



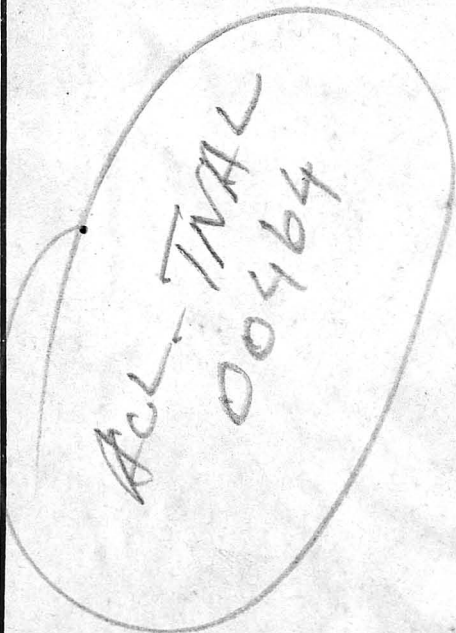
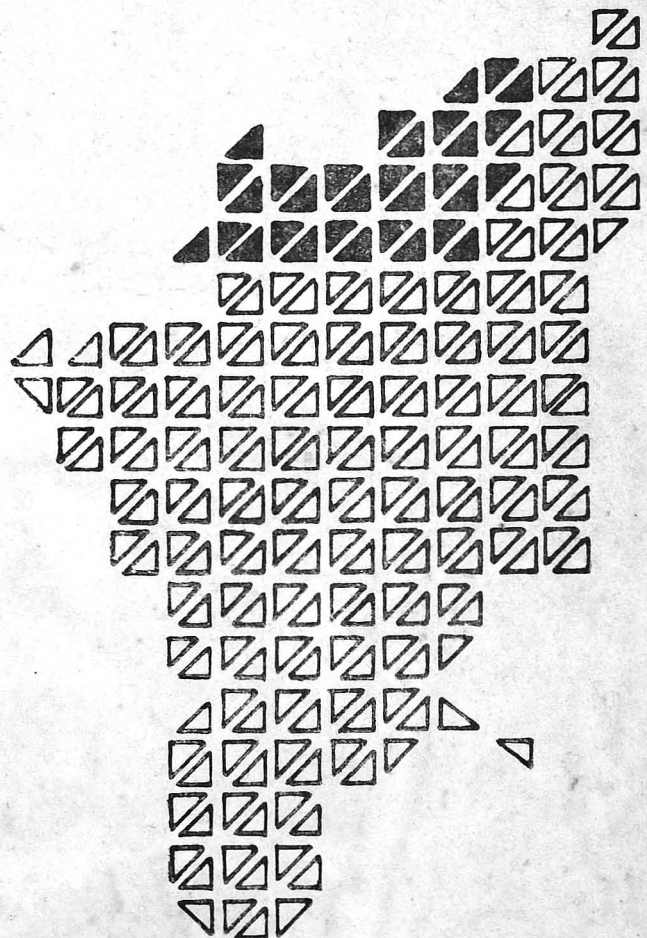
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'Industries'

VELLORE-DHARMAPURI REGION

217

A DRAFT REGIONAL PLAN



VELLORE-DHARMAPURI REGION

A DRAFT REGIONAL PLAN



DIRECTORATE OF TOWN PLANNING
GOVERNMENT OF TAMIL NADU

1973-74



PREFACE

The Department of Town Planning, after reorganisation in 1970 was charged with the formulation of Regional Plans for the eight regions into which the State was delineated. This report on the Vellore-Dharmapuri region is one among them.

The present report is divided into 17 Chapters. Chapters 1 to 9 present the existing conditions in the region and chapters 10 to 17 deal with the assessment of problems, forecast of population and the desirable future frame work for the development of the region. This region is one of the backward region of the State, comprising 15 per cent of the total area of Tamil Nadu and housing 11.3 per cent of the total population. There are 34 urban centres of which Vellore is the only Class I Town. Dharmapuri District is more backward and dry compared to the taluks of North Arcot District forming part of the region and has to be developed through dry land farming and providing for industrial development.

The officers who worked on the project have spared no effort to make the report an informative and useful one. They have not only brought out the major problems of the region into focus but also indicated the lines of future action for the orderly development of the region. The report will no doubt be further examined by the Regional Planning Authority to be constituted for the area and finalised.

The report has been the result of works carried out by the Regional Directorate, Vellore-Dharmapuri region. Particular mention has to be made about the contribution of Thiru A. Damodaran (1970-72) and Thiru J. V. Chandrasekaran (1972-73) for the successful completion of the report. The contribution of the staff of the Regional office and the Headquarters office is also acknowledged.

Madras
1974

A. V. KRISHNAMURTHY,
Joint Director of Town Planning.

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CHAPTER I.

INTRODUCTION.

1.01 Planned development implies not only removal of poverty and attainment of **economic self reliance**, but also reductions of social, economic and regional imbalances. These cardinal principles, have permeated right through the Four Five-Year Plans, through which the country has emerged, with varying degrees of success. Laying emphasis on growth and reduction in inequality between sections of society and imbalances between regions as indispensable to a successful attack on mass poverty, the Planning Commission in its document on "Approach to the Fifth Plan (1979-84)", states "A growth oriented strategy must have woven in its a series of redistributive measures. This requires planning not only for a high growth rate, but also for a particular composition of growth must accordingly be defined not merely in terms of goods and services, but **must also ensure that relatively backward areas and classes will have their due share in raising production and expanding income**". "The compulsions of the present situation", **the document continues** "dictate that the Fifth Plan should be so oriented as to speed up process of removing poverty and fulfilling the people's expectations. In situations involving massive under utilisation of human resources, a higher growth rate and an increasing equality in terms of consumption are mutually compatible objectives, if planning and implementation are conceived along appropriate lines. The accent on the uplift of backward classes and development of backward regions and the envisaged public procurement and distribution system to ensure availability of essential goods to the poorer sections of the population at reasonably stable prices, have all been conceived as mutually reinforcing instruments of policy. The document in other words, tacitly implies the imperative need, to bring the relatively backward regions into the main stream of economic life to contribute and share in its economic benefits alike expeditiously through the implementation of an appropriate planning policy.

1.02 In the light of the strategy advocated by the Planning Commission, for implementation of the country's Fifth and succeeding Five-Year plans, the programming for the planned development of Vellore-Dharmapuri Region, is of more than academic interest and has assumed special significance and importance. Among the eight regions into which Tamil Nadu has been divided for purposes of formulation of Regional Plans, Vellore-Dharmapuri Region with a population of 46.53 lakhs according to 1971 census, and an area of 18,870 square kilo metres, ranks third in size, fifth in population and seventh in density with 246 persons per square kilo metre. Situated as it is, in the rain shadow zone of both the monsoons, the region is highly susceptible to frequent recurrence of prolonged droughts, and is economically the most backward region in the State, giving precedence perhaps only to Ramanathapuram Region in this regard. Significant parameters of economic well being for the region and Tamil Nadu are given in Table 1.1. As the table would reveal, the degree of backwardness of the region, represented by these figures rests primarily on its low urbanisation. There is virtual absence of large-scale industries and correspondingly low levels of tertiary occupation, low percentage of area under cultivation and irrigation, the low consumption of electricity and the consequent low productivity in many areas of production including agriculture and inadequate development of Education, Health, Medical and other Social infrastructure facilities.

1.03 Two decades of planned development, through which the State has passed, has done much to provide a base, both for the development of the economy as a whole, and purposeful integrated development in selected areas. Given the limitations of resources, specially in personnel, intensification of effort implies selection and therefore, a degree of what may thought to be discrimination between different areas. Thus in terms of regional development there has been a natural tendency for new enterprises to gravitate towards the already over-crowded metropolitan areas. More correctly, however, this should be regarded not as discrimination but as priority in time for reasons of overall economic and social advantage, as these areas are better endowed with economic and social infrastructure. Such priorities, in the past, always presented difficult decisions, especially when they involved postponement of programmes of massive development in

areas which are backward and have deep-rooted problems of unemployment and under-employment. However at the present stage of development of the State economy which has provided to a certain extent greater diffusion of enterprise and ownership of production, than before, brought about by sustained efforts of planning there is need to reformulate to some extent the objectives of planning and to institute more adequate techniques of implementation, which will benefit the more backward regions such as the region under study, which have not received adequate attention so far due to various reasons. If the fifth plan objectives of securing not only the basic minimum needs to the people, especially the lower strata of society, but also a strong social base through the provision of education, health services and minimum amenities and providing a measure of social security to increasing numbers within the community, were to be realised to a reasonable measure of success, then the plans have to be so re-oriented, as to provide sizable plan investments in backward regions.

1.04 Backward regions may be divided broadly into three groups. There are, first, those regions which are rich in natural resources, whose development follows directly from the implementation of economic and industrial plans. Areas with undeveloped coal, iron or water resources may be cited as an illustration. Secondly there are areas which are under developed and have no significant resources, but are not also under heavy pressure of population. In these areas progress towards reasonable minimum could be secured in part through agricultural and other development at the local level and in part by measures for training in new skills and facilities for stimulating mobility of labour. Thirdly, there are backward areas which are both poor in resources and under intense and growing pressure of population. At the present state of development, these areas represent one of the most difficult aspects of the country's economy. They call for a long term strategy of development which would provide, at the same time for location of carefully selected industries, extension of basic communication and services, intensive agricultural development where conditions are favourable and greater mobility on the part of labour force. In these areas, even under favourable conditions of overall economic growth, it is likely to take considerably longer time than in other areas to ensure a reasonable minimum to bulk of the population.

1.05 Barring certain isolated pockets, the rest of the Vellore-Dharmapuri Region, indicated, the region is comparatively less endowed with natural resources, and therefore agriculture and industrial development has lagged far behind when compared to developments in the other regions. This has been mainly responsible for the low per capita income of the region. New productive capacities and services established in the region, through the successive five-year plans in larger or smaller degree—the drought prone area scheme—the small and marginal farmers programme and the integrated dry farming project—have not been very helpful in area development. There has been little regional planning, and no conscious effort has been made to integrate what little development of the industrial and the urban economy with that of the rural economy. It is in such regions—markedly under developed, lacking in resources, have heavy pressure of population and a high degree of unemployment and under employment—that the principles of Regional Planning can find useful application through the approach of area development. It should be possible to identify more precisely through area development approach, the vulnerable sections and the pockets most exposed to poverty, to prepare each area for more rapid advance by multiplying skills, providing the basic communications and services, extending rural electrification and ensuring more rapid agricultural development.

1.06 Planning on lines described above appears to offer the largest opportunity during the coming years by—assuming a reasonable minimum to an increasing proportion of population, especially in the rural areas. Compared to the prevailing pattern, such development is likely to call for a larger total investment and the allocation of resources will need to be better balanced between longer and shorter periods of gestation. At the same time the fuller utilisation of man-power resources, greater emphasis on development of agriculture, strengthening of the social base, integration of the rural with the industrial economy and the wider spread of the industry are calculated to provide for greater mobilisation of resources and a larger national output. These aspects have to be worked out necessarily in quantitative terms and with reference to different branches of the economy.

1.07. Reduction in disparities in lands of development between different regions between urban and rural areas and between different economic and social groups is inevitably a process spread over time. A measure of redistribution through the provision of community services and special facilities and assistance for those in lower income brackets are essential aspects of social policy. The expansion of the public sector and measures to prevent concentration of economic activities in a small number of hands are important means both for ensuring the growth of the economy and for giving command over large resources of the community.

1.08. But in an under-developed economy with its problems and compulsions, neither redistribution of income through fiscal and other measures nor the growth of the public sector, will themselves be enough to narrow the disparities between the fully employed and the unemployed or the under-employed, skilled and unskilled workers in towns and those in villages, and regions whose economy and resources are developing rapidly and those which are lagging behind. If these disparities are not to widen in excessive degree and large proportion of the population specially in rural areas is to be enabled to secure a reasonable minimum, the strategy and pattern of development have to be conceived more broadly than has been possible so far. Moreover, they have to be so designed and executed in detail that progressively all parts of the regions and all sections of population can come in a positive way within the influence of economic change.

1.09. The draft Regional Plan for the Vellore-Dharmapuri Region which follows, traces briefly the special features and problems of the region in the various fields, the strategy envisaged for its further development, and the framework required to bring about its integrated development.

TABLE 1:1

TAMIL NADU AND VELLORE-DHARMAPURI REGION

ECONOMY—SOME COMPARATIVE STATISTICS.

Character.	Region.	Tamil Nadu.
(1)	(2)	(3)
1. <i>General</i> —		
Area (in '000' square kilometres)	19.49	129.97
Population (in million) 1971	4.65	41.10
Decadal growth rate (1961—1971)	22.63	25.67
Density of population (1971) per square kilometres ..	246	316
Towns (Number)	34	443
Villages (Number)	1,830	14,124
Urban population (per cent)	17.8	30.3
2. <i>Occupational Pattern</i> —		
Total workers to total Population (per cent) of which—	35.28	36.67
(a) Cultivators (per cent)	15.84	11.36
(b) Agricultural Labourers (per cent)	10.00	10.68
(c) Other workers (per cent)	9.44	14.63
3. <i>Agriculture</i> —		
Total Reported area (1969-70) in '000' hectares ..	1949	13011
Net cultivated area (1969-70)	814	6090
Percentage of net irrigated area to net cultivated area.	41.7	46.6
Net irrigated area ('000' hectares)	292	2600
Percentage of net irrigated area to net cultivated area.	35	43.2

Character.	Region.	Tamil Nada.
(1)	(2)	(3)
Average yield per acre (Kgs/Hectare)—		
(a) Rice .. 1970-71 ..	1,800	1,974
(b) Sugar .. 1970-71 ..	7,410	8,413
Consumption of fertiliser per hectare of cropped area (in Kgs.)	27.22	30.40
Livestock per thousand Population	700	666
Annual rainfall.	900 m.m.	1,036.7
4. <i>Industry</i> :—		
Number of Large scale units	15	585
5. <i>Electricity</i> :—		
Per capita consumption in units	63.6	111.76
Percentage of villages electrified to total villages ..	66 %	62.2
6. <i>Roads</i> :—		
Road length per 000 square Kilometres of area ..	38	48
Road length per lakh of population	176	152
Number of Motor vehicles per lakh of population.	124	240
7. <i>Railways</i> :—		
Railway route lengths in kilometres per '000 square kilometre area.	24	27
Railway route length in Kilometres per lakh of population.	9.7	9
8. <i>Literacy</i> —		
Percentage of literates to total population. ..	30.1	39.39
9. <i>Plan outlay</i> —		
Fourth Plan (1969-74) Planning Commission ..	Rs. 25 crores (approximate).	519.36 crores.
10. <i>Per capita income</i> —		
Per capita income (1970—71) in Rupees ..	593	544

CHAPTER 2

PHYSICAL CHARACTERISTICS

2.01. LOCATION AND EXTENT.—Vellore-Dharmapuri Region, one among the eight Planning Regions, into which Tamil Nadu has been divided, covers the entire administrative districts of Dharmapuri and North Arcot, excluding three taluks, viz., Arakonam, Vandiwash and Cheyyar of the latter district. The Region which is a land locked one, has Mysore and Andhra States as its western and northern neighbours, with Madras-Chingleput and Salem-Cuddalore Regions forming the eastern and southern boundaries respectively. As per the 1971 census, the Region has a geographic extent of 19,490 square kilometres and a population of 46.5 lakhs. While, geographically, the Region may present some diversities from the point of view of economic backwardness, it forms part of a single entity, thus lending itself easily amenable to developmental planning efforts. Vellore, with a population of 1.4 lakhs, the only prominent town of administrative and commercial importance, providing a variety of facilities is located on the north-eastern part of the region on the Madras-Bangalore highway and rail trunk route and one has to traverse a distance of 100 kilometres and 166 kilometres from south and west respectively, to reach it, thereby throwing in bold relief, the lack of such facilities in the rest of the region. In terms of population and density, the region ranks fifth and seventh respectively among the eight planning Regions of the State. (Vide map annexed.)

PHYSICAL FEATURES.

2.02. Geomorphologically, the Region presents a kaleidoscopic view of an interesting but picturesque and contrasting landscape. The striking feature of the physiography is the occurrence of two distinct but separate chain of broken hill range running in a North-east, South-west direction across the Region, separating the plains and trough-shaped basins, that are wedged between them. The first of these, forming part of the eastern ghats and their spurs, runs along the northern and western portions of the North Arcot district, separating the undulating plains of Tiruvannamalai, Polur, Vellore, Arcot and Walajapet in the east. The loftiest mountains among these hillranges are the Javadies which cover the eastern portion of Vaniyambadi, Tiruppathur Taluks, the north-western portion of Chengam taluk and the western part of Polur taluk. The hills in the southern part of Chengam taluk form part of the Kalrayan range of South Arcot district. The general elevation of the Javadies is 750 metres, with peaks raising up to 1,250 metres, the prominent among them being Elagiri Hills, Swamimalai and Kambugudi in Tirupattur taluk, Karnatigar in Polur taluk and Kailasagiri in Vellore taluk. The occurrence of scattered small hillocks adds to the picture sequences of the eastern plains.

2.03. The mountainous country of Dharmapuri district on the western part of the Region forms the second hill range. For the most part, the hilly country has a mean elevation of 400 metres, with a number of hills rising to more than 800 metres in height and are thickly clad in vegetation. Devarbatta (1,000 metres), Pagoda hill, Sulagiri, Melagiri, Diaran Durgam, Anchetti Durgam, and Muniswarankonda are some of the prominent peaks in this area. (Vide map annexed.)

2.04. The hills form the watershed between the plateau on the north and north-west known as the Balaghat and the plains on east known as the Baramahal. Balaghat which forms part of the Mysore plateau and comprises of Denkanikottah and Hosur Taluks, north-western part of Krishnagiri Taluk and a portion of Palacode Taluk, is an undulating plateau with a mean average elevation of 900 metres. The northern part of the plateau is treeless with undulating topography, while the eastern part consists of numerous rocky outcrops. The southern and western parts are covered with dense forests. The plateau is divided into four sections by the Valley of Chinnar, Pennar and Markhanda Nadhi. The Baramahal is an extensive basin has a mean elevation of 390 metres, and is bounded on the east and south by Javadies, Sheroy and Kalrayan Hill ranges, with the river Cauvery on the south-west forming the common border between Salem and Dharmapuri districts. The basin extends over the taluks of Dharmapuri, Harur, Uttangarai and parts of Krishnagiri and Hosur.

2.05. The general slope of the region is from west to east, with mean elevation ranging from less than 150 metres in the east to more than 1,000 metres on the extreme west and north-west. While the hills bordering the Polur and Tiruvannamalai Taluks on the east are barest of any foliages in the rest of the Region, the hills are covered with thick growth of natural vegetation. However, in the former case, the bare rocky surface, has given rise to numerous tanks in the plains below, in the form of man made dams. The spherical rock masses of the hills throw off rain water without retaining in and the hill streams which are thus fed, flow into the tanks. Many of these tanks are in fact big lakes.

2.06. The conspicuous presence of the hill ranges, facilitates easy identification of five natural sub-divisions of the Region, reflecting similar geographic, economic, cultural and developmental characteristics. These are (1) The Northern Sub-Region; (2) The Eastern Sub-Region, (3) The Central Hill Sub-Region, (4) The Central Plain Sub-Region, (5) The Western Sub-Region.

DRAINAGE SYSTEM.

2.07. From the point of view of utilization of surface flow for purposes of irrigation, the Palar, Pennar, Cheyyar, Ponnaiyar, and Chinnar are among the important rivers of the Region's drainage system, besides Cauvery, which eventhough flows through a portion of the region, is not utilised for surface exploitation. The Cauvery enters the Region, at the south-western corner and taking a southern course falls 20 metres below at Hoganekkal before its waters add to the stanly reservoir at the Mettur Dam in Salem district. The Chinnar which is a tributary of river Cauvery, raises near Denkanikottah and fall into the Cauvery near Hoganekkal. The river is dammed at Panjapalli near Marandahalli. The other tributaries of the Cauvery flowing through the Region are Thoppaiar and Toddorhalli.

2.08. The Pennar river rises in Mysore State near Nandi Durg and flows through Hosur, Krishnagiri, Harur add Uttangarai Taluks. A reservoir and dam at Krishnagiri have helped to utilise its water for irrigation in the two main canal irrigated blocks of Dharmapuri district in Krishnagiri and Sathanur Dam in North Arcot district. The chief tributaries of the river Pennar are the Markandhanadhi, Kambainallur Nadhi, Pambon and Vanniar. Medium and minor irrigation schemes have been suggested, to utilise the surface flow of these rivers.

2.09. The Palar river rises near Nandidurg in Mysore State, enters the region at the North-western corner of Vaniyambadi taluk and flow through the taluks of Gudiyattam, Vellore, Walajapet and Arcot before entering the Madras-Chingleput Region. Cheyyar, which rises in the Javadies Hills and Ponnai which rises in the Chittur district of Andhra Pradesh, with Goddar and Kaundinyar in Gudiyattam taluk form its main tributaries.

2.10. The important surface irrigation projects in the region and their ayacuts are as given in Table 2 : 1.

TABLE 2 : 1.

