given in Table No: 42. The decennial growth rate for both urban and rural population over the past few decades, 1981-91 has increased (Refer Table No:43).

4.1.4 Urban slum population

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

4.1.5 Trend in urbanisation and slums

The urban population has increased from 25.01% in 1981 to 26.98% in 1996 period. The identified slum population of Sivagangai district was not available. The details are given in Table No:45.

4.2 Infrastructure services and environmental status

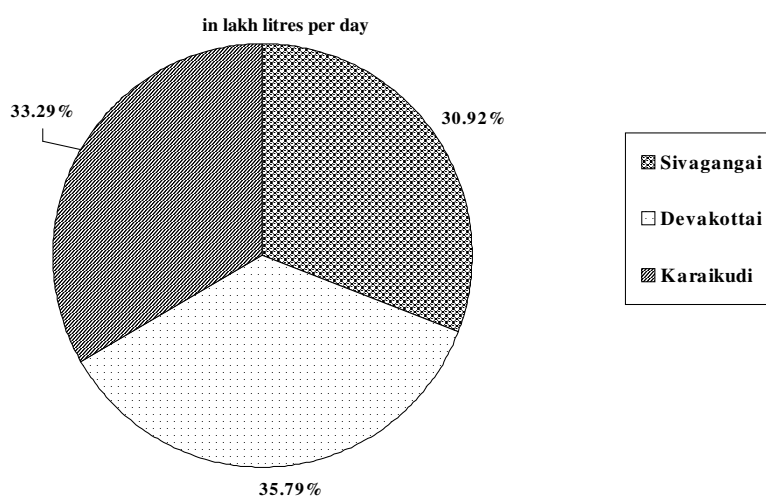
4.2.1 Occupied housing units

The total occupied housing units of urban and rural areas are 60975 and 182530 respectively in the year 1991. Piped water supply both inside and outside of urban areas are 29670 and 31305 respectively and in rural areas are 9495 and 178035 respectively in the same period. Out of 205465, 39040 households are lack of toilet facilities of any type within the houses, there by learning the majority of the population to depend on public conveniences or open air defecation (Refer Table No:46).

4.2.2 Urban services

Ground water is the major source for protected water supply both in municipalities and in town panchayats. The percapita water supply for municipalities and town panchayats is 55 LPCD and 57 LPCD respectively. The municipality of Devakottai has the highest consumption of 30.10 lakhs litres, while the town panchayat of Manamadurai has 15.10 lakhs litres. The municipalities have one at the maximum and the town panchayats, have 16 at the maximum of percentages of population uncovered for water supply. Details on water supply services are given in Table No: 47.

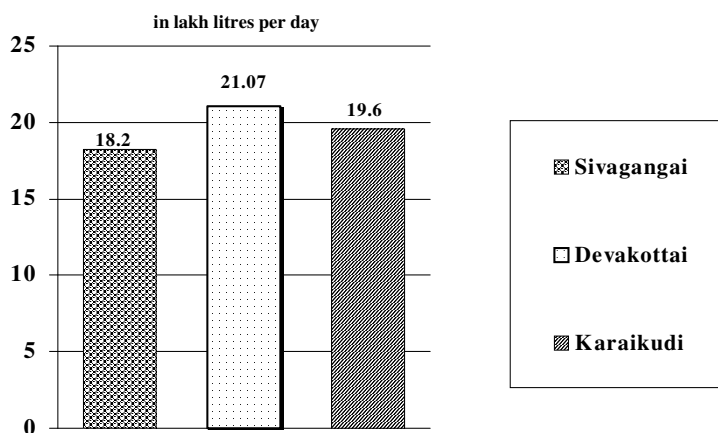
Water supply in Sivagangai district - major towns



4.2.3 Domestic waste water generation and treatment

The estimated sewage generation is 58.87 lakhs litres among municipalities and 137.84 lakhs litres among town panchayats. The district does not have any organised disposal of sewage. Quantity of sewage disposed through river is 21.07 lakhs litres in municipalities and 58.31 lakhs litres in town panchayats and disposal through land is 37.80 lakhs litres in municipalities and 41.73 lakhs litres in town panchayats in the district. The town panchayats and the municipalities have complete open drainage system. The details on domestic wastewater generation and treatment in the district are given in Table No: 48.

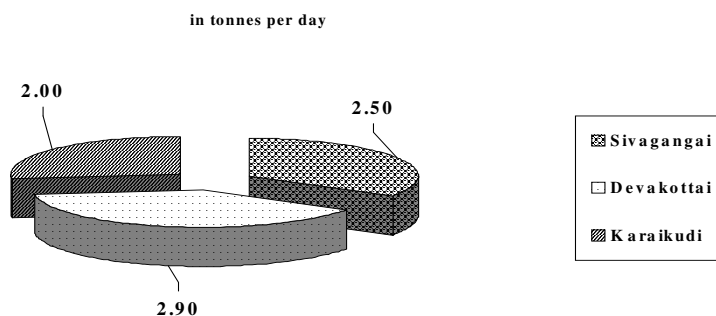
Sewerage generation in Sivagangai district - major towns



4.2.4 Municipal solid waste generation

The solid waste generation of municipalities and town panchayats are 7.4 tonnes and 12.03 tonnes respectively. The solid waste collection in municipalities and town panchayats is claimed to be 100% as of 1995-96, with

Solid waste generation and collection in Sivagangai district - major towns



a manpower of 534 for the solid waste management. The availability of compost yard in municipalities is two. (Refer Table No:49).

