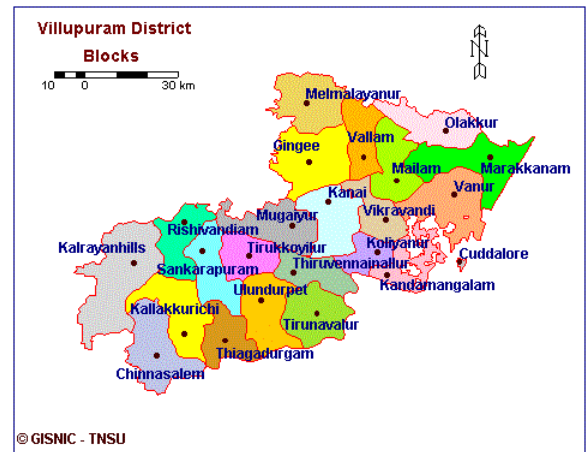
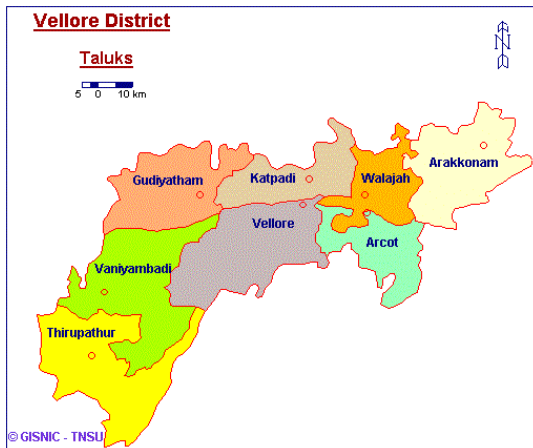


Environment Profile for Villupuram district



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 of sustainable development in all sectors. Effective resources management calls for an in-depth assessment of their existing conditions and trends. A cursory evaluation of the present status of our environment and natural resources including land, soil, water and air, and the life support systems like forests, rivers and coastal areas indicates that the health of such systems is threatened by serious levels of degradation. Though different Government departments / Agencies are responsible for management of resources under their jurisdiction, information relating to the individual sector lies fragmented.

To manage the environment in a holistic manner and to develop the environment friendly sustainable development perspective, it becomes necessary to identify the gaps in the present management of resource bases. Such intervention would be realistic only when the data collected from the primary/secondary sources is compiled and presented in the form of district

environment profiles to provide a strong database. Thus **AIMS Research (A Joint Venture of TCW/ICICI, IDBI and ICICI)** – a leading consultancy and research organisation, has been engaged in the preparation of such a report. This report would form the basis for developing Environmental Management Plans at district levels and this would spell out specific action programs to be implemented by local / state institutions. This report provides a brief account of the manner in which **the District Environment Profile for Villupuram district** has been prepared and presented.

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

2

Background

2.1 Geographical Location of the District

The district of Villupuram, extending over an area of 8,204.63 sq.km, is situated in the south-eastern portion of the state of Tamilnadu. It is bounded on the north by Thiruvannamalai and Kanchipuram districts, on the east by the Bay of Bengal, on the south by the district of Cuddalore and on the west by Salem and a part of Dharmapuri districts. The administrative headquarters is located at Villupuram town. The district lies between 11⁰ 59' and 12⁰ 48' north latitude and 78⁰ 60' and 79⁰ to 80⁰ east longitude. The details of the names of the taluks and area are shown in the following Table:

S.No.	Name of Taluks	Area in Sq. Km.
1	Sankarapuram	1414.21
2	Gingee	1151.84
3	Kallakurichi	1132.05
4	Tindivanam	1121.51
5	Villupuram	1013.34
6	Thirukoilur	839.30
7	Ulundurpet	819.61
8	Vanur	712.77
District Total		8,204.63

2.2 Administrative arrangement in the district

Villupuram district comprises 8 taluks, 22 blocks and 1508 Villages. As regards to the hierarchy of administrative arrangement, there are 2 municipalities, 16 town panchayats and 1183 village panchayats in the district. The details regarding the number of blocks, villages, village panchayats, town panchayats and municipalities, taluk wise are given in Table No: 1.