IRRIGATION PROJECT AND THEIR AYACUTS.

Name of the irrigation Project.	Ayacut in hectares.
(1)	(2)
1. Krishnagiri Reservoir and dam across Pennar ..	3,600
2. Sathanur Reservoir and dam across Pennar ..	4,200 Does not include the Ayacut in Tirukoilur taluk of South Arcot.
3. Chinnar Reservoir and dam across Chinna ..	1,800
4. Nedungal dam across Pennar and Pennar lake ..	2,320
5. Palar dam across Palar	30,000
6. Cheyyar dam across river Cheyyar	10,000
7. Ponnaiyar dam across river Ponnaiyar	9,000
8. Kaveripakkam big lake	2,550 (includes Ayacut in Arkonam taluk.)

CLIMATE AND RAINFALL.

2.11. The Region has a generally dry and agreeable climate with comparatively cool nights and an appreciable drop in temperature from June, following the onset of the monsoon season. The climate of the western half of the region i.e., Dharmapuri district is more pleasant for a major part of the year than its eastern counterpart i.e., North Arcot district. The period from February to May is one of continuous increase in temperature with May as the hottest month in the year, when the mean daily maximum and minimum temperature stand at 38.7°C and 26.3°C respectively. The maximum temperature during summer is found to exceed 42°C . December and January are the coldest months in the Region, with a mean daily maximum and minimum temperature of 28.1°C and 18.3°C respectively. In general, the taluks of Vellore, Arni, Walajapet and Gudiyatham which abound in barren hills suffer from rather extremes of climate, both in summer and winter, as compared to the rest of the Region which enjoys a more equitable climate.

2.12. The Region receives an average annual rainfall ranging from 850 m.m. in Dharmapuri district to 970 m.m. in North Arcot district, nearly half of which is received during the North-east Monsoon season. The South-west monsoon accounts for nearly 30 per cent of the annual normal rainfall, and the remaining accounted by occasional summer showers. Tiruvannamalai, Polur and Arni gets the highest average annual rainfall of 1,000 to 1,200 m.m. followed by Chengam, Walajapet and parts of Arni and Polur with 980 to 1,000 m.m., Tirupattur and the entire Dharmapuri district have an annual rainfall of 750 to 850 m.m.

2.13. Areas receiving less than 635 m.m. of annual rainfall are identified as drought prone areas. In addition, areas which are mainly dependent upon North East monsoon suffer from its characteristic vagaries. Almost the entire Dharmapuri district and a portion of Tirupattur taluk may, therefore, be classified as drought prone areas. The problem of drought prone areas is further compounded by the scarcity of cultivable land. The state average for the percentage of uncultivable land to the total land is 31 per cent. It is only in the Vellore-Dharmapuri Region, that the percentage of uncultivable land to total geographical area is as high as 48 per cent. This coupled with unfavourable rainfall conditions makes practice of agriculture in the region, a comparatively difficult proposition even under normal circumstances. The relative humidity is generally between 70 and 90 per cent, but periods from February to May are generally characterised by dry air.

GEOLOGY AND MINERALS.

2.14. The most part of the Region is a hilly country having a mean elevation of about 400 metres above sea level. A number of hills rise to more than 800 metres in height and are thickly clad in vegetation. The hills represent relief features of what should have once been a notably hilly terrain. The Region has undergone several periods of mountain building, all dating to the oldest time scale on earth namely Archean era. As a result of the various structural disturbances a number of rock types have evolved and thus a wide variety of rock formations can be met with in the Region. Geologically all the igneous and metamorphic rock formations met with in the State are developed in this region. But for the most part, the archeans are represented by the more uniform plutonic incised granite of the Baramahal type. The upper Gondwanas (Rajmahal) are represented by reddish sandstones, conglomerates, clay and shales with loose conglomerates containing imperfect plant remains. They are many hundred metre thick and dip at moderate angles to the east disappearing under the laterite and alluvium at the eastern edge of the Region.

2.15. The hills are made up mostly of iron ores, granites, gneisses, charnockites, syenites and dolerite dykes. In the plains are developed deposits of dunites pegmatities, etc. The important mineral deposits associated with these rock types in the Region may be briefly mentioned. (Vide map annexed).

DHARMAPURI DISTRICT.

2.16. IRON ORES.—The iron ores developed in this district are of Quartz-magnetite type analysing to about 40 per cent Fe, and are found to occur in the Thirthamalai group of hills falling in Harur taluk. The reserves which are estimated at 47 million tonnes can be considered as additional resources for the Salem steel project.

2.17. LIMESTONE.—Limestone of medium size deposits are found near Samalpatti, Kanjanur, Tippampatti in Uttangarai taluks, analysing to 44 to 51 per cent CoO. There are also a few leached type of lime deposits known as Kankar which occur as cappings over other rock formations in the above area. The total resources of crystal-lime and Kankar type of lime deposits is estimated 3 lakh tonnes and 4 lakh tonnes respectively. Although some of the limestone available here are of cement grade type, because of limited quantity and the overall lower grade of limestone and kankar, they can be best put to use only for lime burning purposes.

2.18. There are two other types of calcite bearing rock types in the district viz., the Carbanotities occurring near Jogipatti in Uttangarai taluk and the limestone occurrences north of Hoganekkal in the Wadapatti reserved forest area. While the former is a satellite deposit of a much larger one found near Tirupattur, the latter is of 100 metres thick and about 8 kilometres long. These deposits are said to contain some important proportion of apatite, vermiculite and wollastonite, minerals having industrial uses. The extent of the resources and the economic viability of its exploitation, is now under examination by the Geology Branch of the State Industries and Commerce Department.

2.19. MAGNESITE.—Magnesite, a mineral useful in refractories, is found to occur in the hills around Kanjanur, 20 kilometres from Dasampatti, in the form of dunite patches. The resources of magnesite in this area are estimated at 1,000 tonnes. The grade of the magnesite is low and recovery in the form of mineral is poor, and hence the deposits are not of economic interest. However, their utility in the manufacture of mosaic tiles may be worth while exploring.

2.20. CORUNDUM.—The hills in the neighbourhood of Paparapatti, near Dharmapuri have been known to contain deposits of corundum set in the midst of syenites. Corundum an oxide of aluminium is noted for its property of abrasive quality. The deposits, in this case, however, are not available in economically exploitable quantity.

2.21. QUARTZ AND FELSPAR.—These form the main constituents of rock types called pegmatities. A few occurrence of Quartz have been noticed east of Morappur-Dasampatti railway track, in Morappur, Kalli, Vellakal and Pudur Pungani Reserved forests and east of Dinnabellur. A detailed investigation has now been undertaken to estimate the reserves available.

2.22. COPPER.—Dissemination of chalopyrite and malachite (ores of copper) occur within a radius of 32 kilometres along Bairanayakkanpatti in Harur taluk. An average content of 1 per cent copper has been noticed, in this area.

2.23. BUILDING STONES.—The many rock types, found in the district form excellent sources for use of building stones. Of these, the liner bands of dolerites (dykes) known commonly as black granites are amenable to polishing and because they are dark in colour, are much preferred as decorative and monumental stones. Dharmapuri district has some very well developed deposits of the dyke rocks, the more important locations being, (1) Guttapalli, (2) Tippannapalli, (3) Dandarhalli, (4) Sundukurichi, (5) Avadampalli, (6) Nakkalpettai and (7) Moganur. These rocks have formed the source for the flourishing polishing stone industries located at Kuppam (Andhra Pradesh) north of Krishnagiri. Recently as a result of the investigation carried out in the above area, a Government unit for polishing stones has been set up at Krishnagiri Industrial Estate.

NORTH ARCOT DISTRICT.

2.24. Though minerals like feldspar, mica, magnesite, magnetite, barytes, clay building stone, road metal, vermiculate, etc., are reported to be available in the district none of them saving road metal and vermiculate are estimated to be available in enough quantities to attract commercial exploitation. Nevertheless the entire potentialities of the district have not been fully assessed and a more detailed survey especially in the unsurveyed hilly tracks of the Javadi Hills, may bring promising results. More recently the UNDP—survey for minerals, conducted in two phases over an area of 13,000 kilometres in the district, has led to the discovery of about 150 million tonnes of economically exploitable low grade banded magnesite ore in the Tiruvannamalai area and atomic minerals like Uranium and Thorium in an area south of Tirupattur. Some of the other minerals reported to occur in the district are briefly mentioned below:

2.25. Kankar limestone is reported to occur in the Wandiwash—Thellar area. Large reserves of good quality Kankar suitable for cement manufacture occur in the Dasampatti—Samalpatti area in Uthangarai taluk adjoining the Tirupattur Taluk.

2.26. Small reserves of buff coloured transported clays is found to occur in the Rangampatti reserved forest in Gudiyatham taluk which can form the basis for a polishing powder plant.

2.27. Red Ochreous clay, occur at Techur Village near Polur. Though not conforming to standard specifications, the clay could be washed and put to use as a distemper and colour wash on a small scale.

2.27. Impure steatite rock has been located between Mandardakuppam and Tengal in the Wallajah Taluk, which can be used for developing pesticide in the fertiliser industry.

2.28. Good quality Magnesite occur inter mixed with less pure ore in the Tenmudiyanur area offering possibilities for making dead burnt magnesite.

GROUND WATER.

2.28. The entire region is underlaid by crystalline rock of Archean age, comprising of gneisses with charkockites and granites. All uranium compound of sand is extremely restricted in extent and is confined to the vicinity of the Palar river and on the banks to a few feet from the ground level. The depth of weathering varies from 2 to 8 metres. The rocks are weathered and highly altered and exhibit moderately developed joints, which are widely spaced and occur in sets of two or three. Ground water occurs in the weathered portions of the Rock and as well as in the small cracks and joints. The data collected, from wells within a thin cover of Palar alluvium in an area of about 725 square kilometres between Vaniyambadi and Arcot show that the wells 5.20 metres deep have water levels at 2.15 metre below surface. Many of these yield about 8800 for intermittent pumping. Generally ground water from the Palar alluvium should be reserved for local domestic and industrial uses. The site for future ground water development from the alluvium as established by the Ground Water Project is at the Ponnai—Palar Confluence, which is likely to yield about 4.5 m.g.d. which is expected to take care of the requirements of the communities in the Palar Basin. The extraction of underground water from the Palar Basin is controlled by a set of water regulations known as Palar Basin Rules.

2.29. There are nearly 1.80 lakh wells including tube wells in the Region, of which, 70,000 are located in the Dharmapuri district. Detailed Hydrogeological studies undertaken by the State Agricultural Department and the Ground water Project indicate, that there is possibility of sinking another 5,500 deep tube wells in Dharmapuri district in addition to the deepening of 20,000 shallow wells, and sinking of 5,800 wells in the taluks of Tiruvannamalai, Chengam, Vellore, Gudiyatham and Tirupattur in North Arcot district, mainly to supplement surface irrigation for the raising of a second crop.

2.30. SOILS.—Red, black and laterite soils occur in the Dharmapuri district. The major textural group is loam with a fair to good moisture storage capacity a feature which mitigates the atmospheric drought. The soils are friable. Except probably in black soils, no major restriction on water uptake is expected. In the North Arcot district, the soils are red ferruginous loams and sands, with black soils found mostly in the neighbourhood of Palar, Ponnaiyar and Cheyyar rivers and in the ayacuts of few big tanks. While the black series loam is found mostly in Walajapet and Gudiyatham taluks, Red series loam is found in all the taluks, Red series sand is found to occur predominantly in Tiruvannamalai and Chengam taluks. The native soil fertility is low in nitrogen, low to medium in phosphorus and low in potassium. The need for potash and nitrogen fertilisers are therefore seen to be very high in the region than phosphoric fertilisers.

LAND UTILISATION.

2.31. The land utilization break up for the Region is shown in Table 2.2.

TABLE 2:2.

REGIONAL LAND USE 1970.

Land Use.	Region		State	
	Area in 000 hectares.	Percentage to total area.	Area in 000 hectares.	Percentage to total area.
(1)	(2)	(3)	(4)	(5)
Geographical area as per village Papers	1949	100.0	13,011	100.0
Forests	615	31.5	2,000	15.4
Barren and uncultivable land ..	132	6.8	842	6.5
Land put to non-agriculture use ..	160	8.2	1,448	11.1
Cultivable waste	58	3.0	553	4.3
Permanent pastures and other grazing lands.	23	1.2	278	2.1
Land under garden and tree crops.	13	0.7	250	1.9
Current Fallows	66	3.4	969	7.5
Other Fallow lands	68	3.5	602	4.6
Net area sown	814	41.7	6,069	46.6

(Source : District Statistical Officer.)

2.32. Only a little over 41 per cent of the geographical area of the region is under cultivation as compared to 46.6 per cent for the entire State and 60 per cent for the Tiruchirappalli–Thanjavur region. The low percentage of cultivated area is due in part to the hilly and uneven terrain of a greater part of the region, particularly in Dharmapuri district, Tirupattur, Chengam and Polur taluks, and in part to the constraints imposed on agricultural practices by insufficient irrigation facilities. Nearly a third of the total geographical area in the region is under forests with predominant concentration in the taluks of Gudiyatham, Vellore, Polur, Tirupattur, Chengam, However, Krishnagiri, Denkanikotta and Harur. In terms of percentage, the area under forests in the region is nearly double that of the State's average of 15.4 per cent. Area under non-agricultural uses such as urban land and settlements account for 8.2 per cent, while land under fallows—current fallows, cultivable waste and other fallow lands—cover another 10 per cent of the total area. (Vide map annexed).

Except for Vellore, Tirupattur, Tiruvannamalai, Krishnagiri and Dharmapuri taluks, in the rest of the region, cultivation occupies an area less than the State's average of 46.6 per cent, ranging from 21 per cent of the total geographical area in Hosur to 45 per cent in Gudiyatham taluk. In the former case, the net area sown ranges from 51 to 69 per cent of the total geographical area. Lands under the category of fallows, being of very limited extent with forests, barren and uncultivable waste land occupying more than a third of the total geographical area, it appears as though, that possibilities of extending the net area sown in the region, are very much limited.

CHAPTER 3 POPULATION

3.01. GROWTH.—The Vellore-Dharmapuri region with a population of 4.65 million as per the 1971 census, accounts for a little less than nine per cent of the total population of Tamil Nadu and ranks fifth in population and third in area among the eight planning regions. 8.3 lakhs or 17.8 per cent of the total population lived in towns. The distribution of the population among the different administrative units included in the region is as given below :

1. Dharmapuri district	...	...	...	...	1,677,775
2. The taluks of North Arcot district	...	...	...	...	2,974,751
Total					4,652,526

3.02. The growth of population in the region and decennial variation from 1901 to 1971 is shown in Table 3.1.

TABLE 3:1.

GROWTH OF POPULATION.

Year. (1)	Population. (2)	Variation. (3)	Percent of variation. (4)
1901	2,016,759	....	....
1911	2,180,654	163,895	8.01
1921	2,214,536	33,882	1.55
1931	2,551,352	336,816	15.21
1941	2,947,827	396,475	15.53
1951	3,313,406	365,579	12.40
1961	3,793,700	480,294	14.50
1971	4,652,526	858,826	22.63
Net Variation		2,635,767	130.00

(Source : Census Hand Books).

3.03. While the total population has more than doubled during the last seven decades, the growth itself has not been consistent. While, the growth of population during the earlier decades was very slow at a rate less than one per cent per annum, there has been a spurt in the growth of population during the decades ending with 1931 and 1941. There was a slight drop in the percentage of growth during the decade ending with 1951, perhaps due to the global war, which has again picked up during the next two decades. The near doubling in the rate of growth of population during the last decade as compared to previous ones is in line with the trend in the growth rate recorded for the State as a whole. Perhaps an additional factor in the increased growth rate for the region, may be a high rate of in-migration in the region, especially repatriates from Burma and Ceylon.

DENSITY OF POPULATION.

3.04. The total population of 4.65 million in the region is distributed over 34 urban settlements and 1,830 rural settlements. The overall density in the region is of the order of 246 persons per square kilometre with an urban density of 3,444 persons and rural density of 205 persons per square kilometre.

3.05. The highest density of more than 700 persons per square kilometre is found in Wallajapet and Arcot taluks. Gudiyatham, Vaniyambadi, Tirupattur, Vellore, Arni and Tiruvannamalai have densities ranging from 325 to 450 persons per square kilometre. The entire Dharmapuri district and Chengam and Polur taluks of North Arcot district,

with large areas coming under forests and hilly country have a low density of population ranging from 150 to 250 persons per square kilometre. (Vide map annexed). The pattern of distribution of population in the region indicates, that the Eastern Plains and the Palar Basin with its comparatively level surface and through which the region's main arteries of communication run, have the highest densities with Arcot and Walaja as the apex. The density gradually decreases as one moves to the interior in the west, with Denkanikotta, Hosur, Harur and Chengam taluks having the lowest densities of population in the region. However, if the area under forests, hills and barren lands are left out of account and this taken in conjunction with the existing pattern of economic activity with its excessive dependance on scarce agricultural resources, would reveal that the pressure of population in the region is much greater than is apparent.

3.06. Every eight out of ten people in the region live in rural areas. The villages in the region are rather large with an average population of 2,088 persons. However, villages are comparatively smaller but numerous in the Dharmapuri district and the settlements are also evenly distributed except forest and hilly areas. A study of the size of the settlements in the region indicate, that as is elsewhere, there has been a decrease in the size of settlements with a population of less than 500 with a corresponding increase in the number of villages in the population range 2,000-5,000.

URBANISATION.

3.07. 828,653 persons or 17.8 per cent of the total population has been returned as urban as per 1971 census as compared to 29.9 per cent for the State as a whole. Within the region, there is pronounced difference in the degree of urbanisation as between Dharmapuri district and parts of North Arcot district, forming part of the region. Dharmapuri district accounts for only 17 per cent of the total urban population of the region and the districts' contribution of urban population to total population is of the order of 3 per cent only, as compared to the corresponding figures of 83 per cent and 14.2 per cent respectively for parts of North Arcot district. The proportion of urban population to total populations in the region has increased from 12 per cent in 1901 to 17.2 per cent in 1971, a rate of growth, comparatively very low than the average for the State, even though in absolute terms, the urban population of the region has increased by 240 per cent during the last seven decades. The growth of urban population in the region during the last seven decades is shown in table 3.2.

TABLE 3.2.

GROWTH OF URBAN POPULATION.

Year.	Urban population.	Variation.	Percentage variation.
(1)	(2)	(3)	(4)
1901	243,317	..	..
1911	264,661	41,344	17.0
1921	277,347	12,686	4.8
1931	327,079	49,732	17.2
1941	404,182	77,103	20.5
1951	521,259	117,077	29.0
1961	644,802	123,543	23.7
1971	828,653	183,581	28.5
Net variation ..		585,336	240.0

(Source : Census Hand Books).

3.08. As is evident from the above table, the rate of growth of urban population during the last three decades, has accelerated registering a rate of 2.5 per cent per annum on an average compared to the figure 1.6 per cent for the earlier decades.

LITERACY.

3.09. Vellore taluk with 41 per cent of its population living in towns and is the most urbanised among the taluks, naturally so, since it contains Vellore the only town in the region with a population of over one lakh. Vaniyambadi, Walajapet and Gudiyatham follow closely behind with a percentage of urban population of 35 per cent, 30 per cent and 26.5 per cent respectively. The least urbanised taluks are Harur (4.8 per cent), Polur (6.1 per cent), Denakanikotta (6.7 per cent), Palacode (8 per cent), Hosur (10 per cent), Dharmapuri (11 per cent) and Krishnagiri (12 per cent) all in Dharmapuri district except Polur. Chengam and Uthangarai taluks have no urban centres at all. In the rest of the taluks of the region, the percentage of urban population to total population varies from 17 to 21 per cent.

3.10. There are 34 towns in the region today as compared to 21 in 1901.

3.11. Table 3 : 4 shows the net variation in population in the different categories of towns and the percentage variation in them during the last seven decades.

TABLE 3 : 4.**VARIATION IN URBAN POPULATION.**

Category.	Net variation in urban population, 1901-1971.	Percentage variation.
(1)	(2)	(3)
All Towns	585,336	240
Class I	32,196	30.4 *
Class II	179,092	356.6
Class III	190,755	294.0
Class IV	65,563	69.1
Class V	(—) 51,978	(—) 64.7
Class VI	13,474	411.8

* The small variation is due to the fact that Vellore the only Class I Town come into this category only during 1951.

(Source: Census, 1971.)

3.12. From the above table, it may be seen that the large towns have grown at a much faster rate, than the smaller towns. Also the change in the classification of towns from Class IV to Class III and from Class III to Class II through the addition of population has been at a much faster rate, than the lower categories. This is further vouched by the fact that while the number of towns in the category of Class IV and below diminished. There has been no increase in the number of towns till 1951, and the pattern of distribution among different classes was also more or less static. The decade ending with 1951, however, saw the emergence of Vellore as a Class I town with a population of more than one lakh. The period ending with 1961, saw the increase in number of towns from 21 to 33, the increase being chiefly made up by Class VI towns. The pattern of distribution of urban population is also not commensurate with the number of urban centres, a few centres accounting for the bulk of the population. The one Class I town and four Class II towns which represent only 14.7 per cent of the total number of towns in the region, account for 44 per cent of the total urban population of the region.