4.2.5 Composition of solid waste

It was observed that 61% of the solid waste are compostable on wet basis and the remaining of ash & fine earth, rags, wood matter, rubber leather, etc., are not compostable in the district. (Refer Table No:50).

4.2.6 Coverage of problem villages

It has been identified that about 5 villages out of the total 487 villages in the district and had been problems with regard to supply of drinking water. Manamadurai block has at maximum villages (4) in problem. 5 problem villages have been covered during the VII Five-Year Plan (1987-92). Necessary details are given in Table 51.

4.2.7 Reported cases of water borne diseases

Medical: Medical facility of one type or other is available in 163 villages, which constitute 33.54 percent of the total number inhabited villages. The following table provides town-wise break-up of medical institutions available in the towns along with bed facility.

Town Name	Medical institutions	No. of Beds
Devakottai	Hospitals (2)	55
Ilaiyankudi	Hospital (1)	8
	Dispensary (1)	-
Karaikkudi	Hospitals (5)	142
Urban	Health Centre (1)	6
Agglomeration	Dispensaries (2)	6
Manamadurai	Dispensary (1)	6
Singampunari	Hospital (1)	32
Sivagangai	Hospitals (2)	66
	Others (1)	-
Tiruppattur	Hospital (1)	38
Tiruppuvanam	Hospital (1)	8

Gastro-enteritis, dysentery, cholera, jaundice and meningitis cases were reported from the year 1995-96 and the deaths of jaundice cases were also reported in the year 1995-96 (Refer Table No:52).

4.2.8 Facilities under Indian system of medicines

Allopathic is the most commonly practised system of medicine in the district and facilities for medical treatments are also available. In addition there are few Ayurved, Unani medicine, Sidda, and Homeopathy hospital available. Information on hospitals, beds, dispensaries and admission capacity is given in Table No: 53.

4.2.9 Population below poverty line

The below poverty line of 80277 families in during the year 1998 is identified in Sivagangai district. The details are given in the Table No.54.

4.3 Transportation

The metre gauge section of the Southern Railway serves the district. The important railway junctions in the district are Karaikudi, Virudhunagar and Manamadurai. The main line from Chennai Egmore to Rameswaram runs through the district linking Karaikudi and Manamadurai. Important commercial centres such as Madurai and Virudhunagar are connected to Manamadurai junction by metre gauge lines. Road transport are equally good in this district and connect all the important towns with each other.

4.3.1 Development of roads, bridges

The district has 44 Km of National highway, 65 Km of State highways, 372.84 Km of major district roads, 1323.25 Km of other district roads and 253 Km of panchayat roads in 1996. Over and above, there are 35 major bridge and 4490 minor bridges and culverts in the district in 1996. Relevant information is provided in Table No: 55.

4.3.2 Growth of vehicle population

The population of Two, three and four wheeler vehicles in the year 1996 were 3788, 3092 and 659 respectively. Information was not available for the years 1986-1991 (Refer Table No:56).

4.4 Industrial development and environmental status

The district is considered as an industrially backward area. The State Government is giving incentives to the entrepreneurs for setting up industries. Mat weaving is followed in the vicinity of Ilaiyankudi. Metal articles from copper, brass and aluminium for domestic use are made in Karaikudi. Coconut coir fibre making are followed in the district, the important centre being Singampunari (Tiruppattur taluk) and Devakottai.

4.4.1 Number of Industries

There have been 60 Red Category, 110 Orange Category and 17 Green Category Industries in 1999 which are classified, based on the nature of hazardness by TNPCB. Red category industries are mostly chemicals, textiles and pharmaceutical industries. The details on the number of industries are given in Table No:57.

4.4.2 Emission inventory of major industries

TANFAC has been identified with the highest emission rate in terms of SPM [$302 \mu\text{g}/\text{m}^3$], SO [$302 \mu\text{g}/\text{m}^3$] while the emission rates of CO and HC are not available from the authorities. However all the 2 industries with the 17 units of the district are found to be having the emission rates under the set standards (Refer Table No:58).