2.3 Meteorological information

The monthly average rainfall in the district was 102.13 mm during

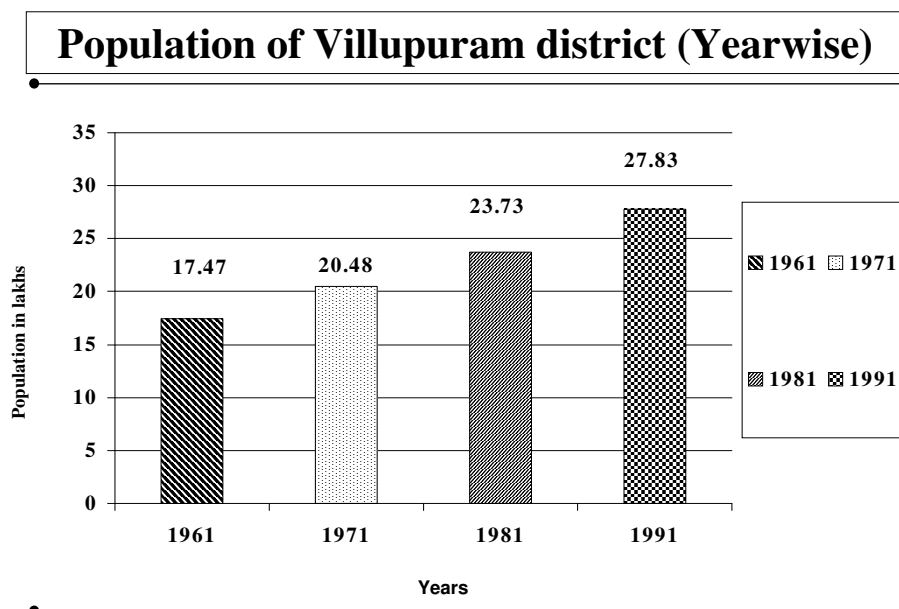
1991-96 period. From the month of August to December, the district receives a rainfall, which is more than the annual average rainfall. This is due to the Northeast and Southeast monsoons. The average maximum and minimum temperatures for the district have been 32.78⁰ C in May and 24.08⁰ C in January respectively. The average number of rainy days, mean maximum and minimum temperatures and mean relative humidity for the period of 1991-96 are given in the Table No: 2.

2.4 Demographic Details

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

2.4.1 Population

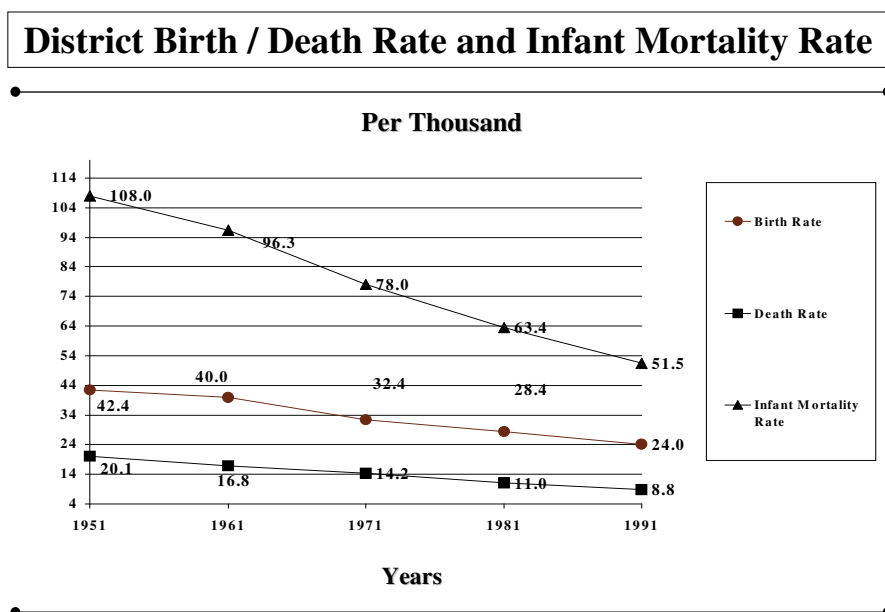
The population of Villupuram district was 27.83 lakhs with a growth rate of 14.72% during 1981- 1991 period. According to the 1991 census, Villupuram taluk was most thickly while Vanur taluk was least populated, in



the district. The details of population growth along with the growth rates (talukwise) are given in Table No: 3.

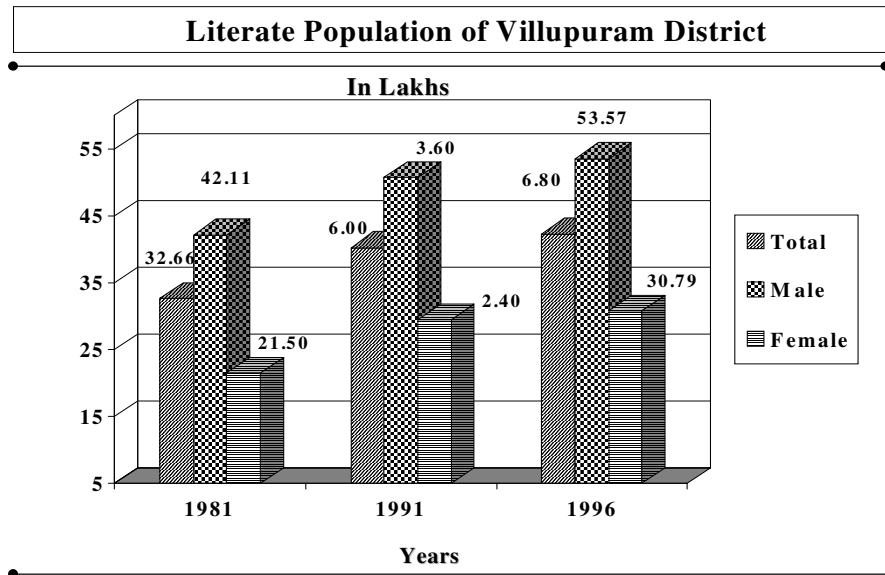
2.4.2 Trend in Birth/Death rate and Infant mortality rate

The essential characteristics of the population in terms of birth rate, death rate and infant mortality rate are not available for the newly created district of Villupuram district as of now. However similar information for the composite district of South Arcot (comprising the present Villupuram and Cuddalore districts) reveals a birth rate of 24 per thousand, death rate of 8.8 per thousand and an infant mortality rate of 51.5 per thousand during 1991 (Refer Table No.4).