Table 3.3 shows the distribution of urban population among towns of different categories during 1971.

TABLE 3:3.

DISTRIBUTION OF URBAN POPULATION.

Population range.	Category.	Number of towns.	Percentage to total.	Population.	Percent to total urban population.
(1)	(2)	(3)	(4)	(5)	(6)
Over 100,000 ..	I	1	3.0	138,220	16.7
50,000—100,000 ..	II	4	11.7	229,302	27.6
20,000—50,000 ..	III	8	23.4	255,627	30.8
10,000—20,000 ..	IV	11	32.2	160,476	19.4
5,000—20,000 ..	V	4	11.7	28,282	3.4
Less than 5,000 ..	VI	6	18.0	16,746	2.1
All Classes ..	..	34	100.00	828,653	100.0

(Source : Census, 1971.)

Either stationery or showed a downward trend, during the last seven decades, the Class II and Class III towns have multiplied by four times. Even in the most urbanised taluks of the region, namely, Vellore, Vaniyambadi, Gudiyattam and Wallajapet, the primary towns account for 81, 89, 56 and 40 per cent respectively of the total urban population of the taluks.

3.13. Vellore town with a population of 138,220 is the largest in the Region. Besides being the administrative Headquarters of the North Arcot district, it derives its importance as a commercial and medical centre serving not only the Region but the entire State and the adjoining districts of Andhra Pradesh as well in this respect. The other important towns in the region are Gudiyatham (63,007), Tiruvannamalai (60,478), Tirupatur (40,300), Ambur (54,002), Vaniyambadi (51,795), Arni (38,647), Dharmapuri (40,021) and Krishnagiri (34,359). All these towns owe their importance to commercial administrative and religious activities. (Vide map annexed).

SEX AND AGE STRUCTURE.

3.14 The Region has 969 females for every 1,000 males as against 979 females in the State as per 1971 census returns. The ratio of females per thousand population of males is generally found to be higher in rural areas, than in urban areas, reflecting an influx of more male population into the urban areas from the surrounding rural areas. The exception to the general rule, is seen in the case of Krishnagiri, Wallajapet, Gudiyattam, Vaniyambadi and Polur taluks, where, the ratio is found to be higher in the urban areas, however, it is to be mentioned that with respect to these taluks, the overall ratio of females to thousand males is found to be uniformly high.

3.15. Distribution of population by broad age groups, for the Region as per 1971 census is not yet available. However, a study of 1961 census figures for the Region reveal no variation of any marked significance in the distribution in the higher age-groups, between the State and the Region. There is, however, a higher population of persons in the age-group of 0-14. The percentage distribution of population by broad age-sex groups in 1961 is set out in table 3:5.

TABLE 3:5.

POPULATION BY AGE-GROUPS.

Age group	Per cent of population.	Per cent of male population.	Per cent of female population.
(1)	(2)	(3)	(4)
0-14	40.04	21.00	19.04
15-34	30.96	15.46	15.50
35-59	23.10	11.90	11.20
60	5.90	3.00	2.90

(Source : Census Hand Book, 1961.)

LITERACY.

3.16. The Region has 301 literates for every 1,000 population as compared to 394 for the entire State. 39.7 per cent of the total urban population are literate, with Vellore, Wallajapet, Vaniambadi, Tirupattur, Arni, Tiruvannamalai, Dharmapuri and Krishnagiri having urban literates ranging from 50 to 55 per cent. The percentage of literates in the rural areas is of the order of 25.4 per cent with Vellore having the highest rural literacy of 39 per cent. In the rest of the Region, rural literacy is of the order of 18 to 30 per cent. Vellore has got the highest literate population of 47 per cent, closely followed by Wallajah (36.1), Arni (36.9), Gudiyatham (35.2) and Vaniyambadi (35.8), while Palacode (18.4), Denkanikotta (19.1), Uttangarai (20.9), Hosur (21.2) and Chengam (22.7) have the least literates in the Region.

MIGRATION TRENDS.

3.17. A study of the salient features of the migration trends in the Region indicate a net out migration from the Region. According to 1961 census figures, persons born outside but enumerated within the Region (viz., the administrative district of North Arcot and composite Salem) numbered 118,952. Persons, born within the Region but enumerated outside, numbered, 198,789, thus giving a net out migration of 79,837 persons. Chingleput (31.3 per cent), South Arcot (30.1 per cent), Madras (14.7 per cent) and Salem (12.2 per cent) have contributed the major share of the in-migrants to the region; 37.8 per cent of the out-migrants from the region have gone to Madras; 28.5 per cent to Chingleput and 16.3 per cent to South Arcot. Roughly 45 per cent of the migrant population into the region were classified as workers, a majority of them belonging to the agriculture working class.

OCCUPATIONAL STRUCTURE.

3.18. 35.28 per cent of the population of the Region constituted the working force, as per 1971 census. 73.5 per cent of the workers were engaged in agriculture, 3.5 per cent in manufacturing including household industry and 15.5 per cent in transport, trade and services. 15.3 per cent of the total workers were working in the urban areas and 84.7 per cent in rural areas. The ratio of participation of workers to total population is higher in the rural areas (36.5 per cent) than in the urban areas (30.2 per cent). Similarly, the ratio of participation of male and female workers to the total population in the rural areas is higher than in urban areas. The participation of both male and female members of the family in the traditional occupation of agriculture perhaps accounts for the higher percentage of workers in both male and female category in the rural areas. Table 3:6 shows the number of workers in different occupations in the region as a whole as per 1971 census.

TABLE 3:6.**OCCUPATIONAL PATTERN—1971.**

Occupation	Number of workers (in '000).	Percentage to total workers.	Percentage to total population.
(1)	(2)	(3)	(4)
Cultivators	737.0	45.0	15.84
Agricultural labourers ..	465.0	28.5	10.00
Live Stock	19.2	1.1	0.41
Mining and quarring ..	5.6	0.4	0.12
Household Industry ..	47.3	2.5	1.02
Manufacturing ..	98.1	6.0	2.11
Construction ..	16.8	1.0	0.36
Trade and commerce ..	96.4	5.9	2.07
Transport, Storage, and Communication.	34.3	2.1	0.74
Other services.	121.3	7.5	2.61
Total ..	1641.0	100.0	35.28

(Source Census 1971.)

UNEMPLOYMENT :

3.19. The number of persons under the category of 'Unemployed' and 'never employed' cannot be measured with any degree of precision. While the live registers maintained by the employment Exchanges, give an indication of number of educated persons seeking employment in the urban areas, the problem of computation of unemployment in the rural areas is rendered difficult by the seasonal nature of employment and under employment in agriculture, the predominant occupation of the rural people.

3.20. According to the figures carried in the live registers of the Employment Exchange in Vellore and Krishnagiri, for the period ending with June 1971, there were 40,651 persons seeking employment in the urban areas in various fields. Table 3:7 gives the break up number of persons seeking employment by nature of qualification.

TABLE 3:7.

CLASSIFICATION OF UNEMPLOYMENT BY OCCUPATION.

Occupational group.				Number in live Register.	
(1)				(2)	
1.	Professional, technical and related workers	..	..	..	3887
2.	Clerical and related workers	..	..	..	4818
3.	Craftsman, production process and related workers	..	..	..	3978
4.	Skilled workers	..	..	..	4776
5.	Unskilled workers	..	..	..	726
6.	Workers without occupation	..	..	..	22,466
Total				..	40,651

3.21. According to 1961 census, the percentage of never employed persons, i.e., seeking employment for the first time and unemployed persons in the rural areas of the Region, put together was of the order of 0.50 per cent to the total number of rural area non-workers. If it is assumed that the same percentage as above constitutes the unemployed and never employed persons of the non-workers in the rural areas of the region in 1971 also, the number of unemployed persons and never employed persons in the region is roughly estimated at 7,000 persons. However this does not take into consideration, the chronic problem of under employment i.e., persons who are gainfully employed only for a few number of days in the year in the rural area. The total number of unemployed persons in the Region, both in the urban and rural areas as per above estimates in 1971, is therefore roughly assessed at 23,000 persons which appears to be a very conservative estimate.

3.22. If a fraction of the working age group of 15-59 of the non-workers, in the rural and urban areas is taken to represent the persons unemployed in the region, then assuming 10 per cent in the age group 15-59 in the urban areas and 20 per cent in rural areas of the non-workers, as unemployed, the region's unemployment figure is assessed at 1,83,000 which may be nearer to facts. The survey conducted by the Indian Institute of Public Opinion in July 1972, has estimated that unemployment in Dharmapuri district might currently be of the order of about 80,000. Assuming a similar figure for the North Arcot district also, the total unemployment figure of 1.6 lakhs is more or less similar to the estimate arrived at earlier.

CHAPTER 4

ECONOMY OF THE REGION—AGRICULTURE FISHERIES AND ANIMAL HUSBANDRY

4.01. **AGRICULTURE.**—The economy of the Vellore-Dharmapuri region, like the rest of the Tamil Nadu depends mainly on the board base of agriculture. The importance of agriculture to the Region's economy stems from the fact, that not only 83 per cent of the Region's populaion, live in villages and is dependent in one form or another on agricultural pursuits, but also from the availability of relatively limited potential for development of mining and industry on a scale that would provide substantial new employment to the growing working force. Unlike his counterpart in the Thanjavur Delta, the region's farmer has to strive hard for sustenance, since agriculture in greater part of the Region is not an easy pursuit, for a majority of farmers even under normal circumstances. For one thing the region is essentially a dry tract and depends to a large extent on the vagaries of a seasonal rainfall for a resonably successful agricultural operations. For another, the areas under irrigation are small and scattered with limited future potential of and a large extent of the region is covered by forests. The scarcity of cultivable land, and the unfavourable rainfall conditions, have resulted in greater part of the region, being subjected to prolonged and frequent bout of droughts.

4.02. In spite of the handicaps set out above if priority is sought to be given for the development of agriculture in the Region, it is, due to three important factors. Firstly, the relatively low population density of the Region, gives a more favourable man-land ratio than is normally found in comparable situations. Secondly, the Region contains within its limits certain areas especially in the taluks of Tiruvannamalai, Vellore, Polur and Krishnagiri which enjoy good irrigation facilities, and where intensive agriculture, can be practised. Thirdly, besides the cultivation of a wide variety of crops, including cereals, pulses and fodder the primary sector comprises also forestry, sericulture, horticulture and animal husbandry and it is possible, with modern inputs and technology, to make rapid advances on all these fronts so as to provide more employment and incomes in the primary sector to make up for the possible deficiencies in growth in the industrial or tertiary fields. Finally the recent advances in the technology of dry land farming make it possible to plan for an increase in productivity in agriculture through certain desirable changes in cropping pattern and application of new packages of inputs and agonomic practices, for which the region especially the Dharmapuri district is eminently suitable.

4.03. Productivity in agriculture is influenced by a number of factors, chief among them being soil, climate, irrigation, marketing, credit facilities and agricultural practices and techniques. A brief analysis of these factors which have influenced the agricultural productivity of the region is discussed below :—

SOILS AND CLIMATE.

4.04. The soils of the region are generally of medium to low fertility. From a study of the soil fertility characteristics, it is seen that nitrogen content is low in almost all the blocks of the Region. Only two Panchayat Unions viz., Vellore and Alangayam have medium nitrogen content. Blocks of Alangayam, Anaicut, Gudiyatham, Pernambut, Natrampalli, Tirupattur, Chetpet and Thandarampet in North Arcot District are having medium phosphorus content. In Dharmapuri District, except Morappur, Krishnagiri and Dharmapuri all other blocks are having medium phosphorus content. Veppanahalli is the only block having high percentage of phosphorus content. All blocks except Uttangarai, Nallampalli and Bargury, are having a low content of pottash, Pottasium content is absent in respect of the above three blocks. Thus it is observed that except for a relatively high phosphorus content of the soil in Veppanapalli block and medium phosphorus content in nineteen other blocks, the soils are generally deficient, with a low content of all three nutrients, nitrogen, phosphate and pottash. Some areas are also alkaline and acidicsaline. This present deficiency in fertility may explain the substantial increase in productivity achieved in the last four or five years even with very modest levels of application of NPK fertilisers in the Region. Also it is well understood that fertilised crops withstand moisture stress better than unfertilised crops.

4.05. Though an equitable temperature which the Region enjoys conducive to raising crops throughout the year, it is the availability or otherwise of adequate rainfall which sets the limit to agriculture as profitable occupation in the region. The annual rainfall averaging at no more than 850 m.m. in greater part of the Region, with several weeks practically no rainfall causing near drought conditions—coupled with lack of sustained irrigation facilities, have produced conditions, under which perennial or long term annual crops are just not possible in the Dharmapuri District and the western parts of the North Arcot district. Naturally therefore, the area under wet crops, like rice and sugar cane and area sown more than once are less in the Region as compared to, other Regions of Tamil Nadu. Any strategy for the future agriculture development of the Region, will have to take into consideration the constraints imposed by unfavourable rainfall conditions limited irrigation facilities and the none too level topography.

LAND HOLDINGS.

4.06. Like the rest of Tamil Nadu, the problems under land holdings, viz., the existing size of individual production units and the actual pattern of the distribution of the plots, are prevalent in the Region also. While sub-division as such may not present much of a problem in the way of increasing agricultural productivity or introduction of mechanisation, it is fragmentation a stage in the evolution of agricultural holding in which numerous discrete parcels often scattered over a wide area are owned by one person or one family which requires urgent attention, through measures of consolidation. A little more than 75 per cent of the total area and 94 per cent of the total number of holdings are less than 4 hectares in extent, which reveals the magnitude of the problem of consolidation to be tackled with Table 4.1 shows the percentage distribution of cultivated area by sizes of holdings in the region.

TABLE 4 : 1.

DISTRIBUTION OF CULTIVATED AREA BY SIZE OF HOLDINGS.

Size of land in hectare.	Number of holdings.	Percentage to total holdings.	Area in hectares.	Percentage to total area.
(1)	(2)	(3)	(4)	(5)
Up to				
1 Hectare	.. 267,347	55	218,725	25
1—2 Hectares	.. 126,534	26	215,494	24
2—4 Hectres	.. 68,185	13	252,472	28
Over 4 Hectares	.. 28,170	6	207,609	23
Total	49,0236	100	894,300	100

IRRIGATION.

4.07. A study of the irrigation facilities available in the region shows that while the eastern plains are comparatively well served, the western portion especially the Dharmapuri district does not have sufficient facilities. The region with 15 per cent of its total area and 31 per cent of its sown area irrigated, compares very unfavourably with the other Regions of Tamil Nadu and with the state as a whole. The deficiency becomes more pronounced, if Dharmapuri alone is taken into account, which has only 6.1 per cent of its total area and 14.8 per cent of its sown area provided with irrigation facilities. It is one of the major handicaps of the region, that it does not possess any major irrigation project capable of providing irrigation to large stretches of cultivable land, as is the case with the Mettur Reservoir, nor are the prospects, in this respect in future is very bright. In fact, the region's comparative backwardness arises not a little from the unequal distribution of this major natural resources.

4.08. 292 thousand hectares or 35 per cent of the net sown area is under irrigation in the Region, which is less than the average for the state as a whole. Tanks and wells are the major sources of irrigation with canals as a source irrigation lagging far behind. Except for Krishnagiri taluk, where canal irrigation fed by the Krishnagiri reservoir accounts for nearly half of the irrigated area, and a small percentage in Tiruvannamalai, Dharmapuri, Chengam, Wallajah, Vellore and Gudiyatham taluks in the rest of the region. Tank and well irrigation equally share the area irrigated. The region's physical configuration with its characteristic bare rocky masses has ideally lent itself for the construction of numerous tanks by raising dams across the valley. The spherical rock masses of the hills throw off the rain water without retaining it and the hill streams which are thus fed flow into the tanks. Many of the region's tanks are infact big lakes. These lakes have also helped, in the general maintenance of the water table of scores of wells in the region nearer to the surface level. There are nearly 4,200 tanks in the region, of which a little over 1,000 are having ayacuts of 100 acres each and 200,000 wells of which, 70,000 are in the Dharmapuri district.

4.09. Table 4.2 shows the area irrigated by different sources in the region, together with percentage of area irrigated under each source.

TABLE 4 : 2.

IRRIGATED AREA BY TYPE OF IRRIGATION.

Source of irrigation.	Area irrigated in hectares.	Per cent to total area irrigated.
(1)	(2)	(3)
Canals	27,178	9.3
Tanks	125,076	42.8
Wells	135,012	46.2
Other sources	4,967	1.7
Total	292,233	100.0

(Source : District Statistical Office and District Planning Cell.)

4.10. About 97,500 hectares are irrigated more than once, giving an index of cropping intensity of 132 in the irrigated areas. Eighty-seven per cent of the gross-irrigated areas in the region are under food crops, with paddy, accounting for 90 per cent of the irrigated area in the North Arcot and 73 per cent in Dharmapuri district. Table 4:3 indicate the irrigated area as percentage of gross sown area in different parts of the region. The future agricultural strategy would very much depend upon the scope and possibilities for expansion of surface irrigation and underground water exploitation especially in areas which have low and very low irrigation facilities.

TABLE 4 : 3.

LEVELS OF IRRIGATION IN THE REGION.

Taluks.	Gross irrigated area as percentage of gross area sown.	Remarks.
(1)	(2)	(3)
Arni, Tiruvannamalai ..	Above 75 per cent ..	High.
Vellore, Polur, Chengam ..	50 to 75 per cent ..	Medium.
Arcot, Gudiyatham, Hosur, Krishnagiri.	25 to 50 per cent ..	Low.
Tirupattur, Harur, Dharmapuri.	Below 25 per cent ..	Very low.

4.11. Twenty-five per cent of the cultivated area in the region is cropped more than once as compared to 20 per cent for the entire state, thus giving an index of cropping intensity of 114. The pattern of consumption of chemical fertilisers in terms of NPK per hectare is estimated 14.06; 7.32 and 5.84 kilo grams in respect of gross cropped area, 49.52; 25.78 and 20.56 kilo grams in terms of gross irrigated area and 52.90; 27.54 and 21.96 kilo grams in terms of area under high yielding varieties. During the year 1970 the region consumed 26,543 tonnes of chemical fertilisers. Table 4 : 4 shows the total and per hectare consumption of fertilisers in the region.

TABLE 4 : 4.

CONSUMPTION OF FERTILISERS. 1970.

Fertiliser.	Total consumption in tonnes.	Gross cropped area.	Average dosage per hectare in Kg. irrigated area.	Area high yielding variation.
(1)	(2)	(3)	(4)	(5)
Nitrogen	13,712	14.06	49.52	52.90
Super Phosphate	7,139	7.32	25.78	27.54
Muriate of Potash	5,692	5.84	20.56	21.96
Total	26,543	20.22	95.86	102.40

(Source : District Collectorate.)

4.12 The use of improved seeds has also been gaining ground in the region. During the year 1970-71, quality seeds valued at 3,000 tonnes were distributed in the region, paddy seeds of first and second grades accounting for most of it. Similarly, the response from the farmer to High yielding paddy strains such as ADT 27, CO 29, IR 5, IR 8, IR 20, IR 22, Co. 33, Co. 34, Co. 35, Karuna, Ponni, etc., and to the high yielding cumbu HP 1, HP 3, groundnut TMV 2, TMV 7 and TMV 9. Sugarcane CO 419, 449 and 658, have been encouraging. Table 4 : 5 shows the area covered by the High Yielding varieties in the region and its percentage to the total area sown.

TABLE 4 : 5.

AREA UNDER HIGH YIELDING VARIETIES.

Crop.	Area under High yielding varieties in hectares.	Percentage to total area under the crop.	Percentage to the total area sown.
(1)	(2)	(3)	(4)
Paddy	2,25,586	81.0	22
Other crops	33,619	4.8	3
Total	2,59,205	85.8	25

4.13. The cropping pattern adopted at present in the region consists of—

1. Two crops of Paddy—Sornavari and Navarai—followed by pulses or green manures.
2. Single crop of sugarcane.
3. Single crop of paddy followed by pulses or green manure or cotton or groundnut.
4. Single crop paddy followed by groundnut followed by maize, ragi, cumbu and vegetables.
5. Cultivation of vegetables, combodia cotton, ragi, in garden lands and
6. Cultivation of cereals like cholam, cumbu, ragi and varagu in rotation with groundnut, red grams, castor in dry lands.

AREA AND PRODUCTION.

AREA AND PRODUCTION.

4.14 The total area of the region excluding forests and lands put to non-agricultural uses is 1,174 thousand hectares of which the net area sown is 69.3 per cent as compared to the State figure of 63.5 per cent. Cultivable waste land, current and other fallows constitute 16.3 per cent of the area and hence there is not much scope for large scale extension of cultivation. The predominant crop raised in the region are food crops chiefly paddy, millets like cholam, cumbu, ragi and varagu, oil seeds like ground nut, gingelly and castor, pulses, sugarcane and cotton in that order. Table 4.6 and 4.7 shows agricultural land use and area under major crops.

TABLE 4:6.