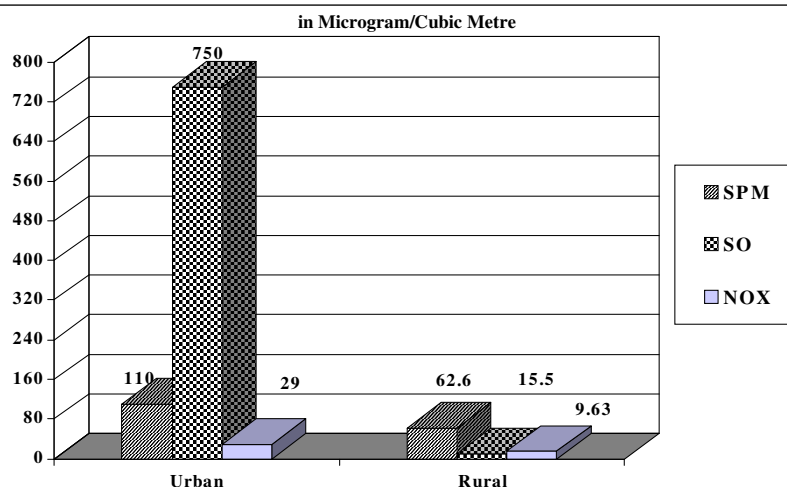
4.4.3 Air pollution stressed area

There is no Air pollution stressed area in the district (Refer Table No:59).

4.4.4 Ambient air quality status

62.6 of SPM, 9.63 of SO and 15.5 of NOX are the average ambient air quality status identified in the rural village of Padamathur. The average pollutants of 110 of SPM, 750 of SO and 29 of NOX are identified in the industrial areas in the district (Refer Table No.60).

Ambient air quality in Sivagangai District



4.4.5 Water quality

No Information was available for water quality in Sivagangai district (Refer Table No:61).

4.4.6 Discharge of Industrial effluents

There has been no discharge of industrial effluents in river basin/other water bodies in Sivagangai district (Refer Table No:62).

4.4.7 Noise levels

The estimates on noise levels in industrial, commercial, residential and silent zones have been under set standards. Industrial area of Kovillur and Karaikudi are accounting of the noise level is 63-93 dBA in the day-time and residential area of Padmathur village is 43.18 dBA in day-time and 34.79 dBA in night-time are identified (Refer Table No:61).

5

Environmental Institutions

5.1 Environmental education and Research institutions

Wasteland development in the district has large potentials. But the growth of mining industries in the district has largely damaged the available land. Land reclamation and development has to go hand to hand. Moreover, migration of the labour force towards northern part of the State, insufficient rain is few constraints in wasteland development.

There has been one environmental education and research institution in the district, undertaken the activities of Education, Pollution control of Research and Environmental awareness. (Refer Table No:64).

5.2 Environmental NGOs

There have been two NGOs dealing with environmental related issues in the district. The operating areas of these NGOs are Manamadurai and Sivagangai, undertaking Environmental Education and awareness (Refer Table No: 70).

6

Observations and suggestions

On the basis of identified key environmental problems in the district, environmental improvement measures are suitably suggested. The key observations of the environmental profile of Sivagangai district is briefed below:

Demographic details

During the period of 1981-91, there has been an increase in the growth rate of population at about 0.98% per annum.

It is interesting and encouraging to note that the percentage of female literacy level has significantly increased during the past 15 years.

Land resources

26.91% of the land area in Sivagangai district is utilised for cultivation. This observation indicates that good efforts must be made to motivate the concerned personnel to utilise the land resource. Hence 8.94% of the land area remain as cultivatable wasteland.

The utilisation of chemical fertilisers and bio-fertilisers in the district is high.

District welfare activities like new constructions of wells and check dams and conservation works for cropping area for each block are promising.

Forest Resources

The forest area in Sivagangai district is about only 4.82%. Apart from Reserve forests, Reserve lands and Unclassified forests, there are 22149 ha. of plantations under green cover classification. The man made forest plantations have been restricted to the existing forest area in the district.

Conservation of biological resources is to be strengthened by the district administration. Bird sanctuary is protected in the district.

The main sources of irrigation of the district happen to be wells. Only 61.73% of the total cropped areas are irrigated by these sources.

Tourism

There have been 7 tourist places in the district.

The fish production both in quantity and value has increased for the past 6 years. The inland fish production and seed production have fluctuations.

Urbanisation

There has been a marginal improvement in the power generation sector. The demand for electricity has not met, owing to the steady population growth and higher rate of consumption. Non conventional and renewable energy source of utilisation is not very much identified. An action plan for the improvement of biogas plant would yield an environment sensitive solution. Urbanisation process in Sivagangai district has been taking place at a higher rate.

Urban services like drinking water and solid waste management in the district is not promising.

Transportation

There has been an increase in the use of two, three and four wheeler vehicles in the district. This vehicle emits suspended air particles.

Industrial development

The Red, Orange and Green categories of hazardous industries are identified by TNPCB. Most of the red category industries are very hazardous in nature.

Environment institutions

There has been one environmental research institute in the district of Sivagangai. Plan may be drawn to set up environmental education institutes in all major towns, adopting the model of other districts, which have environmental education institutions.

Environmental NGOs may be involved in protecting environmental of the district.

Participative planning for environment management, Creation of a Management Information System, Environment Management Training to officers of the stake-holding government departments would go a long way in the environment planning efforts of the **Directorate of Environment, Government of Tamilnadu** in fulfilling its corporate objectives.