2.4.3 Literacy level among the population

The literacy level of Villupuram district according to figures available for the year 1996 is 42.31% with the male literacy level being more than that



of the female literacy level. It is also observed while the male literacy level has grown steadily from 42.11% in 1981 to 53.57% in 1996, there has been a significant increase in the female literacy level also (from 21.50% in 1981 to 30.79% in 1996). The information on literacy level of the district is given in Table No: 5.

3

Resources - availability, use and environmental status

3.1 Land resources

Resources of the district, their availability, use and environmental status is discussed in the following chapters.

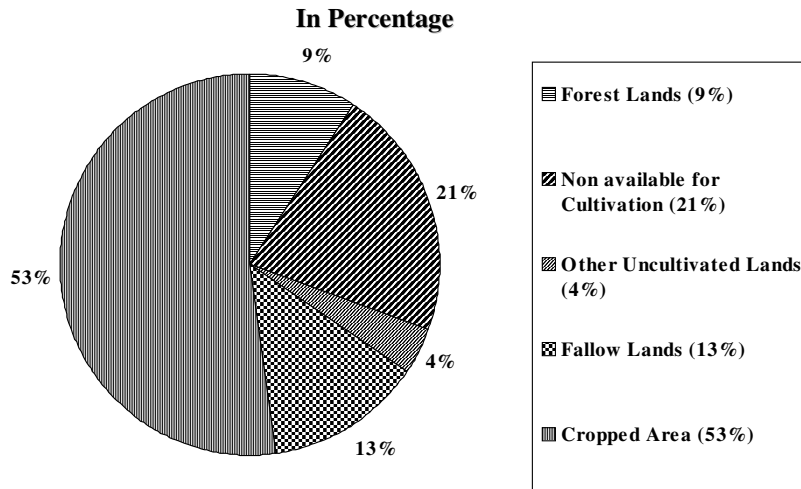
3.1.1 Agriculture and horticulture

i. Land utilisation

This forest division is, for the most part, a flat plain slopping gently from north to south and from west to east towards the sea. The hills in this forest division are mainly in and around Gingee. Then there is the Mount Capper Plateau, west Cuddalore, which forms a part of bed of red laterite ground running from a point about sixteen kilo meters from Pondichery Southwards across Villupuram and Chidambaram taluks.

The total geographical area of the district was 8204.63 sq.km. in 1995-96. Cropped area accounts for about 52.23% of the total area. Forestlands cover about 9.13% of the total land. A significant portion (21.32%) of the land falls under the category of 'non available for cultivation' and 13.33% under 'fallow lands'. About 7.96% fall under the category of uncultivated land. The land utilisation pattern in Villupuram district (Block-wise) is given in Table No: 6.

Land Utilisation - Villupuram District



ii. Trend in production and productivity of important crops

Cereals, pulses and oil seeds are observed to be the three important crops produced in the district. The productivity pattern indicates that the productivity of cereals and oil seeds has fluctuated and of pulses has increased over 15 years. The area under production for cereals and oil seeds has fluctuated in the years 1980-1996, but the area under production for pulses has steadily increased for the same period. The details on the productivity performance of the district in relation to the above important crops for the past 4 years are given in Table No: 7.

iii. Horticultural and plantation crops

There were fruits, vegetables and plantation crops with a yield of 36350 tonnes, 10080 tonnes and 70 tonnes respectively which have area coverage and product pertaining to the crops are given in Table No: 8.

iv. Consumption of fertilisers and pesticides

About 57000 Tonnes chemical fertiliser used in 1996-97. No information was not available Bio-fertiliser and pesticides in Villupuram district. (Refer Table No: 9)

v. Trend in consumption of fertilisers and pesticides

The usage of chemical fertilisers was 57000 tonnes during the years 1995-96. There have been fluctuated in chemical fertilisers by the year 1993-97.

vi. Soil types

The information was not available by the concerned department (Refer Table No: 11).

vii. Soil Problems

The information was not available by the concerned department (Refer Table No: 12).

viii. Status of soil and water conservation programs

The details of cropping areas where soil conservation works of 2023.29 ha areas of namely Othiyathur, Ariyalurthurkkai, C. Pettai, Namaguram, Puthakarem, Palathur, Eravalam, Periyannur, Vengoor, Poriyathal, Nedumanur, Puthamangalam, Pedagam, Kongurarapalayam, Vengaivadi, Kodiyanallur and Chithalur in Villupuram District are undertaken are given in Table No: 13.

