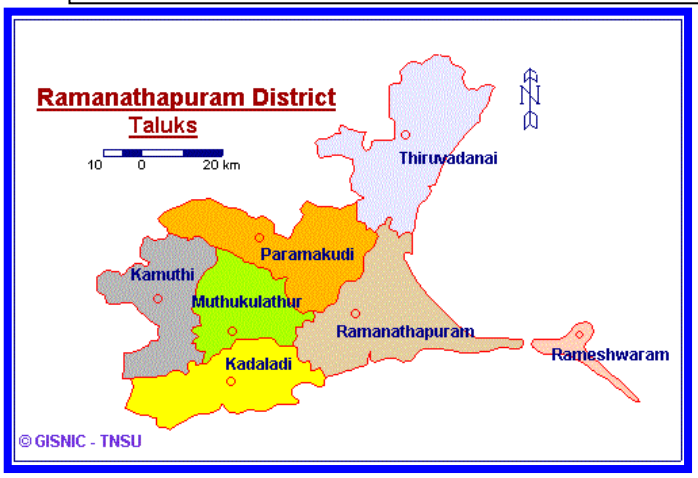
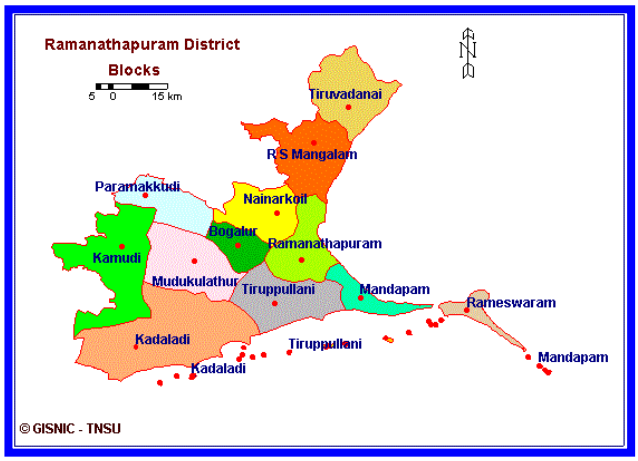
AIM

Environment Profile for Ramanathapuram District





Chapter

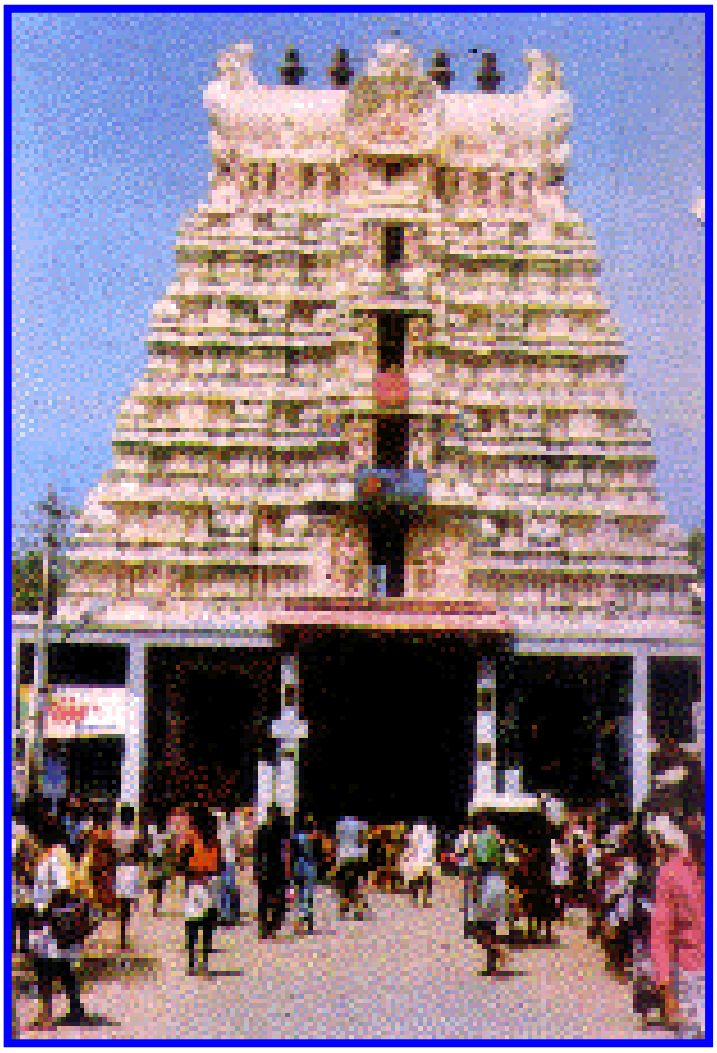
1

1.0 The Context

The **Department of Environment (DoE)** is the nodal department for dealing with environmental management of the State. The State has been endowed with multitude of natural resources, judicious management of which will ensure sustainable development in all sectors. Effective resources management calls for an in-depth assessment of their existing conditions and trends. A cursory evaluation of the present status of our environment and natural resources including land, soil, water & air, and the life support systems like forests, rivers & 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 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 Joint Venture of TCW/ICICI, IDBI and ICICI)*** – one of the country's 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 level and it will spell out specific action programmes to be implemented by local / state institutions. This report provides a brief account of the manner in which the **District** has been prepared and presented. To achieve certain degree of uniformity in the presentation of environmental data in the districts, it is considered necessary that certain standardised formats are adopted for collection and presentation of the relevant data besides interpretations of the data thus

collected. Accordingly the data compiled in the prescribed formats have been synthesised and presented in the following chapters.



Chapter

2

2.0 Background

This district was carved out in 1910 AD, by the British out of portions from Madurai and Tirunelveli districts. The district was named as Ramanathapuram after the name of the important Zamindari town, Ramanathapuram. According to a legend, Lord Ramanathaswamy, the presiding deity of the temple of Rameswaram is said to have directed his faithful servant, Guha to build a town near the Sethu (Adam's bridge). The town was called "Mugavainagaram". The town then appears to have been very near the sea. This town was later known as Ramanathapuram. Its association with the name of Rama and its proximity to the Sethu would justify the town being considered a very ancient one. During the British period, this district was called 'Ramnad' and this name continued to for some time even after Independence. Later, the district was renamed as Ramanathapuram to be in conformity with the state language. In the year 1985 the district of Ramanathapuram trifurcated forming three separate districts i.e. Ramanathapuram, Sivagangai and Kamarajar vide State Government Notification G.O. Ms. 347 dated 8-3-85.

Languages and Religion: Main languages spoken in the district are Tamil and Telugu.

Fairs and Festivals: Important fairs and festivals organised in different parts of the district are Soi Swarnamar Eswarar Ani Brahmothsavam car festival, Arulandiyar festival, Adi Uthireswarar Vaigasi Visagam, Sri Muthu Mariamman Koil festival, Panguni festival [Amman Koil Uthsavam], Sivarathiri, Mara Mayanar Guru Pooja, Magha Nunbu Uthsavam, Vasanthothsavam, Adi Uthsavam in Naga Nathar Koil, Vaikasi Uthsavam, Adi Amavasai festival, Thai Amavasai festival, Thruvathirai festival, Masi Amavasai Samharam, Muppala Pooja, Vaikasi Visakham (Lord Subrahmanya), Illuppaswamy festival, Thirukkaludiar festival, Muthalamman festival, and Santhanakoodu festival.

2.1 History

In the early centuries, Ramanathapuram district formed part of Pandya Kingdom. Its history is closely linked with the Pandya Kingdom till the end of the 15th century. The Pandya Kings ruled over the territories, which comprised Madurai, Ramanathapuram and Tirunelveli. For a brief period, this area was also under the Chola Kings when Rajendra Chola brought it under his authority in 1063 AD Ramanathapuram territory was also under the Muslim Empire till 1365 AD With the help of the Vijayanagar King, this territory was brought again under the rule of Pandya by Parakaram Pandya Deva. By about 1520 AD, the Nayaks of Vijayanagar took over this territory under their control from the Pandya Dynasty. For about two centuries, Nayak Kings ruled Ramanathapuram territory from Madurai. During the Nayaks rule, the marava chieftains-Sethupathis who were lords under the Pandya Kings reigned over this part in 17th century. In 1710 AD, due to family disputes over succession resulted in the division of Ramanathapuram. In 1730 AD, with the help of the King of Thanjavur, one of the chieftains deposed the Sethupathi and became the Raja of Sivagangai.