AGRICULTURAL LAND USE.

Use. (1)	Area in '000 hectares. (2)	Per cent to total area. (3)
Area excluding forest and lands under non-agricultural use.	1,174	100.00
Barren uncultivable lands	132	11.2
Cultivable waste	58	4.9
Current and other fallows	134	11.4
Permanent pastures	23	2.0
Land under garden crops	13	1.2
(a) Net area sown	814	69.3
(b) Area sown more than once	204	
Total cropped area	1,018	

(Source : District Collectorate.)

TABLE 4:7.

AREA UNDER MAJOR CROPS.

Crop. (1)	Area in '000 hectares. (2)
Paddy	278.55
Other cereals	295.66
Pulses	122.00
Sugarcane	28.5
Ground nut	206.00
Other non-food crops	36.6

(Source : District Collectorate.)

4.15 Out of the total area under cultivation, a little over 85 per cent is occupied by food crops mainly paddy, followed by millets like cumbu, ragi, cholam, samai and vargau. While paddy is raised throughout the region both as a single and double crop, where assured irrigation is available, millets are raised mainly in the Dharmapuri district under rainfed conditions. Among oil seeds, groundnut is raised universally, either as a summer crop or as a second to paddy both under irrigated and rainfed conditions. Among other oil seeds, gingelly is grown mainly in the taluks of Hosur, Dharmapuri and Krishnagiri and castor in the taluks of Hosur and Harur. The important pulses grown in the region are redgram, horsegram, blackgram and mochai. Among the commercial crops, the most important is sugar cane. It is grown on a large scale in the taluks of Vellore, Gudiyatham and Tirupattur. Palmyrah is grown in some parts of Dharmapuri and Harur taluks.

4.16 The region also produce some special crops. Important among these are vegetables grown as garden crops, mango varieties like Bangalora, Kalapad, Mulgoa, Neelam grown on a large scale on either side of the Palar river from Tirupattur to Walajapet, Sathukudi grown near Gudiyatham and Ambur, Custord apple in Tirupattur and Gudiyatham taluks and Gova and Lemon in the hilly areas.

4.17 The approximate areas under chief crops and their estimate production in the region are given in Table 4 : 8.

TABLE 4 : 8.

AREA UNDER PRODUCTION OF MAJOR CROPS.

Crop.						Area in '000 hectares.	Estimated Production in '000 tonnes.
(1)						(2)	(3)
1.	Paddy	..	..	..	..	278.5	692
2.	Millets	..	..	..	..	295.6	187.0
	Cholam	..	..	..	..	66.0	33.0
	Kambu	..	..	..	..	21.6	11.0
	Maize	..	..	..	..	17.1	17.0
	Ragi	...	..	..	..	96.2	76.0
	Varagu	..	..	..	..	24.4	20.0
	Samai	..	..	..	..	60.3	30.0
3.	Pulses	..	..	..	..	122.0	37.0
	Horsegram		..	..	..	95.8	24.0
	Redgram	..	..	..	..	10.0	5.0
	Blackgram	..	..	..	..	3.0	1.5
	Other pulses	..	..	..	..	13.2	6.5
4.	Oil Seeds	..	..	..	..	230.0	..
	Ground nut	..	..	..	..	206.0	160.0
	Gingelly	..	..	..	..	13.0	4.0
	Coconut	..	..	..	..	8.0	Not available.
	Castor	..	..	..	..	3.0	1.50
5.	Sugarcane	..	..	..	..	28.5	2,280.0

TRENDS IN OUT PUT.

4.18 Annual production figures are only approximation and varies with reference to shift in average yield and hence is not a true index of productivity. Statistics available regarding yields of the various crops in the region indicate, that with the introduction of high yielding varieties and with judicious application of fertilisers and extension of plant protection measures, the yield per hectare of food crops, pulses and oil seeds have increased considerably, especially in the case of paddy, maize, kambu and ground nut. Production could be, sizeably increased if more areas, especially in cases of millets and pulses are brought under high yielding varieties.

DEVELOPMENT SCHEMES.

4.19 A number of agricultural development schemes, are now in operation in the region, covering a variety of crops. The schemes which have as its objectives, the stepping up of agricultural production through an integrated programme of supply of in-puts cover both food crops and non food crops. The schemes which are just like package programmes, include, among other crops, paddy specially the high yielding varieties. Ground nut (Ground nut export oriented programme), pulses, coconut, vegetable, banana and sugar cane.

MARKETING.

4.20. Under the Madras Agricultural Produce Act, which provides for better regulation of buying and selling of all agricultural produces like paddy, millets, chilly, coconut, castor, cotton, ground nut, etc. and for the establishment and administrations of markets for agricultural produce, market committees have been established in the following places in the region.

North Arcot district.—Tiruvannamalai, Vellore, Arni, Arcot, Polur, Chetpet, Gudiyatham, Vaniyambadi, Tirupattur and Chengam.

Dharmapuri district.—Dharmapuri, Krishnagiri, Karur, Hosur and Palacodu.

4.21. The commodities notified are ground nut, paddy, gingelly, sugar, jaggery and chillies. Each market committee serves an area of approximately 16 kilo metres in radius. However only seven of these market committees are functioning properly, with ground nut, as the chief commodity marketed and sold. During the past five years, market committees, accounted on an average 65 per cent of the total quantity of ground nut marketed and sold. With respect of other commodities, the arrivals were negligible. The levy and procurement policies in respect of paddy and absence of satisfactory regulated market yards and lacks of credit have been mainly responsible for tardy functioning of the many market committees. The Tamil Nadu Agricultural Produce Markets (Amendment) Act of 1971 is expected to put the market committees on a sounder footing, as under the Act, the selling or purchasing of notified agricultural produce in a notified market area outside the market in that area is completely prohibited.

FORESTS.

4.22 Forests are the sources of timber, fuel, raw materials for a number of industries like paper board and plywoods as well as of many minor products obtained from the bark, leaves and fruits of the trees such as tanning material, lac and eucalyptus oil, etc. Forests also provide supplementary employment to agriculturalists in lumber work and gathering of minor produce. 31.45 per cent of the total geographical area of the region are covered by forests, as compared to 15.4 per cent for the entire State. The region's forests are not of good quality, most of which vary from dry mixed deciduous to thorny shrubs, with occasional patches of ever green growth typical of a semi arid zone.

4.23. The area of forests in the region is estimated at 615 thousand hectares, nearly half of which is covered under working plans. The regions forests are mainly concentrated in the taluks of Chengam, Vellore, Polur, Tirupattur, Gudiyatham, Harur, Hosur and Krishnagiri which together account for nearly four fifths of the region's forest area. The reserve forests in the other taluks of the region consist mostly of scrub jungles and river plantations. Forest areas in the region have been grouped into four administrative divisions namely Tirupattur division consisting of Tirupattur, Chengam and Tiruvannamalai taluks, containing the Javadies and Yalagiri hills; the Vellore forest division consisting of Gudiyattam, Vellore, Polur, Walajapet and Arni taluks; the Dharmapuri forest division comprising the southern portion of the Dharmapuri district and Hosur forest division consisting of the remaining portion of the Dharmapuri district.

Table 4:9 indicates area distribution forests in the region.

TABLE 4:9.

Name of the taluk	Area under Forests in '000 Hectares.	Percentage to total area under Forests in the Region.
(1)	(2)	(3)
Gudiyatham	49.7	8.1
vellore	64.0	10.4
Walajah	9.4	1.6
Tirupattur	49.8	8.1
Polur	58.0	9.4
Arni	2.7	0.4
Chengam	72.4	11.7
Tiruvannamalai	7.0	1.1
Hosur	117.0	19.1
Dharmapuri	29.5	4.8
Krishnagiri	83.8	13.6
Harur	72.0	11.7
Total ..	615.3	100.00

4.24 The chief forest products of the region are firewood, cashurina, bamboo, sandalwood, Eucallyptus and bark to a lesser extent. The area under economic plantations and quick growing species is estimated at 450 and 4,000 hectares respectively. The region contributes fifty per cent of sandal wood produced in the whole of Tamil Nadu, with Tirupattur as the Chief producer. The region also produced in 1970-71 nearly 6,000 tonnes of firewood.

4.25 Areas under which forests could be extended are those presently classified as (i) not available for cultivation, (ii) cultivable waste and (iii) long fallows. Some uncultivable land are however not suitable for forests and long fallows if they are cultivated **once in three or four years would not be available for afforestation, while same portion of** cultivable waste if reclaimed can be converted into forests. The State Planning Commission on its report on the perspective plan for forestry, has opined that out of the total uncultivable waste lands estimated at 14,820 Sq.km., in Tamil Nadu an extent of 1,250 Square kilometres or a little less than 10 per cent could be put under forestry and an additional extent of 2,000 square kilo metrs of marginal agricultural lands could be converted and develope to produce wood. While, the exact area under the above categories in the region could be, localised only after a detailed survey, it is worth mentioning that the tank beds, river and canal bank, lands, road margin lands and the catchment areas of reservoirs in the region can be utilised, in the region's forest development programme.

FISHERIES.

4.26 The region being land locked one, the sources of fishing essentially consists of rivers, reservoirs, ponds and tanks. The important centres of fishing in the region are :—

- (1) Cauvery river and at Hogenikkal ;
- (2) Krishnagiri reservoir ;
- (3) Sathanur reservoir ;
- (4) Moat around Vellore Fort ;
- (5) Part of Kaveripakkam lake lying in the region.

However, these do not satisfy the demands of the region and fish is imported from Cochin and Cuddalore.

4.27. The area suitable for fish culture in the region is assessed at 6,250 hectares. During the year 1971-72, the total landing of fish in the region was of the order of 400 tonnes, bulk of which is accounted for by the Sathanur and Krishnagiri reservoirs. The moat around Vellort Fort, which has a cultivable area of 2.8 hectares produced 20 tonnes of fish, giving an average yield of 10,000 kg. of fish per hectare. There are 18 fishermen co-operative societies in the region, handling a little less than 10 per cent of total quantity of fish landed. Fishing in the region is mainly a subsidiary occupation, to agriculture, and the number of families depending upon it exclusively for its livelihood is estimated at 1,058. Almost all the panchayat unions in the region have fish breeding centres and nurseries.

4.28. There is no important fish curing centre in the regions. At present, fresh fish has only a local market, as transport and cold storage facilities are not adequate for supply to inland areas. The first step that need to be taken towards the development of fisheries industry is to provide the appropriate overheads. Insulated trucks would be required to transport fish from villages to nearby markets or rail heads, fish being a highly perishable commodity, marketing of fish depends very much on the availability of cold storage facilities. Hence development of transportation and refrigeration facilities assumes top priority in the development of the industry in the region.

ANIMAL HUSBANDRY.

4.29. The region has a livestock population of 3.22 million and a poultry population of 1.01 million in 1970, comprising of 57 per cent bovine and 41 per cent goats and sheep and the rest horses, donkeys, pigs and other animals, as against 55 per cent and 42 per cent respectively for the State as a whole. The density of livestock as well as poultry population for the region is estimated at 170 and 56 per square kilo metre respectively as compared to the State figure of 112 and 86. The strength of the draught force of the region was of the order of 488 thousand which gave a ratio of 59 animals per 100 hectares of net sown area as compared to 94 animals for the State as a whole. There were 540 thousand milch animals in the region which works out to 11 milch animals per 100 of human population as compared to a figure of 4.5 for the State.

4.30. Except Hosur, in the rest of the region, most of the cattle are of indigenous breed and are small in size. In Hosur area however, fine specimens of Helican breed of cattle are reared. In Dharmapuri area a few cattle belonging to Alambadi breed are owned by some farmers, but these are not propagated in a systematic manner. The total milk production in the region was of the order of 350 million litres, giving per capita milk consumption of 200 milli litres per day. The low per capita milk production in the region is due not only to the poor quality of milch animals, and the low number of milch animals per 100 persons, but also due to the fact that much of the milk production in the region is unorganised.

4.31. The key village scheme is the major Government programme to improve the quality of the breeds. Under this scheme, there are 158 stock men centres and 45 artificial insemination centres in the region, each serving on an average 13 villages. In addition, there are 45 veterinary hospitals and dispensaries in the region. Special mention would need to be made of the cattle farm at Hosur, set up in 1828, with the object of producing good breeding stock suitable for farm replacement and distribution to other areas of the State. Spread over an area of nearly 800 hectares, the farm has a livestock strength of nearly 13,000 comprising of 10,000 number of poultry, 1,000 each of cattle and sheep and other animals. The farm located in Mathagiri village about four miles south of Hosur consists of different sections like central lines, poultry pastures, gardens, dairy, sheep, veterinary hospitals, stores and workshop, key village and artificial insemination centre, and has contributed immensely to the improvement of the cattle wealth of the region, particularly in the Dharmapuri district. The farm rears—Sindhi one of the best in the world—Gir, Kangayam and Frision breed of herds, mainly for cross breeding and improvement of the cattle stock in the region. Other cattle farm of moderate size in the region are at Tirupattur, Ranipet, Arani, Thuringapuram and Dharmapuri. The Institute of Preventive Medicine at Ranipet in the region also deserves special mention. The institute specialises in the detection research and curing of diseases which afflict cattle, goat and poultry and preparation of serums.

4.32. Production and marketing of milk in the region are to a large extent unorganised and handled chiefly by private agencies and individuals. The entire region has been delineated into four circles, namely, Vellore Circle, Ambur Circle, Polur Circle and Krishnagiri Circle by the Co-operative department in the matter of handling milk by the organised sector. The Vellore Circle consists of one co-operative milk supply union at Vellore to which 20 societies are affiliated besides 4 independent societies, Ambur Circle has one milk supply union with 16 affiliated societies and 2 independent societies. Polur Circle has 11 societies. Krishnagiri Circle has one milk supply union, with 16 affiliated societies and 9 independent societies. There is a well equipped dairy farming unit attached to the Hosur Cattle Farm. The milk is supplied to Madras and for local use. A portion of milk is separated and the cream obtained is used for making butter. The chilling plant installed at the farm consists of two immerser coolers each with 5,000 litre capacity. There are also chilling plants at Vaniyambadi and Sathuvacheri (near Vellore) with a capacity of 2,000 litres and 5,000 litres respectively. There is need to organise supply of quality milk at all the urban centre, where demand is the greatest. According to National Milk and Dairy policies, every city or town with a population of over 50,000 should have a milk supply union. On the basis of the above standard, there is urgent need to strengthen the marketing, and distribution of milk supply in Vellore, Gudiyatham, Tiruvannamalai, Ambur, Ranipet Town group, Vaniyambadi Town group, Dharmapuri, Krishnagiri and Tirupattur Town in the region on a priority basis.

4.33. The region has a poultry population of 1.07 million thus accounting for 9.6 per cent of the total poultry resources of the State. The region's three poultry farms are located at Krishnagiri, Hosur and S.V. Nagar and the hatching units at Hosur and Ranipet where incubators are used for hatching eggs. Of the total production of eggs in the region, three-fourths came from desi hens, about 10 per cent from improved quality hens and the rest duck eggs. The annual production of eggs in the region in 1970, as per the returns furnished by the panchayat unions is estimated at 12 millions, giving a per capita consumption of eggs at 3. Obviously a great deal needs to be done to improve the quality of the poultry in the rural areas of the region. Establishment of poultry extension centre, at least one each in every panchayat union in the region would go a long way in improving the quality of the poultry stock and the produce as well.

CHAPTER 5

ECONOMY—INDUSTRIES

5.01 The Vellore-Dharmapuri Region, which is predominantly agricultural, is industrially one of the most under developed areas in the State. Large scale and heavy industries are conspicuous by their absence. Except for certain traditional industries, such as spinning mills and sugar mills, and certain chemical manufacturing units in and around Ranipet which are few in number the region's pace of industrial development, especially in the medium and large scale sector, has remained more or less dormant, in spite of two decades of planning. The position is still worse in the Dharmapuri district, where there are no industrial units worth mentioning, except perhaps the sugar mill at Palacode and the steel mill at Doddampatti. There are at present only 11 units in the region falling under the category of large and medium scale sectors. The pace of industrial development in the region has been so slow, that the taluks of Dharmapuri, Hosur, Krishnagiri, Uttangarai, Harur, Tirupattur, Vellore, Vaniyambadi and Walajapet were declared as industrially backward by the Central Planning Commission eligible for receiving outright grant or subsidy amounting to one-tenth of capital investment for starting new industries subject to a maximum of Rs. 5 lakhs. The State Government immediately followed suit by declaring the districts of North Arcot and Dharmapuri as industrially backward, meriting special consideration such as reduced rates of interest, extended repayment holiday and amortisation schedule, so as to attract industrial entrepreneurs into the area. Further Arni, Polur, Krishnagiri and Dharmapuri taluks have been chosen for grant of further concession, in the matter of location of industries in these areas.

5.02. According to 1971 census there were 145 thousand workers in the region engaged in manufacturing and household industries as compared to 120 thousand in 1961. The region's poor development in the industrial field, is revealed by the fact, that the industrial workers constituted only 8.5 per cent of the total workers as per 1961 census as against 13.5 per cent for the State as a whole. The situation in 1971 was no better as the percentage of workers in the Region remained more or less static. Within the region itself, there were pronounced differences as between portion of North Arcot district and the Dharmapuri district. While the latter had only 3 per cent of its total workers under industrial occupation, the corresponding figures for the former was 11 per cent. Further 86 per cent of the total industrial workers of the region were in the North Arcot district as compared to only 14 per cent in the Dharmapuri District. Massive efforts are, therefore, required to put the region on the industrial map of Tamil Nadu.

LARGE SCALE INDUSTRIES.

5.03. The major large scale industries in the region are those concerned with the processing and manufacture of food products such as sugar mills and textiles, metallic and engineering products, chemical products and Tanning and wool processing materials. Table 5 : 1 gives the number of units and employment among the different categories of industries in the large scale sector during the year 1970-71.

TABLE 5 : 1.

CATEGORIES OF INDUSTRIAL AND THEIR EMPLOYMENT.

Category.	Number of Units.	Employment.
(1)	(2)	(3)
Agro-based Industries including Sugar and Textiles.	8	7,250
Leather and leather products	1	350
Chemical and Chemical products	4	4,000
Machinery	2	250

(Source—Compiled by the Directorate of Town Planning.)

AGRO-BASED INDUSTRIES.

5.04. The Agro-based industries together account for fifty per cent of the total number of large scale establishments and sixty per cent of the total workers. Textiles and Sugar manufacture are the chief industries under this category.

5.05. Both in terms of number of persons employed and the value of output, the cotton textile units occupy an important position in the region. During the year 1971, the mill sector of the industry, consisting of five units employed nearly 3,500 persons. Two of the units are located at Gudiyatham, and one each at Arni, Ariyur (near Vellore) and Sholinghur. The Textile mill at Ariyur is under the co-operative sector.

5.06. There are three units manufacturing Sugar in the region located at Ambur, Palacode and Melpatti, the former two in the co-operative sector. The co-operative sugar mills, at Ambur has a crushing capacity of 2,200 tonnes per day and the Palacode Factory 1,250 tonnes per day. The Palar sugar mills at Melpatti has a crushing capacity of 400 tonnes per day. These three factories put together employ nearly 3,750 workers, and produce nearly 62,500 tonnes of sugar per annum, on the basis of 9 per cent recovery and 180 working days a year. Proposals are also under way for the location of sugar factories at Vellore and Tirupattur, in the co-operative sector, each with a crushing capacity of 1,250 tonnes per day. According to the present programme installation of machineries is now under way, and production is expected to commence by 1976.

LEATHER AND LEATHER PRODUCTS.

5.07. Tanning industry, occupies the pride of place in the region, both in terms of number of units and persons employed. However, most of the units are in the small scale sector. The wool processing centre and the tanning and finishing centre at Vinnamangalam, in the large-scale sector managed departmentally deserve special mention. The centre procures raw wool from the tanneries in and around Ambur and Vaniyambadi and processes the wool with modern techniques for export purposes. The tanning and finishing unit has a production capacity of 1,000 hides and 2,000 skins per day, and has produced Rs. 100 millions worth of hides and skins up to 1971. The units employ about 350 workers.

CHEMICAL AND CHEMICAL PRODUCTS.

5.08. The region's chemical plant manufacturing Sulphuric acid, and the fertiliser plant manufacturing Superphosphate are located at Ranipet, and are owned by Messrs. E.I.D. Parry Limited. The Chemical plant produces nearly 8,200 tonnes of acid per annum and gives employment to nearly 2,000 persons, and the fertiliser plant employs another 1,400 persons. A Ceramic unit manufacturing chiefly sanitary ware is also located nearby and owned by the same Firm. It gives employment to nearly 600 people.

MACHINERY.

5.09. The Nettur Technical Training Foundation, Katpadi, situated in the industrial colony, produces tools, dyes, moulds, jigs and fixtures, and other devices for Engineering Industries. The Tool Room employ nearly 250 persons and produced during 1971, 10,000 tonnes worth of finished products.