3.1.2 Forest resources

i. Forest area

There are 29 forest areas under legal classification and areas in green cover classification without Villupuram district constituting a total area of 25185.58 hectares. 26 areas fall under the Reserve Forest category with 24753.24 hectares, 2 areas under Reserve Land category with 370.01 hectares and areas under unclassified forests with 62.33 hectares. There are only plantations in 112548 hectares composite Cuddalore district under green cover classification in the district. The details regarding the classification of forest area with their extent are given in Table No: 14.

ii. Trend in per capita forest area

There have been 25185.58 hectares of forest area during the years

1961-1996. There was a decrease in percapita forest area from 1961 to 1996. The details are given in Table No: 15.

iii. Man made forest plantations

The Man Made Forest Plantations have been restricted to the existing forest areas in Villupuram district. About 9076.05 hectares of man made forest area are available in the district, which is predominantly Neam, Tamarind and man made plantation, followed by team, eucalyptus and casuarina. Necessary details are given in Table No: 16.

v. Details of Villages Abutting Forest Area

56 revenue villages located in the taluks of Tindivanam, Villupuram, Thirukoilur, Ulundurpet, Kallakuruchi and Gingee abut forest areas in the district. The details regarding the villages abutting the forest area are given in Table No:17

vi. Tribal Villages

The Information about tribal villages was not available by the concerned department (Refer Table No: 18).

vii. Forestry area diverted for non forestry purposes

There have been no forest area diverted for non-forestry purposes in Villupuram district (Refer Table No:19).

iv. Trends in production of forest produce

Industrial wood, fuel wood and minor forest produces are the produces of the reserve forest in the district, while Timber and sandal wood are the produces of the outside reserve forest areas during the years 1995-97 (refer table No:20).

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

There has been no conservation of Biological resources and no conscious effort by the district administration to conserve the rare and threatened species of flora and fauna in the district. Wildlife census in

Villupuram district indicates that 1460 animals are protected in the forest areas. Necessary information is furnished in table Nos: 21, 22 & 23.

3.1.3 Mineral Resources

Silica Sand, River sand, Black Granite, Blue Metal and Gravel are the mineral resources under production in the district. There have been 55130 MT, 2000 CBM, 5446.74 CBM, 5461 CBM and 40500 CBM respectively. (Refer Table No: 24).

3.1.4 Water Resources

i. Catchment Area of River Basins

Ponnaiyar and Varahanathi are the catchment areas of river basins, which have the place of origins as Nandi drug in Mysore and Pakkamalai respectively in the district which have length of 70 Km and 78 Km within the District and area of the river basin 3197.66 ha and 3138 ha. respectively. Necessary information is furnished in the Table No: 25.

ii. Basin wise status of the Ground Water Availability

Net water utilised annually Ponnaiyar and Varahanadhi basins have been 21517(M) and 37294(M) respectively. Necessary details are given in the Table No: 26.

iii. Availability water spread area

There had been available water spread area of total number of tank 2085 in Villupuram district. (Table No: 27).

iv. Details of dams and reservoirs

Vidur and Komuki available within designed extent of Ayacut 1295.02 ha. and 2023 ha. respectively. This dam water is used for irrigation purposes in this district. (Table No: 28).

v. Irrigation by different sources

The total cropped area is 428492 hectares and the percentage of irrigated area to cropped area is 41.49%. The gross area irrigated by canals (8075 ha.), tanks (64016 ha.), wells (98257 ha.) and other sources (7440

ha.). Kallakurichi block has at maximum of 37467 ha. irrigated by canals, tanks and wells. The details on irrigated area by different sources are given in Table No: 29.

vi. Incidence of drought, flood and cyclone

It has been ascertained from the available information that only 8 taluks and 22 blocks were affected by flood in the years 1992-94 and affected by cyclone in the years 1993-94. There was no on drought in the district during the period 1985-1996. The details are given in Table No: 30.

3.1.5 Fisheries production

Villupuram district has a coastal line of 30 kms. Inland fresh water area spreads about 83014 hectares and estuaries & brackish water area is 2072 hectares. Marine fishing is practised in 19 coastal villages of the district. The fish production has increased both in quantity and values. The details are given in Table No: 31.

i. General Fish Seed Production

There has been no fish seed production of standard fry. Fish production both in inland and coastal have steadily increased from 1993 to 1996. The details on fish and fish seed production are given in Table No: 32.