The Nayak rulers of Madurai became weak by this time. With the downfall of the Nayak rulers, the local chieftains Palayakarars became independent. Prominent among them was the Sethupathy of Ramanathapuram and the Raja of Sivagangai. The history of Ramanathapuram is thus closely linked with the history of these two palayams in the later years. After this, Ramanathapuram fell into the hands of Chanda Sahib of Carnatic in 1731 AD In 1741 AD, the area came under the control of the Mahrattas and then under the Nizam in 1744 AD Nawab's rule was not acknowledged by these chieftains. The middle of 18th century, they declared the adopted son of Queen Meenakshi, the last Nayak ruler, as the King of Pandya Mandalam against the Nawabs. At this time, the throne of Carnatic had two rival claimants - Chanda Sahib and Mohamed Ali and this district was a part of the Carnatac. The Europeans - the French and the British supported Chanda Sahib and Mohamed Ali respectively which resulted in a series of conflicts in the southern part of the continent. The two Chieftains supported Chanda Sahib in his conflict with Mohamed Ali. In 1773 AD, General Smith subdued them and brought them under the authority of the British.

The Sethupathy of Ramanathapuram lost his personal freedom. In 1792 when Muthuramalinga Sethupathy, who was paying a sum of Rs.220000 as the tribute to the British to prove his loyalty, the British deposed him and took control of the administration of Ramanathapuram in 1795 AD It was converted into a Zamindari in 1803 AD and Mangaleswari Nachiyar was made a Zamindar. During these periods, the ruler of Sivagangai, Muthur Vadugunathar, also revolted against the British. In his efforts he was ably assisted by the Marudu Brothers-Periya Marudu and Chinna Marudu. Muthu Vadugunathar lost his life in the revolt. After his death, the queen passed on the sovereignty to Marudu Brothers who ruled Sivagangai peacefully and devotedly on payment of regular revenue to the East India Company. In 1801 AD, the Marudu brothers of Sivagangai revolted against the British in collaboration with Kattabomman of Panchalamkurichi. In 1801 AD, Colonel Agnew captured the Marudu brothers in Kalayarkoil on 1st October 1801 and hanged them. The Company installed Gowri Vallabah Periya Udaya Thevar as Zamindar of Sivagangai. The British who earlier were supporters of the Nawabs finally annexed the country. The Nawab became powerless and handed over the administration of Ramanathapuram even as early as 1781. With the fall of Tippu Sultan, the British took full control and the Nawab of Carnatic was pensioned. In 1792 AD, a British collector was appointed to administer the territory. Ramanathapuram and Sivagangai continued to be Zamins till the system of Zamindari was abolished in 1948 AD after India attained Independence.

2.2 Geographical Location of the District

Ramanathapuram is one of the coastal districts of Tamilnadu having a seacoast extending to nearly 260 kms. It is bounded on the north by Sivagangai and Pudukottai districts, on the east and south by the Bay of Bengal, and on the west by Thoothukudi and Kamarajar districts. The district headquarters is located at Ramanathapuram. The district lies between 9^0 09′ and 9^0 98′ north latitude and 78^0 23′ and 79^0 45′ east longitude. The general geographical information of the district is simple and flatted. Vaigai River and Gundar River are flowing in the district and they will be dry during the summer season. The total geographical area of the district is 3889.62 sq.km. The details of the name of the taluks and area have shown in the following Table.

S.No.	Names of Taluks	Area in Sq.Km.
1	Ramanathapuram	819.83
2	Rameswaram	Not available
3	Paramakudi	730.73
4	Thiruvadanai	963.28
5	Kamuthi	398.23
6	Muthukulathur	977.55
District Total		**3889.62**

2.3 Administrative Arrangement in the District

Ramanathapuram district comprises 6 taluks, 11 blocks and 2087 Villages. As regards the hierarchy of administrative arrangement, there are 2 Municipalities, 8 Town Panchayats and 444 Village Panchayats in the district. The Community Development Blocks are Tiruvadanai, Rajasingamangalam, Paramakkudi, Bogalur, Nainarkoil, Kamudi, Madukulattur, Kadaladi, Ramanathapuram, Tiruppullani, and Mandapam. 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.

2.4 Meteorological Information

Climate - The climate of this district in the inland plains is generally hot and dry with a low degree of humidity except within a radius of about 20 Kilometres from the coast, where the temperature is tolerable and cool on account of the sea breeze.

Rainfall: - The district receives the bulk of its rain from the Northeast monsoon, which is often late, irregular and scanty.

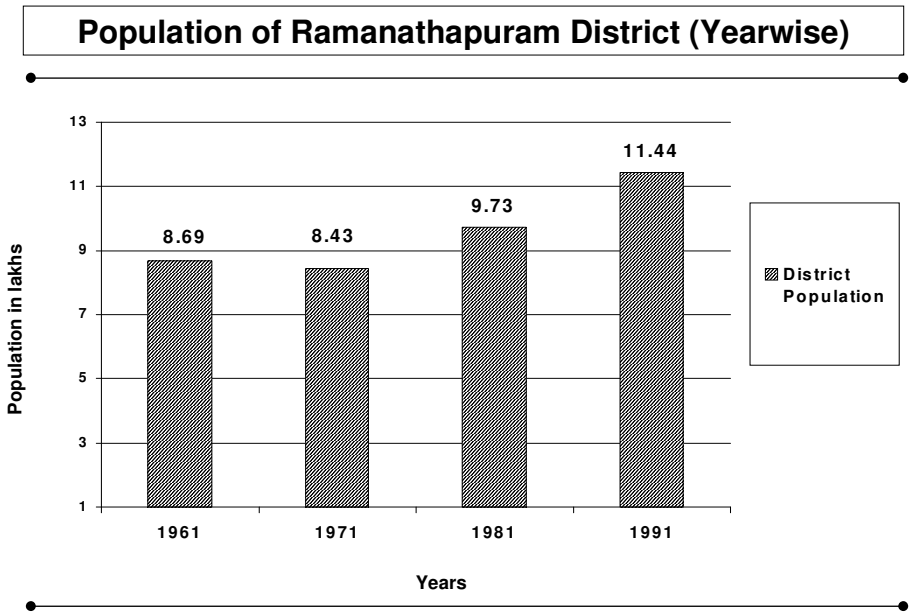
The monthly average rainfall in the district was 75.73 mm. The months of October, November and December receive a rainfall that is more than the annual average rainfall. The average number of rainy days, mean maximum temperature, mean minimum temperature and mean relative humidity for the period of 1991-96 are given in Table 2. However data onward velocity and direction are not available.

2.5 Demographic Details

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

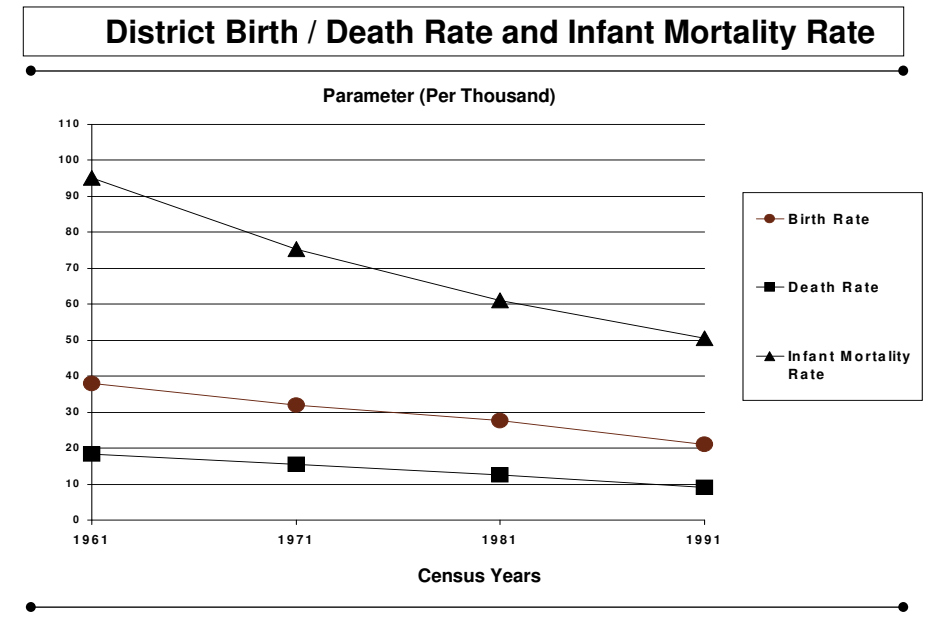
2.5.1 Population

The population of Ramanathapuram district has grown from 8,69,867 in 1961 to 11,44,040 in 1991. The growth rate indicates that there has been a significant increase during the 1981-91 decade with the average growth rate being 1.75 % per annum during this decade. According to the 1991 census of Ramanathapuram taluk is the most thickly populated and Kamuthi taluk is the least populated in the district. The details of population growth along with the growth rate- taluk wise are given in Table No. 3.