5.10. Lascoe Steels Limited near Doddampatti where Production of tool and alloy steels started in 1963, with a promising collaboration of Latrobe Steel, Pennsylvania, but owing to financial difficulties came to an abrupt end in 1968. The Tamil Nadu Industrial Development Corporation has now revived the units with a new production mix of 350 tonnes of High Speed steel, 100 tonnes of high chromium dye steel, 400 tonnes of alloy steel castings and 450 tonnes of alloy steel sheets, the sales of all which exceed rupees 12 millions.

SMALL SCALE INDUSTRIES.

5.11. All industries not being cottage industries with a capital of not more than 750,000 rupees run with or without the aid of power are classified as small scale industries. There are nearly 1,350 small scale units in the region, giving employment approximately

to 17,000 persons, accounting nearly 5 per cent of the registered small scale establishment in Tamil Nadu. The chief concentrations are in the taluks of Vellore, Gudiyatham, Wallapapet, Vaniyambadi, Krishnagiri, Dharmapuri and Hosur. The chief products dealt with in the small-scale sector are Engineering goods, Agricultural processing and machinery, textile, leather tanning and leather goods, and safety match sticks. The major groups of industries and the number of registered units in each of them with number of persons employed are given in Table 5:2.

TABLE 5:2.

SMALL-SCALE INDUSTRIES IN THE REGION 1971.

Serial number. (1)	Type of Units. (2)	Number of units. (3)	Employment. (4)
1	Leather tanning	246	10,546
2	Leather goods	18	244
3	Textiles	138	557
4	Engineering goods	183	519
5	Agricultural processing and machinery.	76	487
6	Match sticks	12	1,200
		<hr/> 673	<hr/> 13,553

Source: Director of Industries and Commerce.

5.12. As the Table would reveal, Tanning constitutes the important small-scale industry in the Region. Most of them have got themselves located in the urban centres along the National Highway stretching from Walajapet to Vaniyambadi, through Ranipet, Arcot, Melvisharam, Vellore and Ambur. Other important centres are, Gudiyatham and Pernambet. In the Region, the house of E.I., tanning has got the greatest concentration of tanning units in Tamil Nadu and the E.I. Tanning is done by a large number of experts whose families have been in the business for generations. They have an instinctive knowledge of their craft and process to a high degree, a fine sense of judgment which produces the E.I. tanned leathers of excellent quality. The contract system of tannage which is the basic principle of Engineering Industries tanning does not appear to be practised anywhere in the world. A large amount of skilled manual labour is put into this process.

Engineering goods mainly concentrated around Vellore, and textiles around Gudiyatham and Vellore, Match stick at Gudiyatham are the other major small-scale industrial in the Region.

INDUSTRIAL ESTATES.

5.13. Industrial Estates established by the Government are located at 2 places, viz., Katpadi and Krishnagiri. Both the estates are of conventional type, accommodating a variety of small Industries and practically all the sheds in the estates have been occupied. The Katpadi, estates has 16 sheds out of 26 sanctioned, and the Krishnagiri estate has 12 sheds out of 18 sanctioned. The products manufactured in the industrial estates include cycle parts, bolts and nuts, iron and steel fabrications, bakery products and hospital equipments. The State Government has acquired 280 hectares of land in Ranipet for establishing a developed plot industrial estate, but no allotment has yet been made to the enterprenuers

5.14. Besides, the industrial estates, the State Government have set up departmental workshops with the primary purpose of rendering service to industries and to serve as part of the infrastructure for the development of industries. Among such facilities provided are Model Farm dairy and tool room (TANSI) at the Katpadi industrial estate, the general purpose engineering workshop (TANSI) at Vellore and Tiruvannamalai and the Sodium Bichromate unit at Walajapet for the manufacture of Sodium Bichromate required for the tanneries.

COFFAGE INDUSTRIES.

5.15. *Handloom Industry*.—The handloom industry is the single largest household industry in the region with nearly 30,000 workers depending upon it for their livelihood. The items manufactured are traditional sarees and dhoties, towels and lungis. The important weaving centres are Skolinghur, Timiri, Walajapet, Katpadi, K.V. Kuppam, Gudiyatham, Sathuvachari and Polur. The total number of handlooms in the Region is estimated at 48,000 nearly 15 per cent of which are silklooms. There are nearly 902 power looms in the Region, a majority in North Arcot district. Paparappatti is an important centre for power looms in Dharmapuri district.

5.16. Silk weaving is an important household industry in the Region, with Arani as the chief centre for silk sarees and materials. Nearly 2,000 persons are engaged in this industry in the Region, majority of whom belong to the Sourashatra families. One-fifth of the persons employed are under power looms. There are 31 organised units engaged in silk weaving with an approximate capital of Rs. 11.63 lakhs. Another important centre for silk weaving is Hosur in the Dharmapuri district. The centres of production are concentrated in Hosur, Thally, Kelamangalam, Shoolagiri, Pennagaram and Nallampalli. Nearly 1,500 persons are engaged in the raising of cocoons, weaving of silk both handloom and power loom, with Hosur as the chief centre. The existing sericultural units are the Government Silk Farm with cold store, silk reeling units, cocon market mulberry nursery, chankie rearing unit, Training and twisting units at Hosur, Government Basic seed Farm-cum-grainage for local race at Denkanikotta, Government chankie at Anchetty, Government cross bread grainage at Berigai. Large-scale farm and mulberry nursery at Kolatti, Chankie farm at Kalkundapalli and two demonstration farms at K.V. Kuppam and Krishagiri. The large-scale silk farm at Kolatti extending over an area of 350 hectares gives employment now to about 300 villages, and ultimately to 800 villages. Tamil Nadu has one-sixth of total number of silk weaving handlooms in India. Dharmapuri district offers a unique feature as one of the only two promising areas in the State where Sericultural industry could be developed.

5.17. *Coir*—Nearly 1,500 persons are engaged in the coir industry, mainly Coir ropes and mats, Walajah, Tirupattur, Nallampalli, Polur, Palacode, Katpadi and Pennagaram are the chief production centres.

HANDICRAFTS AND VILLAGE INDUSTRIES.

5.18. *Handicrafts and Village Industries*.—A variety of products are manufactured under the handicrafts and village industries in the Region ranging from match boxes, furniture pottery, mat weaving, to soap making, honey, palm, gur, etc., giving employment to nearly 18,500 persons. Table 5.3 gives the number of units and persons employed under various categories of handicrafts and village industries.

TABLE 5:3.

NUMBER OF PERSONS EMPLOYED IN HANDICRAFTS AND VILLAGE INDUSTRIES.

Serial number.	[Type of Industry.				Number of persons employed.	
(1)	(2)				(3)	
1	Basket making	..	..	..	..	956
2	Match sticks	..	..	..	..	2,347
3	Carpentry and furniture	..	..	..	..	255
4	Pottery	..	..	..	..	2,977
5	Blacksmithy	..	..	..	..	385
6	Mat weaving	..	..	..	..	498
7	Palm gur	..	..	..	..	4,500
8	Bee keeping	..	..	..	..	915
9	Soap making	..	..	..	..	27

10	Tannery	300
11	Tamarind processing	800
12	Brick making	4,973
13	Comb making	92
		<hr/>
		19,025
		<hr/>

5.19. Industrial Co-operatives.—There are 54 industrial co-operatives in the Region, out of which 43 are working. The value of goods handled is nearly Rs. 20 lakhs.

TABLE 5.1.

IMPORTANT HIGHWAYS TRAVELLING THE REGION

CHAPTER 6

TRANSPORT AND COMMUNICATION

6.01. The traffic and transportation system of the Region consists of 442 kilometres of Highways and 67.50 kilometres of other roads including Panchayat and Panchayat Union roads and 450 kilometres of railway line including 250 kilometres of broad gauge tracks. The road transport industry commands nearly 2,600 commercial vehicles, of which 766 are stage carriers, and the rest are public carrier vehicles and contract carriages.

THE ROAD SYSTEM.

6.02. The Region's road net work comprises of three National Highways, one State Highway and a number of District Roads. The Ranipet-Krishnagiri National Highway connects Arcot, Vellore, Ambur, Vaniyambadi and Krishnagiri. The Bangalore-Cape Comorin National Highway links Hosur, Krishnagiri and Dharmapuri. The Madras-Chittoor National Highway connects Wallajapet and Ranipet. The State Highway connects Tiruvannamalai with Vellore. The Madras-Bangalore Road traversing the northern part of the Region is the main arterial east to west link to which are connected the north-south, Krishnagiri-Salem and Tiruvannamalai-Vellore Highways from the point of view of offering linkages to different urban centres in the Region, and also in terms of density of goods and passenger traffic, these three Highways are the most important in the Region. The east-west Cross road, in the southern portion of the Region, running parallel to the Madras-Bangalore Highway in the north and connecting Tiruvannamalai with Uttangarai through Chengam and Singarapettai completes the grid-pattern of road development in the Region. The details of the important Highways of the Region, and the important urban centres they connect are given in table 6.1.

TABLE 6.1.

IMPORTANT HIGHWAYS TRAVERSING THE REGION.

Highway.	Important towns.	Length in kilometres.
(1)	(2)	(3)
NH 4 Madras-Chittoor ..	Walajapet, Ranipet ..	51
NH 47 Ranipet-Krishnagiri ..	Arcot, Vellore, Ambur, Vaniyambadi.	137
NH 7 Salem-Bangalore ..	Dharmapuri, Krishnagiri, Hosur.	137
SH 1 Cuddalore-Chittoor ..	Tiruvannamalai, Polur, Vellore, Katpadi.	118.
Gingee-Sholingalur ..	Sholingalur, Arcot, Arni and Chetpet.	73
✓ Vellore-Dharmapuri ..	Pallikonda, Tirupattur, Dharmapuri.	145
✓ Hosur-Pennagaram ..	Hosur, Kelamangalam, Palacode, Pennagaram.	90

(Source.—Highways and Rural works Department.)

6.03. The Region has about 7209 kilometres length of roads in total which is 11 per cent of the total road length in Tamil Nadu. About 18 per cent of the total length of National Highway and 7 per cent of the total length of state Highway in Tamil Nadu is within this Region. About 34 per cent of total length of roads, which are mostly Panchayat and Panchayat Unions roads in the Region are still unmetalled.

6.04. The Region has 0.38 kilometre for every square kilometre of territory, as compared to 0.5 kilometre for the whole of Tamil Nadu and 0.25 kilometre for the country as a whole. If areas lying within 6 kilometres of an all weather road and 12 kilometres of a railway line are considered as accessible and those beyond these limits as inaccessible, then the taluks of Tiruvannamalai, Polur, Arcot to a lesser extent, and Hosur, Dharmapuri, Tirupattur, Chengam, Palacode and Denkanikotta to a great extent have pockets of inaccessibility within them (vide map annexed). These taluks have not only a considerable portion of their area under forests, but also the uneven topography has rendered road communication to the rural communities located on the fringe of the reserved forests and hill ranges, extremely difficult. The problems of road communication in the Region, mainly relates to besides inaccessibility and inadequacy of road capacity, bottlenecks in the shape of narrow culverts and bridges, level crossings on railway and unsatisfactory geometrics on certain road sections. In this connection special mention would need to be made of the hidden railway level-crossings at Nattrampalli and Polur, the causeway near Kalasapakkam, the narrow bridge across Palar between Vellore and Katpadi and absence of road bridge across Cheyyar immediately after Chengam, across Palar between Gudiyatham and Madanur and across Topparai between Perumbalai and Mecheri.

VEHICULAR GROWTH AND TRAFFIC.

6.05. There are 5,762 vehicles operating in the region. The break up of different type of vehicles in the region during the year as on 30th June 1972 is shown in Table 6 : 2.

TABLE 6 : 2.

TOTAL VEHICLES IN THE REGION.

Type.	Number of Vehicles with valid registration as on 30th June 1972 Region.		Number of Vehicles with valid registration as on 30th June 1972 Tamil Nadu.		Percentage of Region's share to Tamil Nadu total.
(1)	(2)		(3)		(4)
Motor cycles	1,757	41,809		4.2
Jeep and Motor cars	1,403	58,892		2.5
Stage carriers	766	8,192		9.3
Goods vehicles	1,402	16,444		8.5
Contract carriages	434	11,124		3.9
Total	5,762	1,36,461		4.2

(Source.—Regional Transport Office, Dharmapuri and North Arcot).

6.06. The Regional Transport survey of Tamil Nadu and Pondicherry conducted by the National Council of Applied Economic Research in 1965, has indicated that the total traffic density on the roads has more than doubled in the decade 1950-51 to 1960-61, and that the increase has been due almost entirely to increase in traffic in motor vehicles which increased at an annual rate of 12.5 per cent. The bullock cart traffic remained more or less stationery in absolute terms. The survey has also brought out that the traffic densities in absolute terms and in terms of rate of growth were in the descending order of National Highways, State Highways, Major District roads and other district roads, thereby by bringing out the fact that the roads with heavy traffic density now are also those with a high potential for future growth.

PASSENGER AND GOODS TRANSPORT.

6.07. The road transport industry commands 700 buses. Due to limitations and locational characteristics of the railway lines in the region vis-avis the urban centres, the buses play a dominant role in the Region's transport system. A feature of the carriage of passenger by buses in the Region is the operation of long distance express bus services by the State Government. These services have been developing at a fast rate since 1967,

and in the wake of nationalisation of a majority of the long distance routes of the Region. Vellore, Tiruvannamalai, Krishnagiri and Dharmapuri are the four important bus terminal and transit points for State Government buses, which together accounts for a majority of the long distance bus routes.

6.08. Goods transport by lorries is much better organised in the State than what is obtained in the rest of the country and the Region is no exception. In 1972, there were 1,400 public carrier vehicles in the Region with primary permits issued at North Arcot and Dharmapuri districts, as compared to less than half of this figure a decade back. The private carriers, carried a little less than half of the total traffic generated in the Region, mainly consisting of tanned skins, beedi leaves, Jaggery, fruits and food grains. The Railways carried a little less than 15 per cent of the total traffic and the rest by the bullock carts, and other slow moving vehicles.

RAILWAYS.

6.09. The Region has a railway route kilometreage of 450 consisting of the following sections :—

1. Villupuram-Renigunta Metre gauge line.
2. Salem-Bangalore Metre gauge line.
3. Madras-Salem Broad gauge line with branch line to Bangalore from Jolarpet and branch line to Ranipet from Walajapet.

6.10 The railway route kilometres in the region is 2.4 kilometre per 100 square kilometres and 9.7 kilometre per 100,000 population as compared to 2.7 kilometre and 9 kilometre respectively for the entire state. The Region roughly accounts for 26 per cent and 8 per cent of the State's route kilometreage of broad and metre gauges respectively while the doubling of the main broad gauge line in the Region between Madras and Salem upto Morappur has already been completed, the doubling of the section between Morappur-Salem, Erode and Coimbatore has been taken up, and is expected to be completed in a phased programme.

AIRPORT.

6.11. There is at present no airport in the Region. However there is an air strip near Vellore which is maintained by Defence department and is used occasionally during emergency periods. With the airports of Madras on the east, Bangalore on the west, Tirupathi on the North and Tiruchirappalli on the south, the Region has legitimate claims to have an airport at Vellore, which is nodally situated, and is fast developing as a commercial and market centre of Regional importance.

CHAPTER 7

SERVICES—ELECTRICITY GENERATION ELECTRICITY GENERATION.

7.01. There are no electricity generating stations in the Region. The electric energy is obtained from the common grid of the Tamil Nadu State Electricity Board.

7.02. *Distribution and Transmission.*—Distribution of electric power in the Region is undertaken by the North Arcot and Dharmapuri Electricity systems of the State Electricity Board and some private electricity undertakings in select areas. The distribution net work consist of 1799 km. of power lines out of which 410 are 110 k.v. single circuit lines and 422 k.m. are 230 k.v. lines.

7.03. *Consumption pattern.*—The total consumption of electricity in the Region is estimated at 241.2 million units, giving a per capita consumption of 63.6 units, as against the state per capita consumption of 123 units. The Region's energy consumption is low when compared to other Regions. During the year 1970, with a share of 8.8 per cent and 11.5 per cent of the State's total population and employment respectively, the Region accounted for only 4.8 per cent of the total electricity consumed in the State. In terms of Industrial and agricultural per capita consumption, the Region accounted for only 7.4 and 50.7 units respectively as compared to State figures of 73.4 and 36.9 units respectively. The very poor industrial activity in the Region together with large areas in Dharmapuri district and Chengam taluk in North Arcot district still remaining as inaccessible pockets to electricity, have been largely responsible to the very low per capita consumption of electricity in the Region.

7.04. The consumption of electricity in the Region for industrial and agricultural purposes is estimated at 30 million units and 192 million units respectively. The lift irrigation system operating in the Region consists in tapping the underground water by means of pumpsets either operated by oil engines or electric motors. With the extension of electricity net work, the oil engines are being replaced by motors. As on 31st March 1971, 80,000 pumpsets including filter points and open wells in the Region have been energised, out of the total number 2,00,000 wells.

7.05. Almost all the villages in North Arcot district have been electrified except some villages which lie in the hill forests of Alangayam and Chengam Panchayat Unions. In Dharmapuri district, nearly half of the villages are yet to be electrified. It is expected that electrification of all the villages and hamlets in the Region will be completed by the end of 1974.

HOUSING AND SOCIAL SERVICES.

7.06. *Housing.*—The housing situation in the Region, is the same as that is obtained in any other part in Tamil Nadu and it is quite unsatisfactory. In terms of accommodation facilities available, both in the rural and urban areas, the Region is one of the most backward in the State. As per 1961 census, the number of households and the number of houses in the Region is 748 thousand and 657 thousand respectively indicating a deficiency of nearly 96 thousand houses. Nearly 86 per cent of the deficiency were in the rural areas. Majority of houses in the Region are poor in quality and the houses in the rural areas especially may be termed merely as shelters. Table 7:1 and 7.2 indicate the quality and the quantity of Housing in the Region.

TABLE 7E.1.

TALUK WISE DISTRIBUTION OF HOUSES AND HOUSE-HOLDS IN THE REGION.

Serial number.	Name of the taluk.	Urban		Deficiency per 1000 house holds.	Rural	
		Number of House holds.	Number of Houses.		Number of House holds.	Number of House.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Hosur ..	4232	3335	212	54997	51136
2	Krishnagiri ..	6276	5192	172	74632	70652
3	Harur ..	1731	1533	114	41775	37932
4	Dharmapuri ..	5780	5609	29	70418	67270
5	Walajapet ..	16715	13387	199	55138	47216
6	Gudiyatham ..	16181	12365	236	57234	52293
7	Tirupattur ..	17401	13976	156	59787	56323
8	Vellore ..	33367	22620	322	44143	37650
9	Arni ..	6370	4950	279	30015	23121
10	Polur ..	7256	5820	198	45426	38274
11	Chengam ..	..	..	..	45607	40192
12	Tiruvannamalai.	9336	5717	280	44214	40027
Region total ..		124645	95144	237	623386	562116

Serial number.	Name of the taluk.	Total			Deficiency per 1000 house holds.
		Deficiency per 1000 house holds.	Number of house holds.	Number of house.	
		(8)	(9)	(10)	(11)
1	Hosur ..	69	59229	54471	90
2	Krishnagiri ..	53	80908	75844	63
3	Harur ..	92	43506	39465	93
4	Dharmapuri ..	45	76198	72879	44
5	Walajapet ..	144	71853	60603	162
6	Gudiyatham ..	86	73415	64658	119
7	Tirupattur ..	58	77188	70299	99
8	Vellore ..	147	77510	60270	238
9	Arni ..	229	36385	27711	239
10	Polur ..	157	52682	44094	163
11	Chengam ..	118	45607	40192	118
12	Tiruvannamalai ..	95	53550	46744	127
Region total ..		98	748041	657230	121

TABLE 7:2.

QUALITY OF HOUSING.

Classification of Dwelling units.						Percentage to total.
(1)						(2)
<i>By Wall Material—</i>						100.00
With mud walls	..	..	..	..	..	75.80
With brick walls	..	..	..	..	..	21.10
With Stone wall	..	..	..	..	..	1.40
With other materials	..	..	..	..	..	1.70
<i>By Roof Material—</i>						100.00
With Thatch grass	..	..	..	..	..	65.10
With Tiles	..	..	..	..	..	33.00
With Stones and concrete	..	..	..	..	..	0.50
With other materials	..	..	..	..	..	1.40

(Source : District Census Hand book—1961.)

7.07. The average number of persons per room in Vellore-Dharmapuri Region is 3.33 whereas it is 3.03 for the whole State. Thus the housing condition is worse than that of the State, urban areas of Vellore taluk has the highest deficiency of 322 units per 1,000 households followed by Arni and Tiruvannamalai. In rural areas, the deficiency is acute in the taluks of Dharmapuri, Krishnagiri, Tirupattur and Hosur. If houses with mudwalls and thatched roof were to be considered as kutcha structures, then nearly 70 per cent of the Region's total housing stock would need immediate replacement.