3.1.6 Heritage Resources

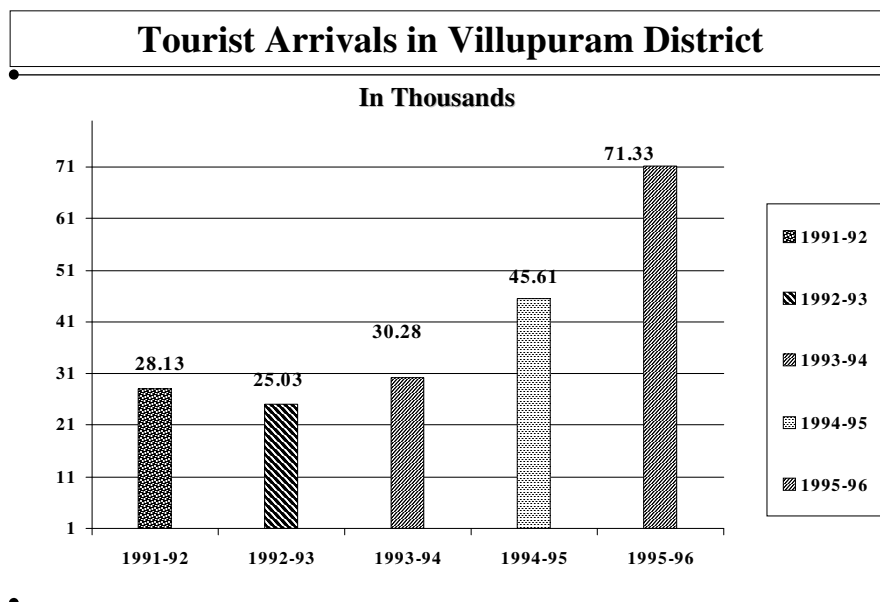
i. Protected and conserved monuments

Seven villages, namely Rajagiri, Krishnagiri, Thiyagadurgam, Pennaru, Keelvalai, Kandamangalam and Perangiyar in Gingee, Kallakurichi, Thirukoilur, Villupuram and Ulundurpet Taluks have monuments maintained by the Department of Archaeology in Villupuram district. The details are given in Table No: 33.

ii. Places of tourist attraction

There are 7 tourist places located at 7 villages/towns in the historical / cultural / natural heritage area. The special significance of the area is Fort, Zoological Park, temple and mount. The tourist arrivals both domestic and

foreign have been fluctuated from 1991 to 1996. Necessary details are given in the Tables 34 & 35.



3.1.7 Energy resources

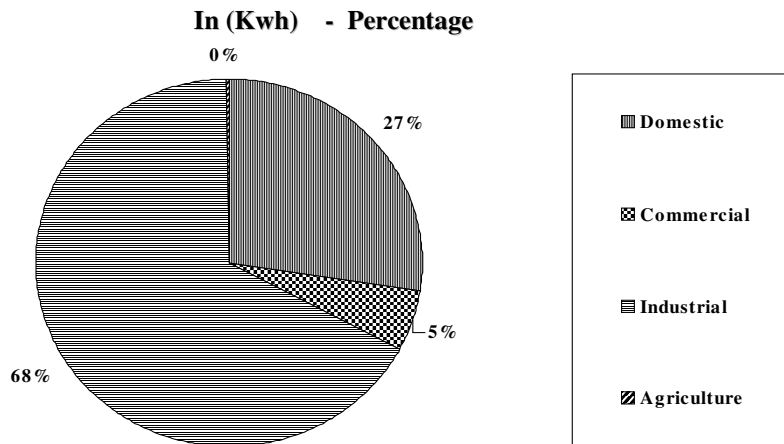
i. Installed power projects

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

ii. Consumption of electricity

There were 175414 electrical connections with a total consumption of 129.50-lakh Kw/h as on 1998. Industrial (High-tension) consumption has the maximum accounting for 59.35% of the total consumption, followed by the domestic consumption 27.42%. The category wise consumption of electricity is given in Table No: 37.

Category wise Consumption of Electricity



iii. Electrification of villages

Villupuram district has achieved 100% electrification prior to 1986. All 1508 villages in the district are electrified. 3000 pumpsets were energised in the year of 1996 (Refer Table No: 38).

iv. Non conventional & renewable energy sources utilisation

There have been no solar energy; wind energy and ocean energy in the district. No information was available for biogas and improved Chulah, efforts are made to procure the data from the concerned department (Refer table no 39).