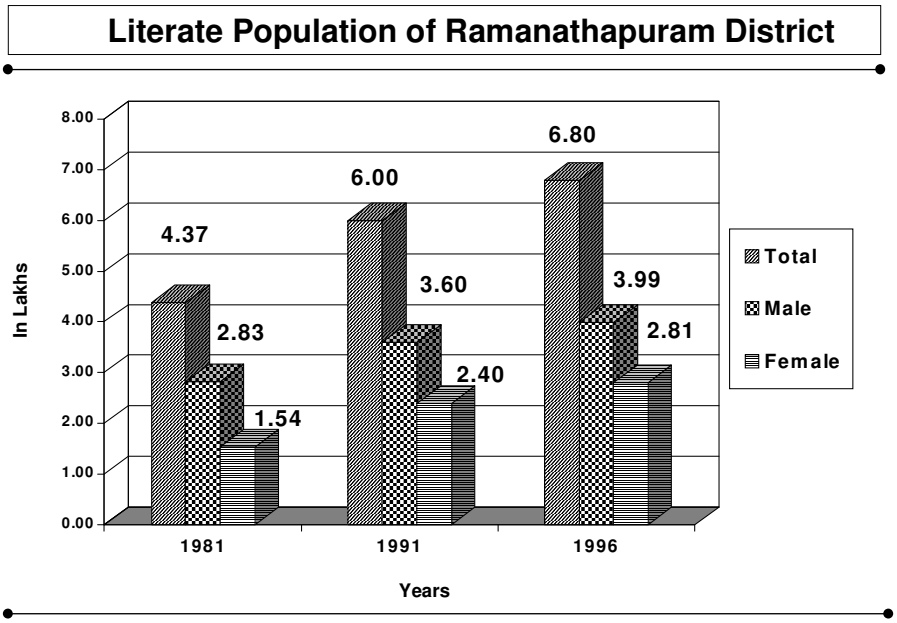
2.5.2 Trend in Birth/Death Rate and Infant Mortality Rate

Birth rate, death rate and infant mortality rate have been reduced significantly from 38.05 in 1961 to 21.00 in 1991, 18.38 in 1961 to 9.00 in 1991 and 95.14 in 1961 to 50.47 in 1991 respectively. The details regarding these are given in Table No. 4.



2.5.3 Literacy Level among the Population

The literacy level of Ramanathapuram district according to figures available for the year 1996 is 54.13% with male literacy level being more than the female literacy level. It is also observed while the male literacy level has grown steadily from 59.32% in 1981 to 65.01% in 1996, there has been a significant increase of female literacy level from 31.11% in 1981 to 43.74% in 1996. The information on literacy level of the district is given in Table No. 5.



Education: Sethupathi Government Arts College, Ramanathapuram and Dr. Zakir Husain College, Ilayangudi, Ramanathapuram are two colleges catering the districts higher education needs.

Chapter

3

3.0 Resources – Availability, Use and Environmental Status

3.1 Land Resources

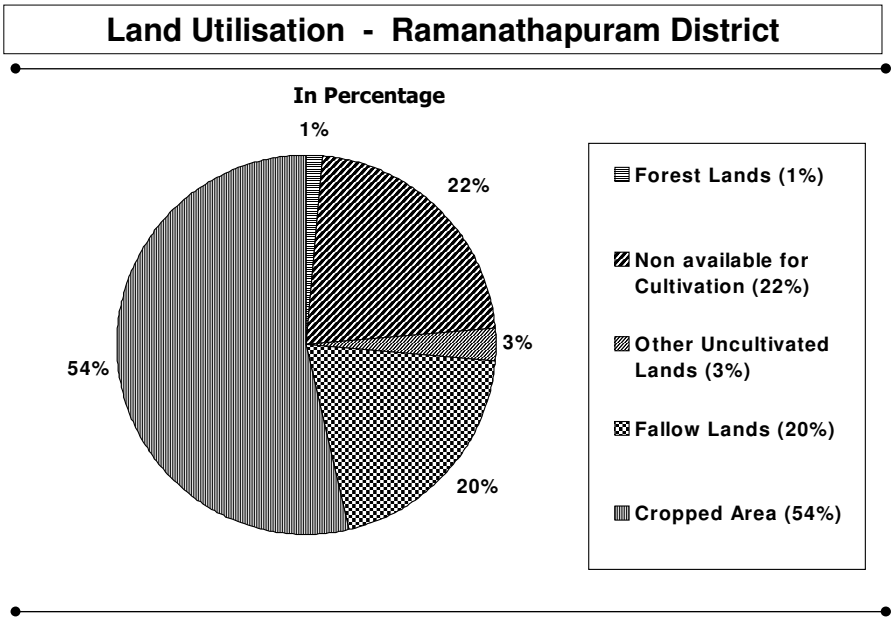
Resources of the district, their availability, use and environmental status is discussed in the following sections.

3.1.1 Agriculture and Horticulture

Ramanathapuram district is deficient in rainfall. There are no major rivers providing perennial water supply for cultivation. Till the advent of independence, most of the areas were Zamindari areas and as such there was not enough enthusiasm for the ryots to develop agriculture. With the implementation of the schemes under the successive five-year plans and with the introduction of ryotwari settlement on the abolition of Zamindari system, fillip has been given to agriculture in the district. Though a dry district, agriculture is extensively undertaken by irrigating the land from tanks and wells. The rainfall during the Southwest monsoon is rather poor. The rain from Northeast monsoon season is the major one but is not steady and is dependent on the vagaries of the monsoon. Whatever rainfall occurs, it is utilised to the best advantage through a large number of tanks and wells in the district. Paddy is the most important food crop of the district. About 46 per cent of the total area sown are under this food crop. Paddy crop is grown on wet lands irrigated by rivers, canals, tanks and wells. Cumbu, Cholam, Ragi, Varagu, Samai and Kudiravali are the millets produced in the district. Ragi is grown in a wide range of varying soil fertility during the periods, May-June and November-January. In East Ramanathapuram district, cotton has been introduced as an irrigated crop in summer. Large areas have been brought under improved varieties of cotton. The Ramanathapuram district is one of the chief cotton producing areas in the State, besides Coimbatore and Tirunelveli. Groundnut and Gingilly are the two prominent oil seeds grown in the district.

i. Land Utilisation: Geography and Physical Features

The total geographical area of the district was 3889.62 sq.km. in the year 1995-96. Cropped area accounts for about 53.68% of the total area. Forest lands cover about 1.30% of the total land. A significant portion (42.13%) of the land falls under the category of 'non available for cultivation' and 'fallow lands'. About 2.89% fall under the category of uncultivated land. The land utilisation pattern in Ramanathapuram district (Block-wise) is given in Table No. 6.



ii. Trend in Production and Productivity of Important Crops

Production and Productivity of Important Crops of Cereals, pulses and oil seeds are observed that to are the three important crops produced in the district. The productivity pattern indicates that the productivity of cereals, pulses and oil seeds have fluctuations over 7 years. The area under production for cereals, pulses and oil seeds have also fluctuations in the years 1990-97. However, certain larger variation in production and productivity of cereals and oil seeds are noticed for the year 93-94 and 92-93, 93-94 respectively. The details on the productivity performance of the district in relation to the above important crops for the past 7 years are given in Table No. 7.

iii. Horticultural and Plantation Crops

There were fruit crops with a yield of 5690 tonnes, vegetables crops of 430 tonnes and plantation crops of not available for cultivated in 279 ha. and 72 ha. respectively in the years 1996-97. The details pertaining the crops are given in Table No. 8.

iv. Consumption of Fertilisers and Pesticides

About 35789 metric tonnes of chemical fertilisers were used in 1995-96, out of which more than 60% constitutes the nitrogenous fertilisers. There has also been an intensive use of bio-fertilisers in the district, followed by pesticides in 1995-96. Moreover, 29913 tonnes 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

The usage of chemical fertilisers, bio-fertilisers and dust and liquid pesticides was 65702 tonnes, 208670 pockets and 279500 kg and 29548.10 litres respectively in the years 1995-96. The decrease in percentage of the bio-fertilisers is 7.6 in the years 1994-95. The details with regard to the trends in the consumption of fertilisers and pesticides over the past 3 years are given in Table No. 10.

vi. Soil Types

The district has two naturally distinct regions viz., (i) the plains of the Paramakkudi taluk and portions of Mudukulattur, Ramanathapuram and Tiruvadanai taluks and (ii) the sandy coastal areas of Mudukulattur, Ramanathapuram and Tiruvadani taluks. The plains of Paramakkudi taluk and portions of Mudukulattur, Ramanathapuram and Tiruvadanai taluks mostly have black cotton soil or regard 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.