7.08. The progress made to fill up the gap between the demand and supply of housing needs in the Region has been awefully inadequate, the supply is so meagre, that the back log in the housing needs goes on accumulating year by year. Most of the efforts to fulfil the gap, has come from the private sector, mainly through individual efforts. Efforts made by the organised agencies like the co-operative buildings societies, State Housing Board, etc., to tackle the housing problem have touched only the fringe, and have been confined chiefly to urban areas. Only recently a beginning has been made by the State Housing Board, to build houses in the major urban centre of the region such as Vellore, Dharmapuri and Krishnagiri, mainly to Government Servants. The quantity of such housing activity being too small to have any impact on the overall housing situation in the Region, massive efforts, through bulk acquisition and development of land atleast in the urban areas are needed for tackling the problem on war footing.

MEDICAL FACILITIES.

7.09. All the taluk and district headquarters in the Region have hospitals with inpatient facilities. The Government Pentland Hospital and Christian Medical College Hospital located at Vellore, are the largest. The latter has a bed strength of 800 and has got up-to-date medical equipment and facilities, attracting patients from different parts of the State and the country. The number of private and Government Hospitals are 16 and 7 respectively, with a bed strength of 3,071 in aggregate. There are 42 primary health centres with an average bed strength of 6 each, besides three municipal Hospitals and forty rural dispensaries, providing mainly out-patient facilities. In addition there are 6 leporacy hospitals located at Tiruvannamalai, Polur, Karigiri (near Vellore) Chetpet, Dharmapuri and Krishnagiri with a total bed strength of 286 for in-patient treatment. A tuberculosis sanatorium is also located at Pennathur near Vellore with a bed strength of 124. A Government Chest Clinic is located at Tiruvannamalai. Table 7.3 shows the availability of medical facilities in the Region.

TABLE 7.3.

TALUK-WISE DISTRIBUTION OF MEDICAL FACILITIES.

Serial number.	Taluk.	Population, 1971 in '000	Government hospital and dispensary.	Primary health centre.	Municipal hospital.
(1)	(2)	(3)	(4)	(5)	(6)
			NUMBER. BEDS.	NUMBER. BEDS.	NUMBER. BEDS.
1	Vellore ..	415	6 617	4 24	1
2	Tiruppattur ..	315	1 72	3 18	..
3	Tiruvannamalai ..	314	3 96	3 18	..
4	Arni ..	182	1 51	2 12	..
5	Chengam ..	265	3 22	3 18	..
6	Walajapet ..	253	2 48	3 18	..
7	Arcot ..	172	..	2 12	1
8	Gudiyatham ..	426	2 94	3 18	..
9	Vaniaymbadi ..	339	4 54	1 6	1
10	Polur ..	293	2 82	3 18	..
11	Krishnagiri ..	396	3 51	3 18	..
12	Harur ..	280	2 11	4 24	..
13	Hosur ..	164	1 10	2 12	..
14	Dharmapuri ..	340	1 30	2 12	..
15	Uttangarai ..	139	..	1 6	..
16	Denkanikotta ..	212	..	2 12	..
17	Palacode ..	146	1 10	1 6	..
Total Reigon ..			32 1248	41 252	3

Serial number.	Taluk.	Panchayat Union and rural dispensary.	ESI, Railway hospitals and dispensary.	Private hospitals.	Total beds strength.	Deficiency in bed strength assuming standard of 1.5 beds per 1,000 persons.
		(7)	(8)	(9)	(10)	(11)
		NUMBER. BEDS.	NUMBER. BEDS.	NUMBER. BEDS.		
1	Vellore ..	2 0	..	1 798	1439	818
2	Tiruppattur ..	3 0	1 5	1 00	95	377
3	Tiruvannamalai ..	..	1 0	1 00	114	358
4	Arni ..	1 0	..	..	63	210
5	Chengam ..	..	..	1 00	40	357
6	Walajapet ..	..	..	1 250	316	63
7	Arcot ..	3 6	..	..	18	240
8	Gudiyatham ..	2 0	1 0	2 240	352	287
9	Vaniaymbadi ..	1 0	..	1 200	260	242
10	Polur ..	1 8	..	1 50	158	281
11	Krishnagiri ..	7 6	..	..	75	519
12	Harur ..	4 0	..	..	35	385

13	Hosur ..	..	3	0	..	..	22	224
14	Dharmapuri ..	..	5	0	..	..	42	468
15	Uttangarai ..	..	3	14	..	..	20	188
16	Denkanikotta ..	..	4	4	..	..	16	302
17	Palacode ..	..	..	..	..	..	16	203
Total Reigon ..			39	38	3	5	9 1,5381	3,071 3,887

(Source :—Additional Director of Health Services and Family Planning.)

WATER-SUPPLY.

7.10. The situation with respect to protected water-supply in the Region is very unsatisfactory. Even though 10 of the 34 towns have some measure of protected water-supply system, the supply is extremely inadequate. In the rural areas, there are nearly 10,000 drinking water wells, with 1,086 villages and hamlets covered by the protected water-supply system. Still more than half of the villages of the Region go without any protected water-supply system. Under ground drainage in the Region is completely lacking. According to an estimate of the Tamil Nadu Water-Supply and Drainage Board, the total cost involved in providing protected water-supply to the rural areas in Dharmapuri district alone would cost Rs. 200 million and another Rs. 150 million for the portions of North Arcot district lying within the Region.

EDUCATION.

7.11. In terms of literate and educated persons, the Region's position is much below the average standard for the State as a whole. According to 1971 census, there were 316 literate and educated persons for every thousand persons in the Region as compared to the State figure of 394. Within the Region, there is a pronounced variation in the degree of literacy, Dharmapuri district having a literate population of 223 persons only per thousand population, as compared to 369 persons in the portion of North Arcot district lying within the Region. The number of primary and secondary schools in the Region in 1971 were estimated at 3,434 and 693 respectively with an aggregate enrolment of 464.5 thousands and 184 thousands respectively. The table 7 : 4 gives the distribution of schools and enrolment of students in different parts of the region.

TABLE 7:4.

DISTRIBUTION OF PRIMARY AND SECONDARY SCHOOLS IN THE REGION 1971.

School.	Part of North Arcot district.	Dharmapuri district.	Region.
(1)	(2)	(3)	(4)
PRIMARY SCHOOL.			
Number of Primary Schools	1,944	1,291	3,235
Number of students	300,011	164,473	464,484
Number of teachers	8,890	4,324	13,214
Average number of students per school	154	128	144
Average number of teacher per school	4.6	3.4	4
Teacher-student ratio	1.34	1.38	1.33

SECONDARY.

Number of Secondary Schools	.. ..	402	291	693
Number of students	.. ..	121,706	62,433	184,139
Number of teachers	.. ..	4,448	2,006	6,454
Average number of student per school	..	303	214	264
Average number of teacher per school	..	11	7	9.3
Teacher-student ratio	.. ..	1:27	1:31	1:28

(Source :—Compiled by the Directorate of Town-Planning.

7.12 One hundred and thirty-eight villages in the Region do not have any educational facilities, i.e., they do not have even primary school facilities. The percentage of enrolment in the primary schools, in the Region varies from 75 to 90 per cent of the children in school going age, in different parts of the Region, and 85 to 90 per cent in the case of secondary schools. A recent survey conducted on the drop outs ratio in schools in Dharmapuri district has revealed that during the year 1969-70, the over all proportion of drop outs to the total number of students enroled at all levels came to 10 per cent for males and 11.2 per cent for females. The sex distribution of drop outs worked out to 60 per cent males and 40 per cent females, which broadly corresponded to the sex pattern of students enroled at all levels. More than a third of all drop outs had left school at the primary level and just under a third at the pre-matriculate high school level. Nearly three-fourths of the drop outs belong to the scheduled Caste and Backward Classes, both agricultural and non-agricultural. The parents/guardians of 60 to 70 per cent of the drop outs are higher illiterate or have not gone beyond the primary level of education. More than two thirds of the drop outs belong to low income families in the monthly income brackets of "up to Rs. 50" and "Rs. 51 to 100". The main reason for the high percentage of drop outs seem to be the financial difficulties of the parents and guardian of the drop outs, forcing the latter to seek employment to bring some relief to their parents. The high drop out ratio in the Dharmapuri district suggests that the district is more educationally backward even as it is more economically backward, than the rest of the State.

7.13. As regards higher education, there are 12 Arts Colleges and one Medical College in the Region, with a total intake of 11,535 students, besides a Police Training College. Out of the 12 Arts Colleges, six are Government Colleges and six are run by private institutions. The two Polytechnic Institutions in the Region are located at Vellore and Gudiyatham and the three Industrial Training Centres at Vellore, Tiruvannamalai and Hosur. In the Region there are 10 Teacher's Training Schools and one Teachers' Training College at Katpadi, besides an Agricultural Training Institute at Katpadi.

TOURISM.

7.14. Planning for leisure is one of the important aspects of regional planning, which involves not only preserving and safeguarding of the existing amenities, but also developing new areas to meet the increasing demand from the rapidly increasing population, especially of the poorer sections. The Region, has got many places of outstanding interest, to the discerning tourist, like picnic spots, project areas and places of historical, archaeological and religious interest. Tourism, if organised properly with the necessary infrastructure facilities, can generate not only valuable foreign exchange, but also additional employment through subsidiary occupations.

7.15. The important centres for tourism and holiday making in the Region can be broadly grouped under the heads 'viz' (1) hill resorts, (2) picnic spots, (3) project areas, (4) temples and (5) historic monuments.

HILL RESORTS.

7.16. The western and central parts of the Region have extensive hilly areas with undulating plains. Important among the hill from the point of view of tourism are Elagiri Hills, Javadhi Hills and the hills in Anchetty and Pennagaram areas. These hills enjoy a salubrious climate and present a pleasing calm and scenic environment ideal for holiday making. The Elagiri Hills situated at an elevation of 900 metres above mean sea level are connected to Tirupattur town by an all weather ghat road with bus transport facility, and are 88 kilometres from Vellore. Excepting the Travellers Bungalow, there are no convenient places for stay. Kommittiyur in Javadhi Hills is at an elevation of 1,100 metres above mean sea level and is connected by an all weather ghat road with Alangayam, which is about 13 kilometres from Tirupattur. Inadequate transport facilities and lack of adequate boarding and lodging facilities come in the way of development of these areas.

PICNIC SPOTS.

7.17. Palamadi, located on Vellore-Tiruvannamalai road at a distance of 8 kilometres from Vellore is a picturesque spot cushioned between three hills. Besides being beautiful and scenic, it has a natural swimming pool and a temple.

7.18. Situated in the Reserve Forest Area known by its own name, the Anchetty Area located south of Denkanikotta, confines within itself, unexposed natural beauties of thick vegetation, plantations, forest rivers and streams and perhaps water falls also. The average level of this area is about 900 metres above mean sea level and is connected with Pennagaram through a very difficult unmaintained forest road.

7.19. Hogeinekkal is located 14 kilometres from Pennagaram. Here the river Cauvery bifurcates, into two, and after flowing for a short distance, falls down from a great height. The place is an ideal picnic spot, and with its extremely beautiful natural setting has attracted the attention of the film producers, and a number of films have been shot with the natural settings of the waterfalls as the back-ground.

7.20. Situated south-west of Hosur, Thalli is a small town on the banks of a lake, has a salubrious climate and is commonly known as "little England". The town has an old and dilapidated fort of historical importance.

7.21. Amirdee a place situated at a distance of 12.6 kilometres from Vellore town, is a forest area with a rivulet and is a pleasant picnic spot. There is a proposal to have an animal sanctuary located in this area.

RELIGIOUS PLACES.

7.22. There are a number of temples and places of religious importance, distributed throughout the Region attracting large crowds, all the year round and especially during festival periods. Among the more important of these places of worship are the Arunachaleswarar Temple and the Ramanashram at Tiruvannamalai, the Vinayaga temple at Shenbakkam, the Murugan temple at Ratnagiri, Kangayanallur and Vallimalai, the Siva temple at Theerthamalai, Tiruvalam and Virinjipuram, the Narasimmaswamy and Hanuman temple at Sholinghur, the Renganathan temple at Palliconda, the Amman temple at Padavedu and the Hanuman Theertham at Uttangarai.

PROJECT AREAS.

7.23. The Sathanur and Krishnagiri Reservoir Project areas are the two important project sites with gardens in the region, that attract a large number of visitors not only from within but also outside the Region throughout the year.

HISTORIC MONUMENTS.

7.24. Among the more interesting places of historical and archeological interest in the Region, special mention may be made of the Vellore Fort, Krishnagiri Fort, Dharmapuri-Adamankottai, Rayakottai Hill Fort, the Delhi gate at Arcot, Anchetty Durg and ooday Drug the Kaganagari Fort and Pagalur Fort.

7.25. Much would need be done if the above mentioned places were to find as place in the tourist Map of Tamil Nadu. Many of these places are not easily accessible and lack certain essential facilities to attract tourists namely, decent accommodation, food, quick and cheap conveyance. Lodges and boarding facilities of acceptable standards at selected places and organised transport facilities are therefore essential for development of tourism in the Region.

CHAPTER 8.

REGIONAL ECONOMY—EMPLOYMENT.

8.01. Even, though the region's population density of 246 persons per square kilometre, is much less than the average for the State, the pressure of population on the rural areas, *vis-a-vis* agricultural land is much heavier, as the availability of cultivated land at 0.57 hectare per head of agricultural population as against 0.90 hectare for the State would reveal. Similarly, 82 per cent of the total population of the Region live in rural areas as compared to 71 per cent for the State as a whole. This coupled with the low productivity in the agricultural occupation, especially in the Dharmapuri district and from industrial climate have been largely responsible for the generation of a per capita income much below the State average.

8.02. Table 8:1 below indicate the percentage of total workers and their distribution in the three major sectors, viz., primary, secondary and tertiary sectors in the State as well as in the Region in both rural and urban areas as per 1971 census.

TABLE 8:1.

PERCENTAGE OF WORKERS TO WORKING FORCE 1971.

		Percentage of workers to total.	Percentage of workers in major economic sectors.		
			Primary.	Secondary.	Tertiary.
(1)		(2)	(3)	(4)	(5)
State :	..	38.37	60.11	17.73	22.16
Region: Total	..	35.34	74.72	9.21	16.37
Rural	..	36.36	84.05	5.46	10.49
Urban	..	34.15	26.63	27.04	46.33

8.03. It would be seen from the above table, that while the participation of workers to total population in the Region, is more or less equal, to the State average, the preponderance of workers in the primary sector, in the Region as a whole and in the rural areas, at a percentage much higher than that of the State average is indeed striking. Even in the secondary sector, household industries occupy a dominant position, so much so that, the high proportion of workers engaged in the primary and household industry sector, whose productivity is naturally low, has tended to pull down the net output per workers and consequently the per capita income, in the Region.

UNEMPLOYMENT.

8.04. Quantitative estimates of the magnitude of unemployment in the Region is rendered difficult, by the fact that nearly 82 per cent of the total population live in rural areas, and a majority of the rural workers viz., agricultural labourers suffer from under employment for major part of the year. Figures furnished by the employment exchanges, put the number of unemployed at 16,000 in the urban areas, in the Region, but no such precise figures are available for the rural areas. A survey conducted by the Indian Institute of Public Opinion in Dharmapuri District, has put the figures of unemployment in the district at 80,000 and assuming a same proportion for North Arcot also, the Region's figure of unemployment comes to 1,60,000. The Agricultural Labour Enquiry Committee of Government of India computed that if the chronically underemployed among the agricultural labour class were taken as unemployed then they constituted 20 per cent of the total agricultural labourers. Taking into consideration the percentage of persons who are never employed and unemployed amongst the non-workers in the rural areas, which is estimated as half a per cent, as per the census figures, and the figures arrived at by the Agricultural Labour Enquiry Committee, the total unemployed in the Region is estimated at 1,00,000. However in view of the uncertainties, involved in the qualification of unemployment and underemployment, the higher figure of 1,60,000 arrived at earlier, may reflect a position much nearer to facts.

8.05. Regional income is an attempt at expressing in aggregate form an index of general level of the economic well being of the Region. Viewed historically, it gives an index of the pace of over all economic progress and also enables the formulation of aggregate targets for regional economic effort in the future in the light of State and national objectives.

8.06. The State income for the year 1970-71 at current prices was Rs. 26,488.9 million, 41 per cent of which came from agriculture and allied sectors, 21 per cent from mining and other services. Over the last decade, while income from primary and tertiary sector have doubled and in the secondary sector trebled, the sectoral share to the total income has remained more or less static, a reversal of the trend seen during the earlier decade. For instance the primary sector which constituted 52 per cent in 1950-51, to the total income came down to 40 per cent at the end of the third plan period, and then remained static whereas the contribution of the secondary and tertiary sectors rose from 12.6 to 21 per cent and 35 to 38 per cent respectively for the corresponding period and then remained steadily at the same percentage during the next decade. An increasing contribution to the total income from the secondary and tertiary sectors, would reflect in the increase of the per capita income, since, these sectors have a higher productivity and hence a higher output per worker. This has been the reason why, the per capita income of the State, has risen at a slower rate during the last decade as compared to the earlier decade. This trend would naturally be evident and perhaps more accentuated, in the Region, where, the primary sector continues to contribute the major share of the Region's income and correspondingly therefore to the per capita income.

8.07. The income of the region under the different sectors has been computed by finding out the net output of value added per worker assuming that, the productivity per worker is uniform throughout the State, and based on the composition of the working force from time to time. This method of income computation would not give exact incomes, particularly in the agricultural sector, where income would vary with intensity of irrigation and cropping practices, land under cash crops and cropping techniques undertaken. An incremental value may have to be added to the net output per agricultural worker in areas where intensive agricultural programme has been under way as the net output per acre in these areas has shown a two-fold increase. But in respect of other sectors the income derived from this method would be adequate to show the difference between the regional income and the State average, since both these sectors have recorded a low key development throughout the region.

8.08. A survey conducted by the Indian Institute of Public Opinion, has put the income of the Dharmapuri district for 1970-71 at Rs. 81 crores of which Rs. 57 crores came from the primary sector, secondary and tertiary sectors accounting for Rs. 8 crores and Rs. 15 crores respectively. The per capita income, was estimated at Rs. 480 as compared to Rs. 644 for the State as a whole. The generation of income in the North Arcot district may also follow a similar trend with the possible exception of the primary sector to a greater extent, and the tertiary sector in a lesser extent, where, due to the improved facilities available, the output per worker, would be slightly higher than that recorded in the Dharmapuri district. Table 8.2 below gives a rough assessment of the regional income for Dharmapuri and portion of North Arcot district separately for 1970-71 at current prices along with the State income.

8.09. It may be seen that though the per capita income for portions of North Arcot in the region is slightly above the State average, the same is very much less for the region as a whole and the Dharmapuri district in particular.

TABLE 8:2.

ESTIMATES OF REGIONAL INCOME—VELLORE—DHARMAPURI REGION.

(Rupees in Millions).

Sector.	State Income.		Regional Income	
	At current prices.	At 1961 prices.	Dharmapuri	
			At current prices.	At 1961 prices.
(1)	(2)	(3)	(4)	(5)
Agricultural and allied activities. ..	10,860.45	6081.85	570.00	319.20
Mining and manu- facturing. ..	5,562.67	3,114.89	80.00	44.80
Commerce, Trade, Communication and Transport and Services. ..	10,065.78	8,052.62	160.00	128.00
Total ..	26,488.90	17,249.36	810.00	592.00
Population in Million ..	44.1		1.68	
Per capita income in rupees. ..	644	419	482	352

	Regional Income—cont.		Region.	
	Portion of North Arcot.		At current prices.	At 1961 prices.
	At current prices.	At 1961 prices.		
	(6)	(7)	(8)	(9)
Agricultural and allied activities. ..	1,056.74	591.78	1,626.74	910.96
Mining and manu- facturing. ..	445.30	249.36	525.30	289.16
Commerce, Trade, Communication and Transport and Services. ..	444.01	355.20	604.01	483.20
Total	1,946.05	1,196.34	2,756.05	1,683.34
Population in Million ..	2.97		4.65	
Per capita income in rupees. ..	655	403	593	362

CHAPTER 9.

FIVE-YEAR PLAN SCHEMES.

9.01. The region's progress in the field of agriculture, irrigation, power, rural electrification and industry, through the three Five-Year Plans and the three annual plans, may be termed as one of moderate success, taking into consideration the severe constraints imposed on development by the none too favourable nature. It must be remembered that the region contains within Dharmapuri the most backward district in the State, which has overshadowed the sustained progress the other portion of the region namely the North Arcot district, has made through planned development. With only a small percentage of its cultivated area under irrigation and with limited scope for expansion of irrigation facilities, a none too favourable topography, combined with the frequent visits of drought due to scanty and inadequate rainfall, has led to a state of affairs where Dharmapuri district could not make concerted efforts in increasing the agricultural productivity. More often than not in the absence of better techniques large areas were sown with samai and horsegram, which usually are the last resort of the desparate farmers, who faced with uncertainty of rainfall and drought, seek some assurance against total failure and wish to provide for themselves and their livestock some foodgrain and feed. In the field of industrialisation too, the Dharmapuri district could not make much progress, during the plan periods, mainly due to the absence of economically exploitable industrial resources, coupled with very poor off take of electric power.