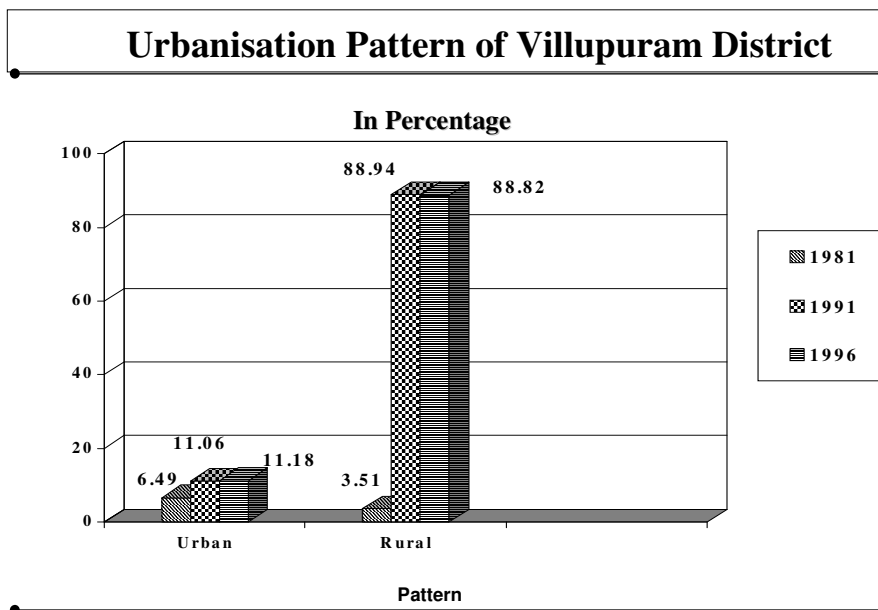
4

Infrastructure

4.1 Urbanisation

4.1.1 Urbanisation pattern

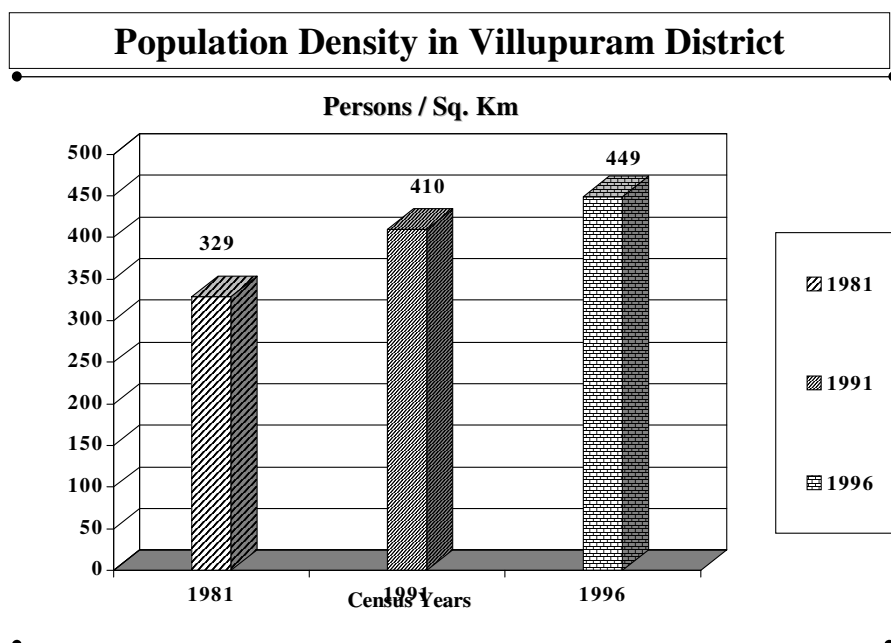
The proportion of urban population to total population has increased during the years 1981-96 from 6.49% to 11.18% and has increased at about 1.47% during 1991-96 period. Among the urban areas, Villupuram municipality accounts for a greater share of urban population when compared to the other urban areas. The proportion of rural population to total population has decreased from 93.51% to 88.82% 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 329 persons/sq.km in 1981 to 449 persons/sq.km in 1996. The density in urban area has increased from 2611 persons/sq.km in 1981 to 5272 persons/sq.km

in 1996 and the density of rural area has decreased from 310 persons/sq.km in 1981 to 403 persons/sq./km. in 1996. Slum area population was not available in the district. The details on density are given in Table No: 41.



4.1.3 Decadal growth rate in urban centres

The Decadal growth rates in two municipalities have fluctuated in the years 1961 to 1996. The population of the district has grown from 63858 in 1961 to 86331 in 1996. Thindivanam municipality, Thirukoilur town panchayat and Ulundurpet 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 has increased from 1961 to 1991 (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 6.53% in 1981 to 11.19% in 1996 period. The identified slum population of Villupuram district was not available. The details are given in Table No: 45.

4.2 *Infrastructure Services and Environmental Status*

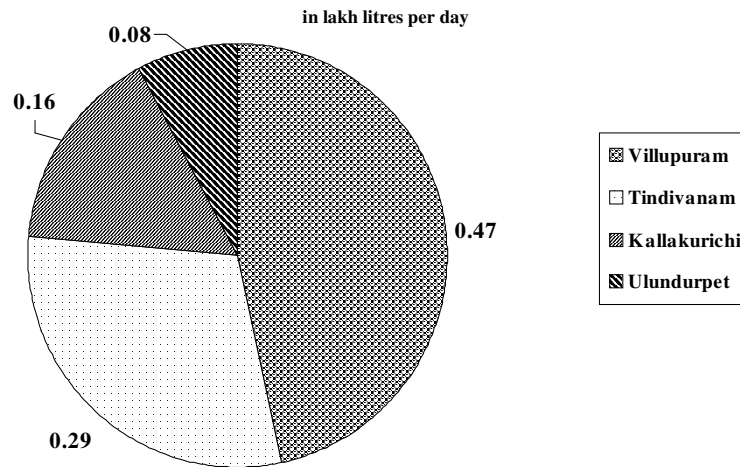
4.2.1 *Occupied housing units*

The total occupied housing units of urban & rural were 150600 and 880875 respectively in the years 1991. Piped water supply inside and outside of houses in urban areas was 77085 and 73520 respectively and in rural areas were 34225 and 846650 respectively in the year 1991 lack of any type within the houses nearly 76580 of the 74025 urban household and 76620 of the 804255 rural households. (Refer Table No: 46).

4.2.2 *Urban Services*

Surface 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 52.50 LPCD and 29.19 LPCD respectively. The municipality of Villupuram has the highest consumption of 27.00 lakh litres, while the town panchayat of Kallakurichi has 9.20 lakh litres. The municipalities have 17.5% at the maximum and the town panchayats have 8.75% of population uncovered for water supply. Details on water supply services are given in Table No: 47.