Typic Chromusterts and Vertic Haplustalfs are the soil types in this district accounting for 0.60% and 0.58% respectively, followed by Typic Ustipsammants for 0.26%. The details of other types of soils are given in Table No. 11.

vii. Soil Problems

About 2.72% of the land available for cultivation is sand, desertic and about 0.63% suffers from salinity/alkalinity. The details in this regard are given in Table No. 12.

viii. Status of Soil and Water Conservation Programs

Soil conservation works were being undertaken in 22186.38 Ha. of cropping area. These conservation works have been done in 11 blocks in the district. There has been 174 new construction of wells for irrigation and 85 construction of check dams/stop Dams in Government sector in the district. The necessary details are given in Table No. 13.

ix. Animal Husbandry

The livestock population comprises mainly of cattle and buffaloes, sheep, goats, pigs and poultry. There are veterinary hospitals, veterinary dispensaries, and key village centres and veterinary sub-centres in the district. Under drought prone area program, Shilch cattle are distributed and the sheep units have been established. A scheme for upgrading local goats in Rameswaram area is implemented. A coastal district with a lengthy coastline of about 271 kms. will naturally have sea fishing. Besides, the district has a very large number of tanks, which are conductive for inland fishing. Further, the district has been famous for chank and pearl fishing from very early times. Fishing has, therefore, a significant role to play in the economy of the district. There are about 50 villages in which a large population of fishermen lives. The important fishing centres in the district are Tondi, Pamban, Devipatnam, Rameswaram, Kilakkarai and Alangulam. To give encouragement to fishing, schemes under the Five Year Plans have been implemented. One of the schemes relates to the supply of motorboats to fishermen co-operative societies. Another scheme provides for the supply of nylon nets to the fishermen. For getting a good market and price for the fish caught, ice and refrigeration units are established in Tondi, Kilakkarai, Mandapam and Mofarm. Fish curing centres are functioning at Tondi under the private sector and at Athangarai and Mukkaiyur in the public sector. An ice plant and cold storage unit is under construction at Kilakkarai. Subsidised salt is being supplied to fishermen for curing fish at two fish curing yards. Improvements in fish markets maintained by local bodies have been made so as to enable the sale of the fresh and cured fish under hygienic conditions. Rameswaram Island is an important area from where mechanised boats are used for marine fishing by owners hailing from different parts of Tamil Nadu. The Indo-Norwegian Fishing Project has been established at Mandapam for implementing various schemes for fisheries development. The Union Government has also established a Central Marine Fisheries Research Institute at

Mandapam for the development of sea fishing in which investigation in various fields of fishery, biology, fishery survey, marine biology and general physiology is carried out.

Schemes to provide quick growing, indigenous the exotic varieties of inland fish and to be implemented in a number of centres in the district. The fish seeds are stocked, reared and distributed to demonstration tanks, revenue tanks and to private persons.

3.1.2 Forest Resources

i. Forest Area

There are 18 forest areas in Ramanathapuram district constituting a total area of 5356.85 Ha. 13 forest areas fall under the Reserve land category with 4139.39 ha. (41.39 sq.km). and category of reserve forest areas in 702.46 ha. There is Unclassified forest available in 515 ha. in the district. The details regarding the classification of forest area with their extent are given in Table No. 14.

ii. Green cover classification of forest

In the district total area of forest under green cover classification was 22149 Ha. Dense and Sparse forest are 742 Ha. and 538 Ha. respectively. There is no grass land and degraded forest area covering this region. (Refer Table. No. 14b)

iii. Trend in Per Capita Forest Area

The forest area has not shown much fluctuation over the years. The per-capita forest area has however shown a declining trend from 0.0062 Ha. in 1961 to 0.0043 Ha in 1996 due to the steady increase in population. The details are given in Table No. 15.

iv. Man Made Forest Plantations

The Man Made Forest Plantations have been restricted to the existing forest areas in Ramanathapuram district. About 2562.65 hectares of man made forest area are available in the district. Fuel wood is the only man made forest plantation in the district. Necessary details are given in Table No. 16.

v. Details of Villages Abutting Forest Area

The villages located in the taluks of Thiruvadanai, Muthukulathur and Rameswaram abut forest areas in the district. Out of these taluks, Thiruvadanai has more number of villages abutting the forest area. The details regarding the villages abutting the forest area and their population are given in Table No. 17.

vi. Forestry Area Diverted for Non Forestry Purposes

Total area diverted from forest use is 0.01 Ha. The details regarding the forest area diverted for non-forestry purposes are given in Table No. 18

vii. Conservation of Biological Resources, Wild like Census, Rare/Threatened Species of Flora and Fauna

Biosphere reserve and sanctuary are the protected area Pamban kuthavalli in 52.59 ha. and keelakarai & Mandapam of 11 Islands in 378.05 ha. respectively in the district. Chitrangudi, Kanjanankulam, Melselvanar & Keelselvanar bird sanctuaries located in this district spread over 46.63 ha., 104.00 ha., and 593 Ha. respectively. Best season to visit this sanctuary is November to February.

Gulf of Mannar Marine Biosphere Reserve :

Designated a Biosphere Reserve, The Gulf of Mannar and its 3600 Species of flora and fauna is one of the biologically richest coastal regions in all of mainland of India. Some of the islands are veritable ' biologist's paradise ' It holds within maximum genetic diversity.

It is equally rich in sea -algae, scagrasses. Coral reef pearl banks, sacred chank bed, fin & shell fish resources, mangroves, and endemic & Endangered species. It is an important habitat for the highly endangered sea mammal, the Dugong dugon commonly called as sea cow.

Fauna: Wild Life is significantly scarce in this district.

Bird life – Ramanathapuram district is a paradise for the bird-watcher, especially during the winter months when all tanks are full attracting many avian visitors. The numbers of tanks in this district are so many that very approximately it is referred to as the "Lake District" of the State. Many beautiful birds like the paradise fly-catcher, the golden oriole, the small green barbet, the red-vented bulbul the king fisher the black cormorant, the partridge, the snipe, the rose-ringed parakeet and the blossom-headed parakeet are some of the more important birds seen in the lower forests along the plains.

The following birds are living in the forest of Srivilliputhur, which was part of Ramanathapuram district until 1985. The Ashy crowned finch dark, Purple sun bird, Purple rumpled sunbird, Indian pitta, Yellow fronted pied, Golden backed woodpecker, Grimson-breasted Barbet, Common hawk-cuckoo, Pied creasted cuckoo and the Koel. Other birds of note are the greater hornbills, the whistling schoolboy, the rocket-tailed dronga, the scarlet minivet, the grey tit, the golden backed wood-pecker and the hill mynah. These birds are however confined to the shola forests only.

Prosopis Juliflore - Highlights and Comments:

1. Prosopis, A Social Asset: In the districts (24,04,500 ha) cultivable waste and other fallow lands occupy 4,80,900 ha (1989-90) and dry land agriculture 5,94,300 ha totalling 10,75,200 ha. Based on an estimated production of wood and charcoal the probable are of Prosopis under active exploitation may vary from 3 to 4.5 lakhs ha depending on the average productivity of anything between 10 and 15 tonnes/ha. It is likely that natural Prosopis of such an extent would be found in the categories of the lands mentioned above. Its socio-economic importance becomes very obvious if past attempts to raise community plantations under the Social Forestry Programme are recalled. Nearly four lakhs ha were raised since 1960-61 in the entire State, the outlay exceeding Rs.120 crores. Prosopis has proved to be a great social asset at no cost to the government. It has brought back vast stretches of land into use and labour into productive employment. (6.34 million man-days and 7.03 million woman-days per annum).