9.02 In direct contrast, portions of North Arcot district lying within the region, have made commendable progress in planned development, especially in the field of agriculture. In food production, the progress made is next only to Thanjavur delta, particularly in rice cultivation. The yield of paddy has more than doubled and the introduction of high yielding varieties over increasingly large areas, supported by optimum dosage of fertilisers and other agriculture inputs have enabled these areas to achieve a phenomenal rise in food production. Programmes for raising pulses, oil seeds particularly groundnut with an export orientation, coconut, vegetables, banana, sugar-cane and cotton with account on increasing the productivity through application of package practices, have also met with commendable success. Similarly in the field of rural electrification, i.e., in the energisation of agricultural pumpsets and electrification of villages, North Arcot district has made an impressive progress under plan programmes. In the field of industrialisation, however, the progress has been rather slow, perhaps more due to the fact that other regions with better and proven infrastructure facilities got precedent over the region in this respect.

9.03. The region being essentially agriculture in character, the efforts in the three annual plans have been geared mainly towards maximising agricultural production. In fact accent in the Fourth Plan too has been centred round agriculture and allied programmes. With the advent of the new technology of integrated dry land farming designed preciously for such areas, new vistas have opened in achieving a break through in agriculture in the dry tracts of Dharmapuri district. The programme essentially consisting of dry farming with multiple cropping and also mixed farming including animal husbandry and pisciculture is expected to ensure attractive return to the farmers so that they would not switch over to cultivation of coarse grains. Of special significance to the area, is the implementation of centrally sponsored schemes under the drought prone area programme costing Rs. 20 millions and the integrated land development scheme with the world bank aid costing Rs. 40 millions.

9.04. The survey for mineral exploitation under the UNDP Programme, in the region and a similar survey by the institute of Public Opinion on the scope of setting up of new industries in the Dharmapuri district are expected to usher in, an era of rapid industrialisation. The intensive agricultural development programme, the integrated dry land farming scheme, the rural electrification programme expected to be completed by 1974, and the massive investment proposed in development of the infrastructure facilities all under the fourth Five-Year Plan, is expected to bring down the disparities in levels of economic development between the Region on the one hand and the rest of the State on the other.

9.05. The most important projects under the Fourth Five-Year Plan which are expected to have an impact on the economy of the region are given in Table 9 : 1.

TABLE 9 : 1.

IMPORTANT PROJECTS UNDER THE FOURTH FIVE-YEAR PLAN.

Main Heads of development.	Fourth Five-Year Plan Provision (Tentative) 1969-70 to 1973-74 State Scheme. (RUPEES IN LAKHS).
(1)	(2)
<i>Agricultural and allied Programme—</i>	
1. Drought prone Area Programme	200.00
2. Groundnut Export Oriented Programme, Oil Seeds Development Scheme, Sunflower Demonstration Scheme, Soyabean Demonstration Scheme and Castor Demonstration scheme.	40.00
3. Agricultural Research Station at Dharmapuri ..	12.00
<i>Minor Irrigation—</i>	
Integrated Land Development Project including Minor Irrigation under the World Bank Aid Programme.	400.00*
<i>Irrigation and Flood Control —</i>	
(a) Chinnar Scheme	108.00
(b) Doddalvalla Scheme	225.00
(c) Pamban Dam Scheme	90.00*
(d) Thambrapalli Scheme	60.00*
<i>Dairying and Milk Supply—</i>	
Pasternation Plants, Vellore	600.00*
Ware Housing and Marketing	79.39
<i>Village and Small Industries—</i>	
(a) Sodium Bichromate Unit at Wallajapet ..	9.56
(b) Technical Information Section at Katpadi ..	6.75
(c) Reorganisation of Arcot Bell Metal Works Industrial Co-operative Society	0.07
<i>Industrial Estates—</i>	
(a) Industrial Estate, Hosur	5.41
(b) Industrial Estate, Katpadi (Expansion) ..	4.37
(c) Developed Plots Estates, Ranipet	N.A.**
<i>Handi-Crafts—</i>	
(a) Establishment of a production centre for polishing of granite stones at Krishnagiri.	0.51
(b) Training-cum-production centre for field cumblies and blankets in Dharmapuri.	1.62
<i>Sericulture—</i>	
(a) Improvement to Government Silk Farm, Hosur.	N.A.**
(b) Chankie Silk Farm in Dharmapuri	0.47
(c) Demonstration Silk Farm in Dharmapuri ..	0.50
(d) Establishment of silk weaving unit	2.70
(e) Expansion of silk testing unit	2.00
(f) Research extension centre and Agronomic work at Hosur.	2.62

Main Heads of development.

Fourth Five-Year
Plan Provision
(Tentative)
1969-70 to 1973-74
State Scheme.

(1)

(2)

(RUPEES IN LAKHS)

Road Development—

(a) Development and improvement of Road communication.	75.00@
(b) Improvement to the National Highways ..	400.00@

Tourism—

(a) Tourist Bungalow at Vellore and improvement of Amridce forest area into Holiday Resort.	6.00
(b) Tourist Bungalow at Tiruvannamalai ..	5.00

* Centrally sponsored for the Region.

** Actual allotment not available.

@ Approximate.

(Source: Compiled from State Five-Year Plan documents.)

CHAPTER 10.

REGIONAL DEVELOPMENT OBJECTIVES

10.01. The narrative part on the region's socio-economic situation vis-a-vis the progress achieved in the rest of the State has revealed that through the various schemes under the different sectors undertaken during the plan periods, and in particular during the Fourth Plan, recorded some significant progress in the growth of the economy of the region, still development in certain vital sectors of the economy such as agriculture, industry and animal husbandry have not been adequate and enough attention has not been paid to the development of infrastructure facilities. Not only is the regional percapita income continue to be well below the State's average, but what little development that has taken place has further accentuated sectoral disparities and disparities in income between one part of the region and the other. Any development programme for the region, should therefore aims at not only reducing the intra regional disparity but should visualise optimum utilisation of region's resources so as to minimise the sectoral disparities as between agriculture and industry and the urban and rural areas.

10.02. The main objectives of planning at a regional level is—

- (1) to narrow down the disparities between the region and the State and one region and the other in the generation of income;
- (2) to provide maximum, if not, full employment to all persons seeking jobs;
- (3) to limit migration from or to the region to the minimum;
- (4) to utilise local resources for income generation; and
- (5) to reduce the gap in incomes and in the level of living in different parts of the region, particularly as between urban and rural areas.

10.03. These objectives can be translated only through an integrated programme of—

- (1) allocating finances for the various sectors of development;
- (2) identification of projects in each sector;
- (3) spatial location of the projects;
- (4) spatial allocation of population as between urban and rural areas on the one hand and between different urban areas on the other. These are discussed in detail under proposals. But certain salient points are alone stressed here.

10.04. The per capita income of the region is Rs. 593 at current prices as compared to the State's per capita income of Rs. 644. Bulk of the income is contributed by agriculture and other primary activities. But the productivity of labour engaged in this occupation is relatively low as against the out put added by an industrial worker. Agriculture being essentially a rural occupation and industry trade and service being found concentrated in major urban centres, the gaps between the levels of living in terms of real income between rural and urban population is very much striking. It can not therefore be said that the per capita income of Rs. 593 is the same in all parts of the region. While part of North Arcot it is Rs. 655, in Dharmapuri district it is only Rs. 484. So a pattern of development which would enable these backward portion of the region to attain the maximum possible rate of growth consistent with the availability of resources and within the limits of their capabilities may have to be evolved.

10.05. The very limited scope for diversification of the region's economy through development of mining and industry on a scale to absorb bulk of the increase in labour force, the relatively low population density in portion of the region which gives a more favourable man land ratio than is normally found in comparable situations, the existence of a diversified primary sector through the occupations of forestry, sericulture, horticulture and animal husbandry, and the recent advances in the technology of dry land farming all these factors, indicate that the main thrust of economic development in the region, would continue to be based on agricultural development only. Neither growth

nor the distribution can be achieved by scaling down the allocation for agriculture, since eight out of ten persons in the region depend mainly on agriculture for their livelihood and this ratio is not expected to climb down appreciably in the immediate future. The faster the growth in agriculture, the greater the livelihood of rise in consumption standards and incomes

10.06. While in the ayacut areas of Sathanur and Krishnagiri Reservoir projects and in the eastern plains and the Palar basin, the agricultural strategy would mainly devolve around propagation of high yielding varieties of paddy with summer cropping of pulses, oil seeds particularly groundnut and cotton, supported by package of agri-inputs, to boost agricultural production in the Dharmapuri district, the main thrust in the agricultural development, would have to be through Integrated Dry land farming under which, with adequate package practices, high yielding and short duration varieties of drop crops like cholam, ragi, maize, pulses, cotton, sun flower and chillies could be raised, replacing the low yielding and less profitable crops like cumbu, varagu, samai, terai and horse gram. This part of the region is also ideally suited for raising horticultural and agri-horticultural crops. With adequate incentives and agri-support infrastructure, the region is capable of achieving a sustained rate of growth in agriculture of about five per cent per annum during the next decade.

10.07. Much of the region's economic backwardness may be directly attributed to the large body of unproductive labour force in the rural and urban areas of the region. The success or failure of the regional strategy would depend largely on the steps taken to absorb them in productive employment. The endeavours of regional development would have to be directed in such a way, that besides formulating programmes in agriculture, animal husbandry forestry, fisheries, small industry chiefly labour intensive throughout the region, special rural works programme would have to be designed as to absorb, in large measure, the unproductive labour force in the rural areas. In the scheme of things for development of the region, intensive development of agriculture and rural employment therefore assumes top priority.

10.08. The region suffers from low urbanisation. This has manifested itself in the form of excessive concentration of people in a few large sized towns, with uneven distribution of number of towns as between one part of the region and the other. Only 8.5 per cent of the total population in the Dharmapuri region live in towns and the situation is no better in North Arcot, where 23 per cent of the population live in towns, a figure much below the State average. Fostering the growth of new market towns and helping the existing ones serves two purposes. Firstly it assumes a reasonable and fair price to the producer and consumer and serves as the focal point around which a number of activities could be organised leading to further economic activity. Secondly it aids in the equitable distribution, over space the benefits of agricultural and industrial growth. By locating and actively promoting the growth of new market towns, spread over space, economic growth could be disposed to the less developed areas and thereby bring employment opportunities to the rural population where they want them and thus prevent migration to the over crowded cities. Proposals for agricultural development in the region would therefore need to be simultaneously accompanied by a parallel development in marketing and marketing centres equipped with a viable infrastructure.

10.09. The pressure of population on agriculture and educated unemployed can be solved only by rapid industrialisation. The switch over to industry is inevitable for modernisation of agriculture and for reducing the dependence on it and also for meeting the multivarious needs of the farmers in the region in the farm production. The regional strategy should spell out measures for speeding up of industrialisation, particularly in the very backward areas of the region. In the present, the region, which lacks resources oriented industries, the obvious choice at industrialisation would fall on the **medium and small scale industries especially agriculture based and agriculture oriented industries**. These industries, especially those that are foot loose may advantageously be located in small towns so as to form an essential part of the industrial infrastructure near the rural areas.

CHAPTER 11.

POPULATION AND EMPLOYMENT FORECAST

11.01. Population growth is an important variable determining the rate of improvement in per capita income. The speed at which a Region develops depends largely upon its ability to direct a large part of its growing resources to investment rather than current consumption. A growing population with a high proportion of dependent children may find it increasingly difficult to do so. If population keeps growing rapidly, the major part of the investment, energy and effort may have to be used up for merely maintaining the existing standards of low living. Population growth, thus presents a serious challenge and the long term projections have to be therefore based on the careful assessment of the demographic aspects. The projection of population naturally therefore assumes very great importance in framing of policies and programmes of Regional Development. Following the normal practice, population projections have been worked out for a twenty years period and policies and programmes designed to serve this population.

ESTIMATED POPULATION, 1991.

11.02. The population of the Region according to 1971 census was 4.65 millions, as compared to 3.79 million in 1961, giving a decennial growth rate of 23 per cent. Over the three previous decades the rate of growth of population has raised between 1.2 per cent to 1.5 per cent per annum. Population projections based on the past trends, using the conventional methods of curve fitting and on the basis of the decennial growth rate of 1961-71 as well, are given in table 11:1.

TABLE 11:1.

POPULATION PROJECTIONS.

Method.	Population figures in Million—1991.		
(1)	(2)		
Geometric ratio
Parabolic curve
Graphical
Exponential curve
Assuming a decennial growth rate of 25 per cent.

11.03. For the purposes of this plan, the highest figure has been assumed because it reflects the trend of growth in last decade, and it will not also suffer from under estimation. The maximum of the projections viz. 7 million population by 1991, will be a reasonable and safe assumption because it is advantageous when a long term plan is prepared and even if there is any error, it will be marginal and on the positive side only.

URBAN POPULATION.

11.04. The percentage of urban population to total population in the region, according to 1971 census was of the order of 17.8 per cent, which is far below the State average of 30 per cent. Only 8.5 per cent of the total population in the Dharmapuri district lived in towns, as against 23 per cent in portions of North Arcot district coming within the region. Both the districts therefore have a low urban content, as compared to the State average. This position can be attributed to the region's economic backwardness, with a majority of population depending upon subsistence agriculture and also to the fact that rapid and diffused industrialisation, the pace setter for urbanisation is very poor in this part of the State. The rate of growth of urban population, in the region during the past three decades, has remained steady, at 3 per cent per annum, a situation not very much different from that obtained in other parts of the State. The difference, however lies in the fact, that the Regions urban component to total population has been very low so far as compared to other Regions, and unless a differential rate of growth at a much

higher percentage is envisaged the Region will lay behind in urbanisation as compared to other areas even though the rate of urbanisation, i.e., the rate at which urban population increases may remain the same for different parts of the State. This apart, siphoning off a portion of the rural population from excessive dependence on agriculture and prevention of further deterioration in the economic levels in rural areas, would demand that the rate of urbanization, oriented towards an industrial economy be accelerated further. Considering the levels of urbanization that is obtained today in the region, vis-a-vis the State as a whole, it is reasonable to assume that the rate of urbanization in the region would have to be at such a pace as to attain at least within the next two decades the State's present urban component of 30 per cent. This would in itself involve, the raising of the urban population from the present figures of 829 thousand to 2.1 million at a little over double the present rate of rise in the urban population of the region.

WORKING FORCE PROJECTION.

11.05. According to 1971 census, 35.28 per cent of the total population constituted the working force as against 36.7 per cent for the entire State. Of the total working force, 73.5 per cent were in agriculture 5.9 per cent in trade and commerce 8.5 per cent in industry and 15.5 per cent were in transport and services. The total number of workers and percentages to total population are given in Table 11.2.

TABLE 11:2.

WORKING IN THE MAIN ECONOMIC SECTOR IN THE REGION.

Sector.	Number of workers (000)	Percentage of worker to total population.	Percentage to total workers.
(1)	(2)	(3)	(4)
Cultivators ..	737.0	15.84	45.0
Agricultural Labourers.	465.0	10.00	28.5
Live stock ..	19.2	0.41	1.1
Total ..	1,221.2	26.25	74.6
Mining and Quarry- ing.	5.6	0.12	0.4
Household Industry.	47.3	1.02	2.5
Manufacturing other than household.	98.1	2.11	6.0
Construction ..	16.8	0.36	1.0
Total ..	167.8	1.61	9.9
Trade and Commerce.	96.4	2.07	5.9
Transport, storage and communica- tion.	34.3	0.74	2.1
Other services ..	121.3	2.61	7.5
All categories ...	1641.0	35.28	100.0
Non-workers ..	3011.0	64.72	..

11.06. The high percentage of non-workers shown above includes not only children below 15 and very old persons, but also the bulk of the women who presumably have restricted themselves to household duties. More over the census of 1971 had adopted a very restricted definition of worker and therefore probably excluded many who have some kind of work or income. It is difficult therefore to derive from these data, the actual numbers of the unemployed that is of people who are offering themselves for full time work but have not obtained it at all, or can get only occasional jobs. However, some kind of rough assessment could be made, of the total working force in the Region in 1971, and the quantum of unemployment prevalent. The total number available for employment in the region in 1971, would be 1.86 million for a population of 4.65 million, if we assume that two persons in each household consisting of about 5 persons were wage earners. The actual earners according to 1971 census was 1.64 million. It will follow that the remaining 220 thousand were unemployed, of which 80 thousand were in the urban areas and 140 thousand in the rural areas.

11.07. The addition to the working force in the agricultural and non-agricultural sectors in urban and rural areas in 1991 have been worked out, assuming the same proportion as obtained in 1971. These figures are given in Table 11.3.

TABLE 11:3.

NUMBER OF WORKERS IN THE AGRICULTURAL AND NON-AGRICULTURAL SECTORS IN 1971 AND 1991.

	Agricultural.		All others. (Workers in '000).		Total.	
	1971.	1991.	1971.	1991.	1971.	1991.
Urban	32	80	218	554	250	634
Rural	1,190	1,527	201	261	1,391	1,788
Total ..	1,222	1,607	419	815	1,641	2,422

11.08. The estimated number of additional workers in the agricultural and non-agricultural sectors in urban and rural areas of the region in 1991 is given in Table 11.4.

TABLE 11:4.

ESTIMATED NUMBER OF ADDITIONAL WORKERS IN THE AGRICULTURAL AND NON-AGRICULTURAL SECTORS IN URBAN AND RURAL AREAS 1991.

	Agriculture.			All others . (Workers in '000).		Total.
	Urban ..	Rural ..	Total ..	Urban ..	Rural ..	Total ..
Urban	48	336	..	384
Rural	337	60	..	397
Total	385	396	..	781

11.09. The additions to the total labour force of the region in 1991, i.e., person who are actually available for employment, is roughly estimated at 940 thousand, composed of 540 thousand in the urban areas and 400 thousand in the rural area. Taking into consideration, the additional, workers likely to accrue in the region, in the urban and rural areas in 1991, the short fall in productive employment in the urban areas is likely to be 125 thousand and in the rural areas 34 thousand. If 50 per cent of this shortfall is absorbed in the normal course of expansion in economic activity, the balance of 80 thousand will swell the ranks of the unproductive labour force in the Region from the present 220 thousand to 300 thousand of which 142 thousand is likely to be in the urban sector. What the Region requires therefore is an employment oriented programme that would take care of not only the existing back log of unproductive labour but also the requirements of the future addition to the labour force.

HIERARCHY OF SETTLEMENTS.

11.10. There are 34 urban centres in the Region to-day as against 31 in 1961. Thus there is very little increase in the number of urban centres, though in absolute terms, the urban population has increased by 184 thousand or 28.5 per cent since 1961. The addition to the urban population in 1971, has therefore been mainly accounted for by the existing urban centres, chiefly the larger towns of Class I and Class II Categories. Three important urban concentrations dominate the Region, all of them in the eastern part of the region in the North Arcot district. They are Vellore and the adjoining urban centres of Thorapadi, Konavattam, Shenbattam and Katpadi and Dharapadavedu. Vaniyambadi and the adjoining centres of Udayandram, Jaffarabad and Devasthanam and lastly Arcot with Ranipet, Walajapet and Melvisharam. All important urban centres in the region have been grouped hierarchically, on the basis of population size, pace or extent of industrialisation, administrative status, and scale of educational, medical, recreational and marketing facilities. The hierarchical pattern of urban settlements within the Regions, as emerged based on the factor set out above is given in Table 11 : 5.

TABLE 11 : 5.

HIERARCHY URBAN SETTLEMENTS.

I Order	..	..	..	..	1. Vellore.
II Order	..	..	..	..	1. Tiruvannamalai.
					2. Gudiyatham.
					3. Ambur.
					4. Vaniyambadi.
III Order	..	..	..	..	1. Tirupattur.
					2. Arni.
					3. Arcot.
					4. Dharmapuri.
					5. Krishnagiri.
					6. Ranipet.
IV Order	..	..	..	..	1. Walajapet.
					2. Pernambut.
					3. Polur.
					4. Hosur.
					5. Denkanikottah.
					6. Kaveripatnam.
					7. Harur.
					8. Sholinghur.
					9. Melvisharam.
					10. Jolarpet.
					11. Palacode.

11.11. A study of prevailing urban pattern of the region reveal that in the eastern part, the urban centre are closer to one another, and comparatively evenly spread out, as against the western part in the Dharmapuri district, where the urban centres are few and far in between. The belt along the national highway stretching from Walajapet to Vaniyambadi is highly urbanised and even small Town Panchayats, like Thorapadi, Dharapadavedu, Pallikonda and other in the eastern part of the region offer all amenities which the second order of urban settlements are able to provide. This pattern therefore does not call for the development of new settlements at least in this part of the region to serve as service centres, as these centres could themselves be developed in the normal course. However, a greater part of the Dharmapuri district has yet to come under the urban influence and the remedy will be to induce urbanisation in the district at an accel-

lerated rate by infusing industrial growth, increasing the level of income and provision of urban infrastructure, like education, health, sanitation and water supply, transport, etc. This would involve the selection of more number of centres in Dharmapuri district which have the growth potential and develop them in order that they may serve as urban centres of a higher order.

IDENTIFICATION OF SUB-REGION.

11.12. From a consideration of development of resources, extent of industrialisation, intensity of land utilisation and pattern of urbanisation, the Region could be divided into **five major sub-regions**. Each sub-region has its own developmental problems, calling for the preparation of detailed plans of development at sub-regional level, within the overall frame work of the Region's development. The descriptions of the five major sub-regions and their special characteristics are given in table 11:6 (vide map annexed).