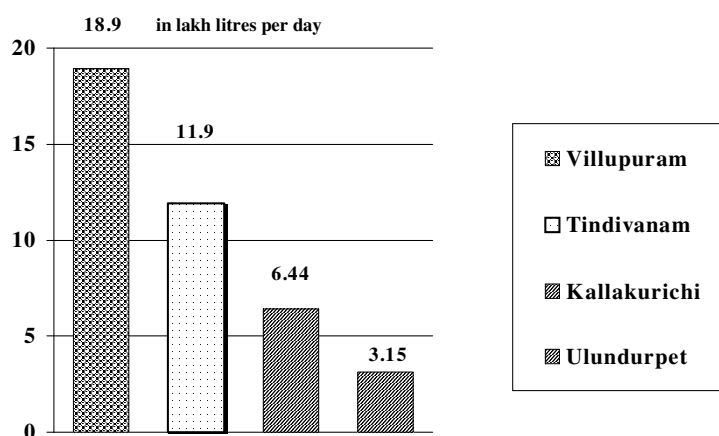
Water supply in Villupuram district - major towns



4.2.3 Domestic waste water generation and treatment

The estimated sewage generation is 31 lakh litres among municipalities and 54.32 lakh litres among town panchayats. The district does not have any organised disposal of sewage. Quantity of sewage disposed through land is 71.82 lakhs litres in municipalities. Both the town panchayats and the municipalities have complete open drainage system. There have been 13.30 lakhs litres, sewerage disposal from Town Panchayats. The details on domestic wastewater generation and treatment in the district are given in Table No: 48.

Sewerage generation in Villupuram district - major towns

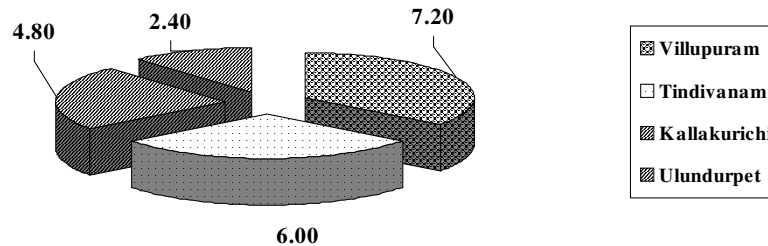


4.2.4 Municipal solid waste generation

The solid waste generation of municipalities and town panchayats are 12 tonnes and 40.80 tonnes respectively. The solid waste collection in municipalities and town panchayats is claimed to be 90% as of 1995-96, with a manpower of 373 for the solid waste management. Necessary details are given in the Table No: 49.

Solid waste generation and collection in Villupuram district - major towns

in tonnes per day



4.2.5 Composition of solid waste

It was observed that 70% of the solid waste are compostable on wet basis, 6% of bricks and stones and 24% of rags, wooden matter, rubber & leather, plastics, etc., are the compostable in the district. (Refer Table No: 50).

4.2.6 Coverage of problem villages

It has been identified that all the 3165 villages in the district have had problems with regard to supply of drinking water. Melmalayanur block has at maximum villages' (246) in problem. 807 problem villages have been covered during the VII Five-Year Plan (1987-92) and 767 problem villages have been covered during the VIII Five-Year Plan (1992-97). Still 1591 settlements have had problems with the supply of drinking water. Necessary details are given in Table No: 51.

4.2.7 Reported cases of water borne diseases

Gastro-enteritis, dysentery, cholera, jaundice and meningitis cases were reported during 1991-96 period and deaths of Gastro-enteritis and

dysentery cases were also reported during the same period. The details are given in Table No. 52.

4.2.8 *Facilities under Indian system of Medicines*

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

4.2.9 *Population below poverty line*

Percentage of population below the poverty line both in rural and urban areas of the district is 84631 families. (Refer Table No: 54).

4.3 *Transportation*

4.3.1 *Development of roads, bridges*

The district has 28.6 km. of national highway, 109.96 km. of state highways, 553.3 km. of major district roads, and 2334.54 km. of other district roads in 1996. Over and above, there are 3 major bridges and 106 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 18000, 330 and 5721 respectively. Information was not available for the years 1986 and 1991 (Refer Table No: 56).

4.4 *Industrial Development and Environmental Status*

4.4.1 *Number of Industries*

The district has many special and hazardous industries, which are classified as “Red” by TNPCB. These are mostly chemicals, textiles and pharmaceutical industries. The bifurcation of the district in 1993-94 has resulted in the redistribution of industries based on location. The details on the number of industries are given in Table No: 57.