2. Prosopis, The Great Provider: Prosopis ecologically successful and favoured by many contributory factors, has overrun available lands in the five southern districts in the last two decades and now occupies 3,00,000 to 4,50,000 ha, which is under exploitation. No doubt it is a vigorously regenerating, plentiful and useful crop where agriculture is uncertain and life frustrating. It is great natural boon, because man has no hand in its development except exploitation. The total annual wages by way of exploitation amounts to Rs.232 millions working out to Rs. 2,323 per ha once in three years or a national annual wage accrual of Rs. 774 per ha. The other benefits include hire to owners of double bullock-carts and lorries, wages to sundry workers, brokerage, business to firewood merchants, sustenance to village artisans (carpenters and blacksmiths) and feed to livestock.

3. Prosopis and Ground Water: Nevertheless Prosopis could become a bane in the sense that farmers have to spend a lot of energy and effort to keep it off their cultivating lands and there is little respite from this highly invasive species. The fears of many

villagers, we talked to, that it lowered the water table do not appear to be whooly unfounded. We have no knowledge of dry land ecology, much less the effect Prosopis has on ground water. The ground water vis-à-vis Prosopis is an important topical theme in the context of overall groundwater depletion and needs immediate study.

4. Prosopis Silviculture: Prosopis productivity and its response to repeated felling on short cycle is far better than native species considering the agro-climatic conditions. It is high time that silvicultural system for maximum volume production is taken up for a detailed study. It is worthwhile to study the economics of fertilisation. The logistics for aerial fertiliser application are favourable where large blocks running to many hundreds of hectares occur in Ramanathapuram, P.M.T. and Virudhunagar districts, particularly at their boundaries. The study should take into account groundwater considerations.

5. Rethinking of Social Forestry Activities: Under the Social Forestry Programme Phase I and II Babul is the choice of species for tankbed plating in these districts as per general plan. Ecologically and socio-economically Prosopis has proved itself a much better species than Babul. In fact in one tank bed in Ramanathapuram district, a group of women labourers toiling on removal of Prosopis for Babul planting by the Forestry Department were vociferously protesting against the replacing of Prosopis by Babul. It was a genuine and a meaningful protest. Economically a hectare of Babul planting generates 44 man-days and 123 woman-days employment and exploitation 80 man-day and 40 man-days provided the yield of wood is 20 tonnes per hectare, often it is less than that. the coupe contractors use their own trained labour for exploitation, denying the local people the benefit of wages. The total wages amount to Rs.2,090 once in ten years (i.e.) Rs.209 a year as against Rs.774 a year from Prosopis (exploitation and charcoal making only). Babul is not favoured for another reason and according to local people the charcoal out-turn is 150-180 kg/tonne of wood which is less than that of Prosopis and it is more brittle. The Programme with emphasis on Babul, if continued, will only amount to denying the poor an additional earning of Rs.565 for every ha of planting. It is evident that even Phase II of the Social Forestry Programme does not seem to reflect the realities of the situation. Such blanket plans prepared at State level with no grassroot level contact lack the sensitivity of social underpinning and are not likely to achieve the objective.

6. Charcoal Making: Moisture content of wood at the time of carbonisation is an important factor for getting high quality and quantity of charcoal. Otherwise part of the wood charged into the kiln is used for driving away the moisture which could be avoided by sun-drying. But this is not followed and the felled wood goes straightaway for the process. Second, stacking the wood is time consuming and costly. Third, forced cooling by dousing with water rather than allowing it to cool naturally reduces output and adds to the cost of process. The workers are against radical changes in the process nor are the charcoal producers willing for higher investment, say in portable steel kilns. A detailed study to suggest changes in the technique and process is very essential for maximising output and wage earning.

7. Money-Lending: The usurious rate of interest (60 to 120 percent) in the rural areas reduces the entire activity to one of poverty alleviation measures and keeps the socially handicapped rural poor (Scheduled Castes) in a perpetual state of abject poverty. The rural banks are of no help. Hence is a rare instance of a natural resources being available for productive employment but lack of contributory factor like credit on easy terms simply does not make it happen. It sum Prosopis, no doubt, is the staff of life for a

multitude of rural poor. How to handle it, environment friendly, and at the same time how to maximise the flow of benefits to the deserving rural poor merits a comprehensive and high priority study. Necessary information is furnished in Table Nos. 19,20 & 21.

3.1.3 Mineral Resources

The eastern portion of the district consists of rocks formed in beds of swallow lakes and coastal backwaters where the salt and mud brought by the rivers are deposited. The sedimentary rocks extend into the whole of Tiruvadanai, Ramanathapuram and Mudukulattur taluks. These sediments, mostly of clay and sandstone, have been deposited for several million years from what is known in types of clays geological parlance as Gondwana age, to the present day. They contain limestones. Limestone of different grades, clays, euchres, gypsum, graphite and Limonite sands are the minerals of economic value found in the district.

Minerals – Clay: China clay with an average thickness of 0.91 mm. occurs over an area of 2.59 Sq. Km. in Sivaganga area. The total estimated reserve area of the order of 4.06 million tonnes upto a depth of 3.05 mm.

Garnet and Ilemenite sands – The beach sands along the coast of Ramanathapuram district carry small quantities of garnet and ilemenite ranging in length from a few meters to 8 Km. and in thickness from 0.6 to 2.5 cm. The total reserves of ilmenite and garnet are 4165 and 1219 tonnes respectively.

Graphite: Graphite bearing zones have been met between 3m and 32m at several horizons in the boreholes. The percentage of graphite in the rock varies from 18 to 23. The graphite bearing zone has been proved along the strike direction for a distance of 2000m. The total preliminary estimated reserves are of the order of 1,80,000 tonnes of graphite bearing rock.

Gypsym: The total reserves of this area are estimated to be of 33,500 tonnes of which about 10,000 tonnes have already been mined.
Limeshell – Sub-Recent shell limestone occurs at about 0.8 Km. north of Ramanathapuram.The total reserves are of the order of 81,300 tonnes.

Limestone – Three bands of good quality crystalline limestone occur in the vicinity of (1) Pandalkudi (58 K/3; 9024', 78006'), (2) Palavanattam (58 K/2; 9033', 78000') and (3) Chinnayyapuram (58 G/15; 9029', 77058').Information available for mineral reserves produced in the district is given in Table 22.

3.2 Water Resources

3.2.1. Rivers, Canals & Waterways

The existence of over 5000 number of tanks in the district makes it known as the Lake district of the State. Vaigai river starting in Gandamanaickanur hills of Madurai district traverse through Paramakkudi and Ramanathapuram taluks in a south-easterly direction feeding a large number of tanks. It joins the sea near Attangarai. There are no perennial rivers in Ramanathapuram district. The only river of importance is Vaigai. The Gundar in the eastern slopes of the Varushanadu and Andipatty ranges above Watrap flows through Aruppukkottai and empties into the Gulf of Mannar. The river assumes the name of Reghunatha Cauvery from Kamuthi.

3.2.2 River basins and their catchment areas

i. Catchment Area of River Basins - Rivers, Canals and Waterways

Vaigai river basin, Pambar & kottakaraiyar and Gundar,are the three catchment areas of river basin in the district. The area of the basin within the district is 77000 ha., 124800 ha. and 213100 ha. respectively. The details are given in the Table No. 23.

ii. Basin wise status of the Ground Water Availability

There have been three river basins-Vaigai, Pambar & Kottakaraiyar and Gundar which have annual surface water potential 1579 [MCM], 653 [MCM] and 567 [MCM] respectively (Refer Table No. 24).

iii. Details of Dams and Reservoirs

There are three rivers were flowing to this district but no dam is available in the district (Refer Table No. 25). There have been 156 system tanks and 361 seasonal/rainfed tanks maintained by Public Works Department in Ramanathapuram district. 1340 panchayats tanks were also available in the district. Available water spread area in the district was not made available. The details are given in Table No. 26.

iv. Irrigation by Different Sources

The total cropped area is 208790 hectares and the percentage of irrigated area to cropped area is 4.87. The gross areas irrigated by tanks and wells are 7861 hectares and 2307.95 hectares respectively. R.S.Mangalam block has at maximum of 4857 ha. irrigated by Tanks and 437.64 ha. irrigated by wells. The details on irrigated area by different sources are given in Table No. 27.

v. Incidence of Drought, Flood and Cyclone

There are 7 taluks and 11 blocks in the years 1985-86 in the district. It has been ascertained from the available information that only one taluk and three blocks were affected by drought in the years 1994-95. There were one taluk and two blocks affected by drought in the years 1996-97. No block was reportedly affected by cyclone and flood in the district during the period 1985-1997. The details are given in Table No. 28.

3.2.3 Fisheries Production

The Ramanathapuram district has 271 km. of coastal line. No information was available for inland fresh water area and estuaries & brackish water area. Marine fishing was done in 99 villages in the district. The fish production has increased both in quantity and value during the years 1990–96. The details are given in Table No. 29.

i. General Fish Seed Production

The fish seed production of standard fry fluctuates from 1991 to 1996 and the highest production was in the years 1991-92. The inland fish production has also fluctuations between 1991 and 1996 in the district. There has been an increasing trend in coastal fish production in the district between 1991 and 1996. The details on fish and fish seed production are given in Table No. 30.

3.3 Heritage Resources

i. Protected and Conserved Monuments

One village of Ramanathapuram taluk has monuments namely Ramalinga Vilasam Palace maintained by the Department of Archaeological and one village of Kamudi taluk has a monument namely Fort Kamudi maintained by the department of Archaeology. The details are given in Table No. 31.

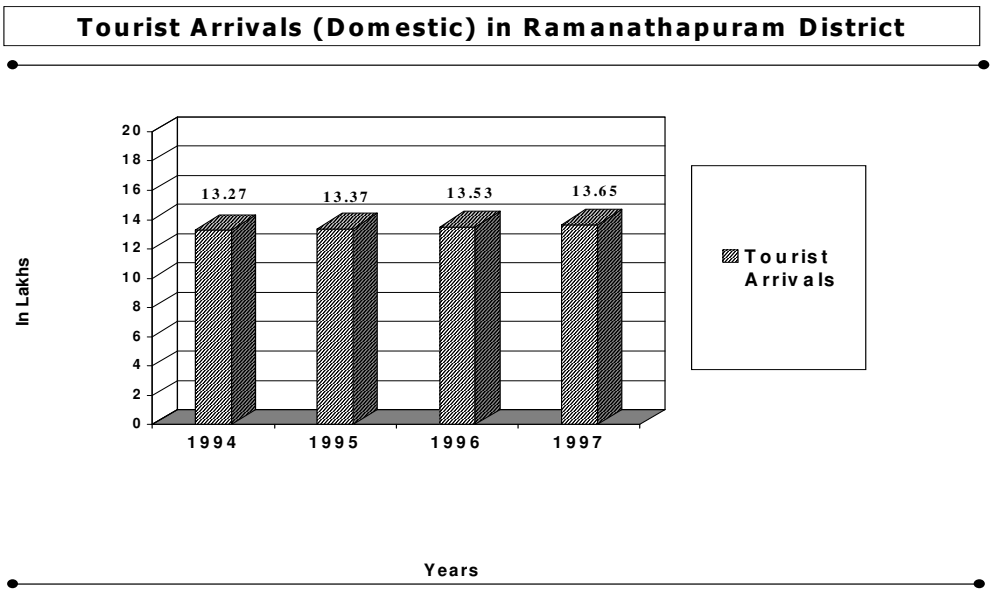
ii. Places of Tourist Attraction

Ramanathapuram district has a number of places having temples, famous for antiquity and sculpture. This region, having been known from early times and mentioned in Ramayana and later in Tamil Puranas, naturally has a good number of places of worship associated with Hindu gods. Of these, Rameswaram deserve mention which even now attract large number of persons from within the district and outside. Rameswaram is an island, but very close to the main land. It is the Pamban canal , which separates it from the main land. Rameswaram can be reached by train and lies on the Chennai-Rameswaram main line of the Southern Railway.

Rameswaram is a sacred place for Hindus and is as famous as Varanasi in the northern India. It is 12 miles from Mandapam, the nearest place on the main land, and it is from here that Rameswaram is linked by rail.

The town is built on an island in the Palk Straits at the extreme south- eastern tip of the Indian Peninsula. It contains one of India's most venerated temple, a fine example of south Indian architecture. The presiding deity of the temple is Ramanathaswamy, said to have been installed in Linga form by Sri Rama of the Ramayana epic on his return from Sri Lanka defeating Ravana. The Ramalingam at Rameswaram is one of the twelve Jyothi Lingams in India. The most impressive feature is the many pillared corridors, covering a length of 1220 metres. Besides, there are art works depicting puranic stories. Gandhamadhana Parvadham is a hillock to the north of the temple and is the highest point around from where one sets an excellent view of the temple and is the highest point around from where one gets an excellent view of the island. There is a two storeyed Mandapam and Rama's foot placed on a chakra for worship attracts pilgrims. Dhanushkodi, another holy place is situated at a distance of 8 kms. from Rameswaram and has a temple for Kothandaramaswamy. The temple remains intact on the island, even though Dhanushkodi was washed away by the cyclone in 1964. It is believed that Vibhishana, brother of Ravana, surrendered before Sri Rama at this spot. The three main festivals celebrated at Rameswaram temple are Sivarathri for 10 days (February-March) Brahmotsavam for 3 days (June-July) and Tirukalyanam for 17 days (July-August).

There are 12 tourist places located at 12 villages/towns in the historical / cultural / natural heritage area. The special significance of the area is Palace, Saint Temple, Hindu Temples, Sanctuary, Pilgrim centre, Mosque and Beach. Tourist arrivals in domestic have steadily increasing from 1990 to 1996. These tourist spots are visited throughout the year except Bird Sanctuary and Shiva Temple and included in the tourist circuits identified by the tourism department. Tourist arrivals both domestic and foreign have been steadily increasing and estimated as 1365036 during 1997 in the district (Refer Table No. 32 & 33).



3.4 Energy Resources

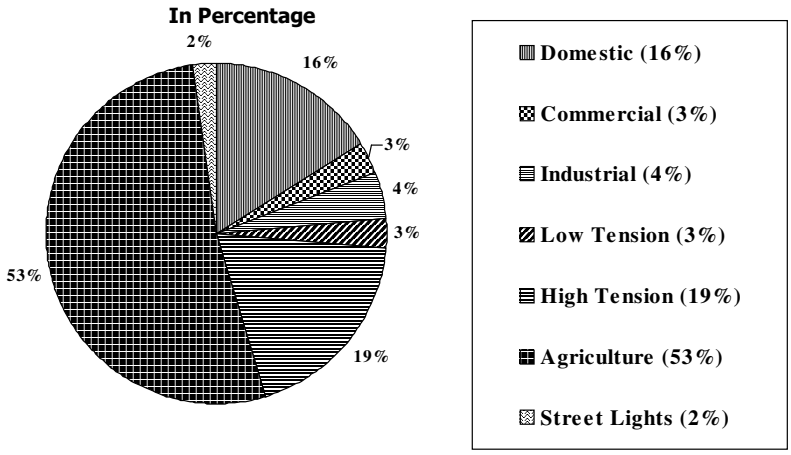
i. Installed Power Projects

There have been no installed power projects in the district (Refer Table No. 34).

ii. Consumption of Electricity

There were 2,61,750 electrical connections with a total consumption of 3,85,17,171 kW/h as on 1995-96. Agricultural consumption has the maximum accounting for 52.4% of the total consumption, followed by domestic consumption of 16.2%. The category wise consumption of electricity is given in Table No. 35.

Category wise Consumption of Electricity



iii. Electrification of Villages

Ramanathapuram district has achieved 100% electrification prior to 1986. All 2087 villages in the district are electrified. The electrification of the energised pumps was 7401 in the year 1996 (Refer Table No. 36).

iv. Non Conventional & Renewable Energy Sources Utilisation

There have been no estimates on non-conventional and renewable energy sources utilisation as the information was not furnished (Refer Table No. 37).