4.4.2 Emission inventory of major industries

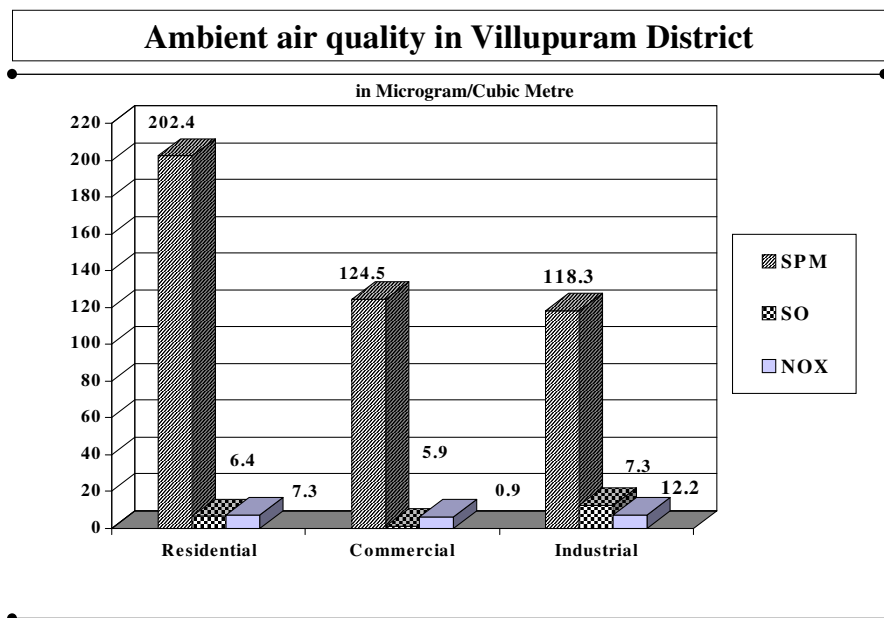
MAC has identified the highest emission rates in terms of SPM [$325 \mu\text{g}/\text{m}^3$], SO_2 [$39.3 \mu\text{g}/\text{m}^3$] and NO_x [$26 \mu\text{g}/\text{m}^3$] while the emission rates of CO and HC are not available from the authorities. However all the 2 industries with the 2 units of the district are found to be having the emission rates above the set standards (Refer Table No: 58).

4.4.3 Air pollution stressed area

There has been no air pollution stressed area in Villupuram district (Refer Table No: 59).

4.4.4 Ambient air quality status

As per the urban air quality status is concerned the average residential SPM values seem to be on the higher side comparing the standards. Rest of the indication on air quality status is found to be will with in the limits (Refer Table No: 60).



4.4.5 Water quality

Under MINAR's scheme TNPCB is monitoring the quality of water from 16 places of Cauvery riverbed. As per the test, the quality of water is normal. In Pichavaram TDS and Chloride content of water is exceeding the standard value. Because of more water evaporation and Backwater of sea. PH of water is slightly more than the standard. Disposal of sewage and drainage water into the Cauvery river is the main reason to affect the quality of water in the composite South Arcot District. (Refer Table No: 61).

4.4.6 Discharge of industrial effluents

The information was not available in the Villupuram district (Refer Table No: 62).

4.4.7 Noise levels

There have been survey not conducted noise levels in the district. (Refer Table No: 63).

4.5 Environmental Status of Coastal Eco-system

4.5.1 Aquaculture activities

There were 30 Km length of coastal line, Villupuram, Marakanam & Vannur main located area of Aquaculture units, which have 7 units within the area of 12 ha in Villupuram district (Refer Table No: 65).

4.5.2 Industrial sewage discharge in the coastal waters

The information was not available in the Villupuram district (Refer Table No: 64).

4.5.3 Wetland Habitats, their use and problems

1901 fresh water lake areas are spread in 83014 hectares in the district. The details are given in the Table No: 66).

4.5.4 Potential Hot Spots along the coast

Kaluveli Swamp

So the time has come now the identify and conserve wet lands of important ecological value. Some examples are Bharathpur and point

Calimere, which are well known and studied. But many others remain to be identified. Especially for aquatic birds artificial wet lands such as tanks also prove to be important. Efforts must be taken to presume this swamp in order to revival different species of water birds. There have been one potential hot spots of Vanur in the district (Refer Table No: 67).

5

Environmental Institutions

5.1 Environmental Education and Research Institutions

There has been no Environmental Education and Research Institution in the district. (Refer Table No: 68).

5.2 Environmental NGOs

There have been two NGOs dealing with Environmental related activities under taken by Herbal and forest protection, growth of trees, water resource management, environmental awareness in the district (Refer Table No: 69).

6

Summary of Observations

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 Villupuram 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 1.47% per annum, warranting appropriate intervention.

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

Land Resources

52.23% of the land area in Villupuram District is utilised for cultivation. This observation indicates that good efforts must be made to motivate the concerned personnel to utilise the land resource.

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 analysed.

Forest Resources

The Forest area in Villupuram district is about only 9.13%. Apart from Reserve Forests, Reserve Lands and Unclassified Forests, there are 25185.58 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.

The main sources of irrigation of the district happen to be canals, tanks, wells and other sources. Only 41.49% of the total cropped areas are irrigated by these sources.

Tourism

There have been 4 tourist places in the district.

Fishing

The fish production both in quantity and value has increased for the past 4 years. The inland and coastal fish production has steadily increased but there was no information for standard dry fish production.

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.

Urban services like drinking water and solid waste management in the district.

Transportation

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

Industrial Development

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

Environment Institutions

There has been no environmental Research institute in the district of Villupuram.

Environmental NGOs may be involved in protecting the environment

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 Tamil Nadu** in fulfilling its corporate objectives.

Table No.**Title of the Table**

1. Details of administrative units in Villupuram district as on 1995-96
2. Meteorological Information of Villupuram district (1991 – 96)
3. Taluk wise population in Villupuram district
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