Chapter

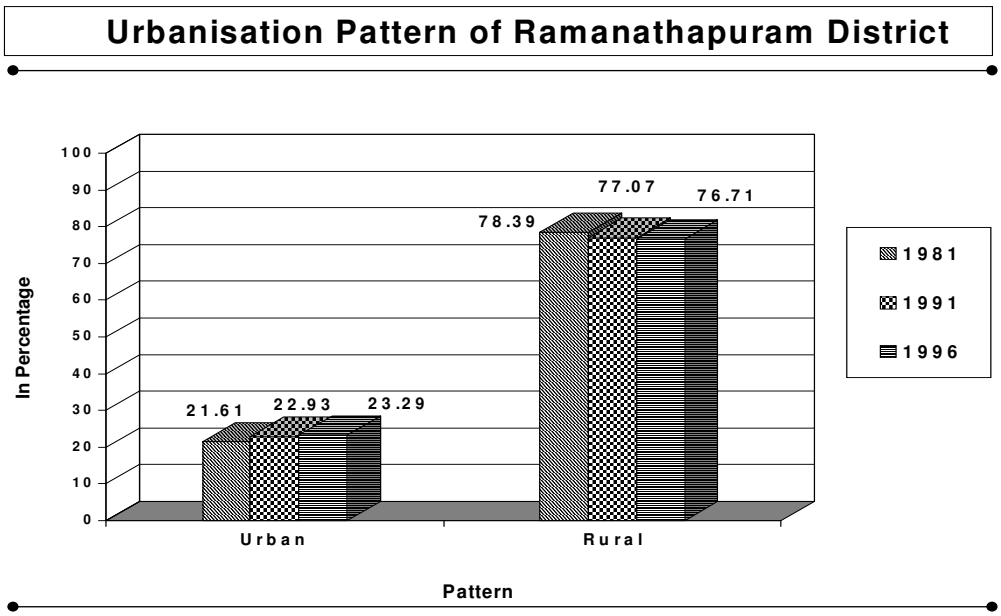
4

4.0 Infrastructure

4.1 Urbanisation

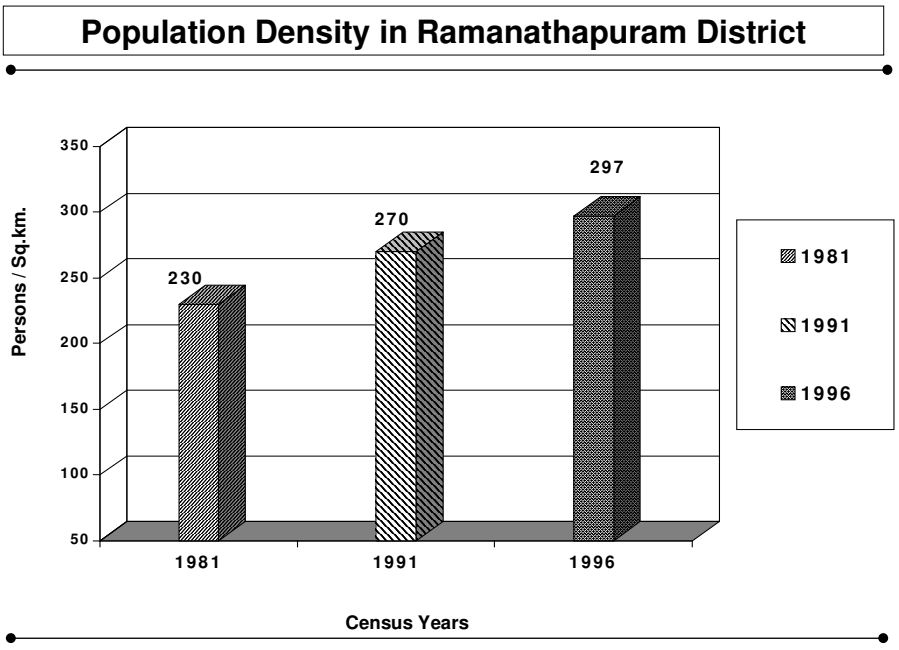
4.1.1 Urbanisation pattern

The proportion of urban population to total population increased during the years 1981-96 from 21.61% to 23.29% and is increased at about 15% during 1991-96. Among the urban areas, Paramakudi municipality accounts for a greater share of urban population when compared to the other urban areas. The proportion of rural population to total population increased from 78.39% to 77.07% during the years 1981-1991 and then decreased to 76.71% in 1996. The urbanisation pattern of the district is given in Table No. 38.



4.1.2 Density of Population

The overall density of population has increased from 230 persons / sq.km. in 1981 to 297 persons / sq.km. in 1996. The density in urban area has increased from 1209 persons/sq.km. in 1981 to 1591 persons/sq.km. in 1996 and the density of rural area has decreased from 188 persons/sq.km. in 1981 to 238 persons/sq./km. in 1996. The details on density are given in Table No. 39.



4.1.3 Decadal Growth rate in Urban centres

The decadal growth rates in municipalities and town panchayats have increased in the years 1961 to 1996. The urban population of the district has grown from 1.04 lakhs in 1961 to 2.92 lakhs in 1996. The decadal growth rate indicates that there is a considerable decline in growth over the previous decade in the municipalities of the district. Paramakudi municipality has registered the maximum growth rate. The details of decadal growth rate are given in Table No. 40. The Decennial growth rate for both urban and rural population over the past one decade, 1961 to1991 has increased (Refer Table No. 41).

4.1.4 Urban Slum Population

No information was available for slum population in the district. (Refer Table No. 42).

4.1.5 Trend in urbanisation and slums

The urban population has increased from 21.61% in 1981 to 23.29% in 1996 period. The identified slum population of Ramanathapuram district was not available. The details are given in Table No. 43.

4.2 Infrastructure Services and Environmental Status

4.2.1 Occupied Housing Units

Total number of occupied housing units has 218160 HH in 1996 in the district. Details regarding occupying housing units by water supply system and toilet installation by rural and urban areas of Ramanathapuram district are given in Table No. 44. It is seen that majority of households have water supply outside the houses. Likewise majority of household do not have toilet facility of any type.

4.2.2 Urban Services

Surface water and ground water are the major sources for protected water supply system in municipalities and town panchayats respectively. The Percapita water supply

for municipalities and town panchayats is 52 LPCD and 49 LPCD respectively. The average water supply is around 50.43 LPCD for the district. The municipality of Ramanathapuram has the highest consumption of 55 litres, while the town panchayat of Kilakkarai has 46 litres. The municipality of Paramakudi has 15% at the maximum and the town panchayats, Kamuthi and Muthukulathur, have 10% each at the maximum of percentage of population uncovered for water supply. Details on water supply services are given in Table No. 45.

4.2.3 Domestic waste water generation and treatment

The estimated sewage generation is 56 lakh litres among municipalities and 72.80 lakh litres among town panchayats. The district does not have any organised disposal of sewage. Nature of disposal and quantity through river is 56 Lakh litres in municipalities and 25.9 lakh litres in town panchayats, with the direct flow to sea disposal is 46.90 lakh litres. The town panchayats have complete open drainage system and the municipalities have partial under ground pipe system. The details on domestic wastewater generation and treatment in the district are given in Table No. 46.

4.2.4 Municipal Solid Waste Generation

The solid waste generation of municipalities and town panchayats are 15 tonnes and 21.75 tonnes, respectively. The solid waste collection in municipalities and town panchayats is 15 tonnes and 20.3 tonnes, respectively as on 1995-96. Overall the solid waste generated adds up to 36.75 tonnes with a collection efficiency of 96.05% with a manpower of 424 on solid waste management. The availability of compost yard in municipalities is two (Refer Table No. 47).

4.2.5 Composition of Solid Waste

It was observed that about 86% of the solid waste are compostable on wet basis 14% of rag, wood matter, glasses, brick and stone, etc, are non-compostable in the district. The details are given in Table No. 48.

4.2.6 Coverage of Problem Villages

It has been identified that about 1707 villages out of the total 2087 villages in the district have had problems with regard to supply of drinking water. R.S.Mangalam block has at maximum villages (385) in problem. 839 problem villages have been covered during the VII Five Year Plan (1987-92) and 868 villages covered during the VIII Five Year (1992-97). Necessary details are given in Table No. 49.

4.2.7 Reported cases of water borne diseases

Gastro-enteritis cases and dysentery cases were reported from the year 1992 to 1996 and the deaths of gastro-enteritis cases were also reported from the year 1992 to 1996. Information was not available for other water borne diseases. (Refer Table No. 50).

4.2.8 Facilities under Indian system of Medicines

Medical facilities of one type or others are available in 154 inhabited villages, which constitute 37.47 percent of its total inhabited villages. Homeopathy, Sidda and Allopathy are the commonly practised systems of medicine in the district. In addition there is a Unani Medicine dispensary available in the district. Information on hospitals, beds, dispensaries and admission capacity are given in Table No. 51.

4.2.9 Population below poverty line

There have been 72326 families of below poverty line in the district. The details are given in Table No. 52.

4.3 Transportation

The district is served by the metre gauge section of the Southern Railway. The main line from Chennai Egmore to Rameswaram runs through the district linking Karaikkudi and Manamadurai of the adjoining district. Road transport is another important aspect in communication facilities. The district is connected by the national highway. NH 49, Madurai - Dhanushkodi road, connects Manamadurai, Paramakkudi, and Ramanathapuram. There is no major shipping transport in the district. A small port at Rameswaram is having a ferry service to Talaimannar, situated in the north of Sri Lanka. This service is not operated round the year, but stopped with the onset of north-east monsoon. Kilakkarai port lost its importance in sea transport with the development of railway line to Thoothukudi and the opening of the Pamban-Madurai line. However, a little foreign trade is done with Jaffna, Kaits, Talaimannar and Colombo. Chanks are imported from Kaits and exported to Calcutta and Dacca for making bangles.

4.3.1 Development of Roads and Bridges

The district has 88 Km. of national highway, 59.70 km. of state highways, 383.20 km. of major district roads, 1100.62 Km. of other district roads 343.20 km. of panchayat roads and 40 km. of roads maintained by urban local bodies in 1996. Over and above, there are 1 major bridge and 265 minor bridges and culverts in the district in 1996. Relevant information is provided in Table No. 53.

4.3.2 Growth of Vehicle population

Two, three and four wheeler vehicles in the year 1996 were 14458, 1150 and 1212 respectively. (Refer Table No. 54).

4.4 Industrial Development and Environmental Status

The district is considered as an industrially backward area and the Government is giving incentives like cheap sites, adequate power supply and loans on low rates of interest to entrepreneurs for setting up industries. The Government on their part also has set up few establishments in the public / co-operative sectors for providing employment to local population. The chief industries found in the district are handloom weaving of textiles, spinning and weaving of textiles in factories, salt and chemical industries, cement, matches, crackers and fireworks and printing and allied industries. Handloom weaving of cotton textiles is an ancient occupation followed in this district. The important handloom centres are situated in Paramakkudi taluk. Silk weaving, using China Silk as raw material, is practised in Ramanathapuram and Paramakkudi. Textile mill is functioning in the district, which produce a variety of yarns. Mat weaving is followed in the vicinity of Ilaiyankudi. Boxes and other articles from palmyrah leaves are being manufactured in a number of places in Ramanathapuram taluk. Coconut coir fibre making are followed in the district, the important centres being Periyapattinam (Ramanathapuram taluk).

4.4.1 Number of Industries

There have been 28 Red Category, 45 Orange Category and 2 Green Category Industries in 1995-96 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. 55.

4.4.2 Emission Inventory of Major Industries

Information was not available in this head (Refer Table No. 56).

4.4.3 Air pollution stressed area

Information was not available for air pollution stressed area in the district. The Details are given in Table No. 57.

4.4.4 Ambient Air quality Status

There has been no ambient air quality monitored in Ramanathapuram district. The Details are given in Table 58.

4.4.5 Water quality

The geological formation comprised in this district is of mostly marine origin and hence the groundwater is most of the district areas at all levels is brackish and saline. A few areas confined to the shallow alluvial aquifer of Vaigai River are the only source of potable quality of water in this district. Under MINAR'S Scheme TNPCB is monitoring the quality of water from Vaigai River bed near Thirubuvanam. DO content of water is exceeding the standard value. pH of water is slightly more than the standard. The details are given in Table No. 59.

4.4.6 Discharge of Industrial effluents

There has been no discharge of industrial effluents in river basin/other water bodies in Ramanathapuram district (Refer Table No. 60).

4.4.7 Noise levels

Data on residential noise levels were not available (Refer Table No. 61). It is ascertained that no noise level monitoring is being carried.

4.5 Environmental Status of Coastal Eco-system

4.5.1 Industrial sewage discharge in the coastal waters

Industrial sewage discharge available for the coastal water of 1025 m3/d in the district. The coastal towns and coastal villages are 11 and 99 respectively.(Refer Table No. 62).

4.5.2 Aqua culture activities

Ramanathapuram district has 271km. of Coastal line covering 99 coastal villages and towns. There are 164 aqua-culture units spread of 417 ha. in Ramanathapuram district (Refer Table No. 63).

4.5.3 Wetland Habitats, their use and problems

Mangrove vegetation in Ramanathapuram occurs in small blocks and is represented by luxuriant Mangrove vegetation and its associates in few places, but in degraded condition in most of the places. In this district Mangrove communicate with the sea by shallow passage of water from fresh water. Sources from Kottakarai, Uppar are Vaigai rivers. Sand bars affect the sea water inflow into the mangrove islets. with between sea & Tambirabarani estuary. The Mangrove areas 825 ha in 13 bits are at present sea poromboke and as a part of by the forest department to notify these areas under section 26 of Tamilnadu forest act, 1882.

The district has a long coastline of about 271 kilometres. The coastal area is a sandy tract with no natural growth. Coastal taluks of Mudukulattur and Ramanathapuram are on the south above the Gulf of Mannar. The Rameswaram taluk is an island separated from the mainland by the Pamban passage. The sub-marine extensions in the east have numerous reefs, shoals and coral islands. Coconut palms and fruit trees make up all the cultivation. Tiruvadanai is another coastal taluk, which is in the northern parts of the district. All along the sea coast we can find thorny Prosopis and Palm trees. The coastal forests serve to control the drifting sands. There are 16 other islands, besides Rameswaram, the important being Kurusadi, Muyal and Nallathanni Thivuvaigai (Refer Table No. 64).

4.5.4 Potential Hot Spots along the coast

The 11 coral islands available as potential hot spots along the east coast of Gulf of Mannar. The present status of the area is Marine National park in the district (Refer Table No. 65).

Chapter

5

5.0 Environmental Institutions

5.1 Environmental Education and Research Institutions

There has been no Environmental Education and Research Institution in the district. (Refer Table No. 66).

5.2 Environmental NGOs

There has been three NGOs dealing with Environmental related issues in the district. the area of the operation of Ramanathapuram district. There have been activities under taken of Education, Women and child welfare, public health, Women development, Environmental awareness in the district. (Refer Table No. 67).

Chapter

6

6.0 Summary of Observations

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

Demographic details

1) During the period of 1981-91, there has been an increase in the growth rate of population at about 1.49% per annum.
2) It is interesting and encouraging to note that the percentage of female literacy level has been significantly increased for the past 15 years.

Land Resources

1. 53.68% of the land area in Ramanathapuram District is utilised for cultivation. Hence 1.31% of the land area remain as cultivatable wasteland.
2. The utilisation of chemical fertilisers and bio-fertilisers in the district is high.
3. Typic Chromusterts (0.60%), Vertic Heplustalfs (0.58%) and other types are the soil types of Ramanathapuram District.

Forest resources

1. The Forest area in Ramanathapuram district is about only 1.30%. Apart from Reserve Forests, Reserve Lands and Unclassified Forests, there are 5 scrub forests under green cover classification. The man made forest plantations have been restricted to the existing forest area in the district. There are few Bird Sanctuaries and a Marine National Park in the district.
2. The main sources of irrigation of the district happen to be tanks and wells. Only 4.87% of the total cropped areas is irrigated by these sources.

Tourism

1. There have been 11 tourist places in the district. Domestic tourist arrivals have had fluctuations.
2. The fishing potential area in the district is mainly the coastal line. The fish production both in quantity has increased for the past 6 years. The inland fish production and seed production have fluctuations. But coastal/marine fish production has steadily increased from 1991-92 to 1995-96.

Urbanisation

1. 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.
2. Urbanisation process in Ramanathapuram district has been taking place at a higher rate. However, certain essential needs of urban areas like drinking water, electricity, public convenience, drainage, approach roads and health centre have not been increased keeping the pace with the process of urbanisation.
3. Urban services like drinking water and solid waste management in the district is not promising.

Transportation

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

Industrial Development

1. The Red, Orange and Green categories of hazardous Industries are identified by TNPCB. Most of the Red category industries are very hazardous in nature. There are only a very few red category industries in Ramanathapuram district.

Environment institutions

1. There has been no environmental Research institute in the district of Ramanathapuram.
2. Environmental NGOs may be involved in protecting environmental of the district for which action plans for better environment shall be made with NGOs participation.
3. 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.