TABLE 11:6.

SUB-REGIONS AND THEIR CHARACTERISTICS.

Sub-Region.	Unifying characteristics.	Extent in K.M.	Population 1971 in '000.
(1)	(2)	(3)	(4)
1. Northern Sub-Region. Comprising of Gudiyattam and Walajapet taluks and parts of Arcot, Vellore and Vaniyambadi taluks.	Dominated by the Palar river; agriculturally highly productive: rich in tanneries and match factories; traversed by the Madras-Bangalore National Highway and Broad-gauge railway line; industrialised and most urbanised in the region.	2,540	1,190.0
2. Eastern Sub-Region. Comprising of Tiruvannamalai and Arni taluks and parts of Polur, Arcot and Vellore taluks.	Rich agricultural belt; mostly plain lands with numerous tanks and wells; sparsely industrialised and urbanised.	2,350	767.3
3. Central Hill Sub-Region. Comprising of Chengam taluk and parts of Polur, Vellore, Vaniyambadi, Tiruppathur and Harur taluks.	Agriculturally and industrially backward; full of hills and reserved forests with mineral wealth; least urbanised, tribal area.	4,850	727.4
4. Central Plain Sub-Region. Comprising of Krishnagiri, Uthangarai and Palcode taluks and parts of Harur, Dharmapuri and Tiruppathur taluks.	An undulating plain relieved by sporadic hill masses; except for the ayacut area of Krishnagiri reservoir project the rest of the sub-region is characterised by dry farming; agriculturally and industrially backward; poorly urbanised.	5,510	1,448.4
5. Western Sub-Region. Comprising of Hosur and Denkanikottah taluks and parts of Dharmapuri taluk.	Elevated area salubrious climate, ideal for agriculture Horti-dairy farming and sericulture industry, hills and reserved forests predominant; agriculturally and industrially very backward and very poor in urbanisation.	4,240	519.4

CHAPTER 12

DEVELOPMENT PROBLEMS

12.01 The per capita income of the Region at Rs. 593 is far below the State's average per capita income of Rs. 644. The Region's low urbanisation, the virtual absence of large scale industries, the low consumption of electricity and the consequent low productivity in practically all fields of production including that of agriculture, has largely been responsible for the high degree of economic backwardness of the Region, as reflected by the low per capita income. Obviously, massive investments would be required even to bring the per capita income to the level of the state average, within a reasonable period of time.

12.02 A greater part of the Region receives a rainfall of less than 850 m.m. per annum, and consequently, with out adequate support of irrigation, crop failure is more frequent. The water resources in the Region are generally inadequate to provide a very significant increase in the irrigation facilities and probable additions to the irrigated area of the Region may at best be only marginal. The tendency on the part of the farmers, to go in for such drought resistant varieties as horsegram, and samai which have very low yields, as an insurance against complete crop failure at the cost of better yielding varieties, especially in Dharmapuri district, has been in large measure due to unfavorable rainfall conditions and seasonal failure of the rainfall. Consequently the net per capita income of the dry farmer, a majority of the region's farmers belong to this group-at Rs. 180 per annum is much below the poverty line of 2,250 units of calorie consumption per day. Obviously, determined efforts are required to put the Region, especially Dharmapuri district, in the way of new cropping patterns and package of practices associated with the integrated dry land farming—a technique which is eminently suited to the region.

12.03. The soils of the region are markedly deficient in all the plant nutrients and the lower use of fertilisers per hectare of cultivated area has consequently affected the productivity and in turn gross agricultural production. The fact that where fertilisers are used and soil conservation methods are adopted, have led to marked increase in productivity is an aspect of agricultural practice that invites immediate attention.

12.04. The animal husbandry resources of the Region have not been adequately exploited, so as to provide a subsidiary source of income to the Regions farmer. Dairy farming and poultry keeping are two facts of animal husbandry development which can augment the income of rural considerably. Integrated dairy and poultry farming, in the Region requires attention on a priority basis.

12.05 An inventory of the Region's mineral resources has not been very flattering. With the possible exception of the iron ore deposits around Tiruvannamalai, none of the resources are economically viable at the present stage of development. Polished stones in Krishnagiri, Apatite in Harur taluk, and Quartz for electronic appliances in Hosur seem to be the most promising minerals for further investigation. Large scale mineral based industries in the region, therefore, appears to be a remote possibility.

12.06. The land under forests, in the region is more than the state average. However, denudation of forests is occurring in the hilly areas and catchment areas of Sathanur and Krishnagiri Reservoir Project areas. Afforestation, soil conservation and water management are all factes of the same problem viz. conservation which requires urgent attention.

12.07. The region's problem of man-power would call for measures involving long range perspective planning. With a back log of 220 thousand as the unproductive labour force in 1971, the Region has to reckon with another 80,000 which will swell the ranks of the unproductive labour force during the next 20 years. The economy of the Region would have to grow at a rate fast enough, to absorb at least a portion of this unproductive labour force, as full employment through a desirable objective is rather difficult to achieve.

12.08 On the industrial scene, the most discouraging feature has been almost the total failure in the establishment of profitable medium scale industries in the Region over recent years. Nor the few existing medium and small scale industries in the Region have dis-

played much vigour or viability. In the absence of purposeful industrialisation, the main motivating force, urbanisation-an index of economic growth and prosperity in the Region is very low, lagging far behind the state average. Induced urbanisation through rapid industrialisation would have to be thought of, if the Region is to catch up with the rest of the state, in the foreseeable future in this particular aspect.

12.09 The over all percentage of literacy in the Region is well below the State average. A direct consequence of the low levels of income in the region, especially in the rural areas, has been the alarming rate of school drop outs as revealed by a survey conducted recently in the region by the Indian Institute of Public Opinion. As 55 per cent of the drop outs have stated financial difficulties as the reason for their leaving school, the vicious circle of poverty and educational backwardness is unmistakable. Such of those drop outs as are required to help their parents in cultivation or other family occupation as unpaid helpers bring some financial relief to their families. The fact that two thirds of all drop outs have stated that their parents were responsible for their decision to leave school is most significant in this context. The problem of school drop outs, bring into clear from not only the need to initiate measures to rehabilitate them, but also the much more fundamental problem of improving the lot of the common man especially in the rural areas.

12.10. The problem of pollution in the region of late has assumed serious proportions. Such industries as chemical industries and tanneries have created serious health hazards in and around Walajapet, Ranipet, Melvisharam, Vellore, Ambur, Vaniyambadi, Pernambut and other towns in the Region where these industries are prominent. Induced urbanisation through rapid industrialisation envisaged in the region would aggravate this problem further unless this is tackled through an integrated approach of built in measures.

12.11 In the matter of agricultural and industrial development, level of urbanisation, literacy and development of infrastructural facilities like power, transport and communication, health and educational facilities, etc., disparities exist within the region between one sub-region and the other. While the per capita income for the entire Region is well below the State's average, the sub-regional disparities, have manifested themselves in further low per capita incomes in the concerned sub-region, and have underlined the need to bring them into main streams of the Region's economic and social life through massive investments.

12.12 In formulating a development policy for the Region and more particularly the strategy to be followed, particular attention would, therefore, need to be paid to the problems enumerated above, apart from other usual problems that be set any backward region such as shortage of housing, inadequacy of transport and communications, marketing, storage and service facilities and deficits in social infrastructure. Any approach to rectify the imbalances and remove deficits would require an integrated approach viewing the whole as an integral part of a comprehensive programme.

CHAPTER 13

DEVELOPMENT POLICY

13.01. *Prospects for Agriculture.*—The crucial position of agriculture and the extreme urgency of achieving rapid growth in production have been brought home, more than ever before by the experience in recent years. The peace of development in the agricultural sector sets a limit to the growth of industry of exports and of the economy as a whole and constitutes a major condition for achieving economic and social stability and improving levels of living and nutrition for the mass of people. In the agricultural sector, the approach paper to Fifth Plan by the National Planning Commission, has in view two main objectives. The first objective is to provide the conditions necessary for a sustained increase of about 5 per cent per annum over the next decade. The second objective is to enable as large a section of the rural population as possible, including the small cultivator, the farmer in the dry areas and the agricultural labourer to participate in development and share its benefits. Accordingly the priority programmes of development in agriculture fall broadly into two categories, namely those which aim at maximising production and those which aim at remedying imbalances.

13.02 Success in the achievement of derived agricultural production in the Region, is principally linked with success of high yielding varieties and multiple cropping programmes, closely supported by schemes of major and minor irrigation, including large scale energisation of pumpsets through rural electrification and integrated use of ground and surface water supply of inputs for plant nutrition and production, machinery for farm operations, reorganisation of credit and strengthening of rural infrastructure in other important ways including more village roads, better marketing facilities and adequate storage.

13.03 Because of the inherent differences in topography rainfall, soil conditions, and irrigation facilities, the strategy to be adopted for increasing agricultural production, in the region will vary between one part and the other. While in the eastern plains and the Palar Basin the policy to be followed will be one of consolidating the gains already made in the propagation of high yielding varieties especially paddy, and introduction of crop diversification, in the Dharmapuri district the main thrust in agriculture development will be through the adoption of integrated dry farming techniques. The strategy that may be adopted in realising increases in agriculture production, in Dharmapuri district and the rest of the region is spelled out below in some detail.

DHARMAPURI DISTRICT.

13.04 The Indian Institute of Public Opinion, in advocating a strategy for irrigation and agriculture, for the district, in its employment oriented survey has stated that the district can register a compound growth rate of 6 per cent in agriculture, mainly through the new cropping pattern and packages of practices involved in the adoption of modern methods of Dry Land Farming and that Rs. 17 crores of output not estimated from irrigated agriculture could more than double itself to over Rs. 34 crores through extension of area under HYV and modern inputs with marginal increases in the irrigated area and for the rest, Dry Land Farming would be able to raise the present value of agricultural products from Rs. 38 crores (at current prices) to 70 crores in 1981-82.

13.05. Nearly half of the geographical area of the district is not available for cultivation most of it under forests and cultivable waste. It is estimated that there is a limited scope of adding 50 to 60 thousand hectares to the net sown area mainly by reclaiming cultivable waste or by bringing current fallows under the plough. There is also very limited scope for expanding the irrigation facilities, and the total irrigated area is not expected to increase from the present 14.8 percent to beyond 20 percent in the next decade. The surface irrigation projects now either under execution or investigation, in the district, consists of reservoirs across Ponniar, Vaniar, Pambar, Kallar, Nagavathi, Kesarigulihalla and Chennar rivers, which might add about 6500 hectares to the net irrigated area. These projects are estimated to cost Rs. 7.5 crores. Well irrigation, mainly, through the sink-

ing of 5,500 new wells, and deepening of 20,000 shallow wells is likely to add another 20,000 hectares to the net irrigated area, thereby bringing the total net irrigated area to 85,500 hectares or 20 percent of the net sown area within the next decade. The rainfall in the district is so seasonal and sporadic, that, except in Hosur and Denkanikotta taluks, the rainy season is most unreliable for any general crop planting. In the district, as a whole, atmospheric precipitation received from 31st to 45th Standard week only, may be considered as reliable for cropping. This naturally has a great bearing not only on the duration of a crop, but also the type of crops that could be raised within the constraints imposed.

13.06 With water resources thus limited and the average rainfall averaging not more than 850 m.m. in the district as a whole, though with some variations, the major thrust in agriculture will have to be sought in the new technology of Dry Land Farming designed precisely for such areas. The main objects of dry farming scheme are (1) carrying out research on dry farming at specially selected centres; (2) practical application of the results on soil and moisture conservation measures; (3) cultivation of drought tolerant and short duration crops; (4) adoption of new techniques of fertilisation like foliar spraying of area; (5) adoption of timely plant protection measures, and (6) crop rotation with leguminous crops alternating with non legumes. In general low production in dry lands is due to low rainfall, long breaks in monsoon and low moisture storage in the soil. However the relieving features in the district are the rainfall of about 400 m.m. during the crop season and the high storage capacity of soil for moisture. These two mitigate the devastating effect of the breaks in monsoon. The lands are slopy and their protection through soil conservation measures are more important.

13.07 Depending upon the relative importance of crops, four crop zones are recognizable in the district, viz;

(1) The Ragi-Horsegram zone consisting of 5 blocks, Hosur, Shoolagiri, Thalli, Keelamangalam and Veppanapalli;

(2) The Horsegram-Samai complex consisting of Uttangarai, Morapur, Palacode and Pennagaram blocks;

(3) The cholam-ragi complex consisting of Papireddipatti, Dharmapuri, Nallampalli and Kaveripattinam blocks and

(4) The cholam-Horsegram zone comprising of Krishnagiri and Baragur Blocks.

Although groundnut is grown all over the district it is prominent in the blocks of Uthangarai, Baragur, Kaveripattinam and Palacode blocks.

13.08. While the general strategy for desirable cropping pattern in the district would have to include introduction of improved varieties of the existing crops, substituting the inefficient, less yielding crops with more productive ones and developing inter cropping system, the specific measures suggested are—

(1) In the ragi-horsegram zone, hybrid Ragi should be substituted for the present varieties of ragi and blackgrams, cow peas and sunflower should progressively replace horsegram. In the horsegram-samai zone, the same method should be adopted with ragi, cholam or sunflower taking the place of samai also. No change is necessary in the cholam-ragi zone except the introduction of HYV varieties;

(2) Because groundnut is a shallow rooted crop, requires good moisture at peg formation stage and also sufficient moisture at harvest, it is considered as a risky crop in the district. A comparison of groundnut with sun flower recently carried out under the All India Co-ordinated Research Project for Dry land Agriculture has shown clearly that wherever groundnut is a marginal or a risky crop, sunflower is an assured one. The average yield of groundnut in such areas was of the order of 4.7 quintals per hectare compared to 8.2 quintals per hectare of sunflower. Hence a gradual extension of area to 60,000 hectares under sunflower by 1981 would have to be planned, replacing groundnut cultivation;

(3) Inter cropping systems would have to be developed, based on redgram, castor and Jowar as principal crops. A gradual shift to hybrids under cholam, sharda Ragi and HB3 cumbu can appreciably raise the inputs, thereby releasing part of the land for the other requirements;

(4) Irrigated area of 6,000 hectares within a 40 K.M. radius of the Palacode sugar factory would have to be set apart for growing sugarcane to maintain regular cane supplies to the Palacode Sugar factory to meet both its existing crushing capacity and the expanded capacity proposed;

(5) An additional 10,000 hectares will have to be brought under mulberry of which half will be irrigated primarily by wells in the Denkanikottah-Hosur Region;

(6) Nearly 400,000 hectares of land in the district would have to be progressively covered with soil conservation measures, such as contour bunding, gully plugging, land levelling and shaping. the entire programme to be covered in the next ten years at the rate of 40,000 hectares per year;

(7) The area under fruit crops especially mango would have to be raised progressively from the present area of 8,800 hectares to 12,000 hectares at the rate of 500 hectares every year. Similarly the average under potatoes could be raised to 2,000 hectares from the present 100 hectares. Similar increase in area under Tapioca, vegetable would have to be made, mainly to improve the income of the farmers.

13.09. The changes suggested in the cropping pattern, replacing the low yielding varieties and crops by hybrid crops such as Cholam, Ragi and Cumbu, gradual replacement of part of the area under groundnut with sunflower cultivation, and localisation of the area under mulberry and sugarcane and the additional irrigated area of 26,500 hectares to be utilised for raising paddy, cholam, groundnut and ragi besides mulberry, would involve change in the area under the main crops as indicated below:—

TABLE 13:1.

SUGGESTED CROPPING PATTERN FOR DHARMAPURI DISTRICT.

Crop.					Present area in Hectares.	Proposed area in Hectares.
(1)					(2)	(3)
Paddy	..	..	..	..	50,000	55,000
Ragi	..	..	..	..	95,000	120,000
Cholam	..	..	..	..	54,000	80,000
Cumbu	..	..	..	..	14,000	16,000
Cow peas	..	..	..	..	..	20,000
Blackgram	..	..	..	..	4,000	20,000
Sunflower	..	..	..	..	..	60,000
Groundnut	..	..	..	..	40,000	20,000
Fruit crops especially Mango	..	..	..	..	9,000	12,000
Potatoe	..	..	..	..	..	6,500
Tapioca	..	..	..	..	3,500	6,000
Total					269,500	364,500

(Source: Report on employment oriented survey for Dharmapuri district—Indian Institute of Public Opinion.)

13.10. The financial outlay, for the agriculture developmet suggested would involve, an expenditure of 21 crores towards surface irrigations, sinking of new wells and deepening of the old wells; Rupees 10 crores towards soil conservation; Rupees one crore for pasture development; Rs. 17.5 crores towards the cost of hybrid seeds; Rupees one crore now to Rs. 9.3 crores in 1981 towards fertilisers, and Rs. 3 crores for plant protection measures; Rs. 4 lakhs for arranging for field demonstrations in the farmer's field and Rs. 22.5 lakhs for establishing one main research station and three sub-stations with a running expenditure of Rs. 6 lakhs annually.

13.11. As a result of the above measures, the additional income in the district, from the irrigated sector will raise the value of the gross product from Rs. 17 crores now to Rs. 34 crores in 1981, while the additional income from dry land agriculture will raise the value of the goods product from Rs. 38 crores to Rs. 70 crores, thereby considerably increasing the regional income from the agricultural sector.

NORTH ARCOT DISTRICT.

13.12. Of the district's total geographical area of nearly 1.2 million hectares, 43 per cent is not available for cultivation. At present the net sown area is 659,000 hectares, and there may be only marginal scope for bringing additional land under cultivation by reclaiming cultivable waste or by bringing current fallows under the plough. There are nearly 100 thousand hectares of land under cultivable waste and other fallows, and during the past ten years nearly 5,000 hectares of land have been reclaimed and part under cultivation. Even assuming that about 40,000 hectares out of total 100 thousand, could be reclaimed and put under the plough, the prospect of extending the cultivated area, within the next ten years, cannot exceed 5,000 hectares mainly through reclamation taking into consideration the past progress made in this direction. Nor is it being assumed that expanded irrigation facilities would make a major contribution to agricultural development. The total irrigated area of 278 thousand hectares (51 per cent of net sown area) draws as much of the existing water resources from canals, wells and tanks. In the next twenty years, this irrigated area is likely to increase by another 96,000 hectares mainly through the sinking of 18,000 wells. A number of medium surface irrigation schemes are now under preliminary investigation, across Malatar and Kaudinyanadhi in Gudiyatham taluk, across Killimalagar and Naganadhi in Vellore taluk, across Kammandalanadhi in Polur taluk, across Cheyyar in Chengam taluk, across Andiyappanur Odai in Tirupattur taluk, excavation of a channel from right bank of Panniar above the pick up anicut of Sathanur reservoir in Chengam taluk, construction of an anicut across Palar river near Thirumukkadal and Palayaseeraram causeway and formation of flood moderator across Turinjalar river in Tiruvannamalai. The irrigation potential of these projects are yet to be assessed. Hence the additional area under irrigation in the immediate future is not expected to more than 100,000 hectares, to the net irrigated area.

13.13. With modest possibilities in the expansion of the horizon of cultivated area and are under irrigation, the strategy for agriculture development in the district, would very much depend upon consolidation of the gain already made and accelerated propagation of high yielding varieties of paddy and other crops and crop diversification. Besides application of optimum dosage of fertilisers, efficient use of plant protection measures and adequate and timely availability of farm credit, the specific and measures suggested for stepping up of the agricultural production in the district would include—

(1) Coverage of 255 thousand hectares of paddy area consisting of 40 thousand hectares under Sornavari, 155 thousand hectares under Samba and 60 thousand hectares under Navarai with high yielding varieties;

(2) Cultivation of pulses especially high yielding varieties of black and green grams in the rice fallow lands after the harvest of Samba paddy;

(3) Raising of red gram in the irrigated groundnut fields in summer, and in the banana, coconut and cashew plantations;

(4) Cultivation of oil seeds especially groundnut, gingelly and castor in the rice fallow lands;

(5) Conversion of rain-fed groundnut area into irrigated one;

(6) Increasing the area under sugarcane cultivation, banana, coconut and vegetable cultivation.

13.14. The desirable cropping of certain crops pattern for the district taking into consideration, the availability of irrigation facilities is tentatively indicated below :—

TABLE 13:2.

SUGGESTED CROPPING PATTERN FOR NORTH ARCOT DISTRICT.

Crop.	Present area in '000 Hectares.	Proposed area in Hectares.
(1)	(2)	(3)
Paddy	250.00	280.0
Millets	50.0	70.0
Pulses	44.0	100.0
Groundnut—Rainfed	180.0	140.0
Irrigated	20.0	110.0
Sugarcane	26.0	30.0
	<hr/>	<hr/>
Total ..	570.0	730.0
	<hr/>	<hr/>

13.15. The financial outlay required for the suggested pattern of development in terms of hybrid seeds is estimated at Rs. 8.84 crores per annum, Rs. 14.60 crores per annum in terms of fertiliser requirements and Rs. 9 crores towards digging of wells for supplementing irrigation. In the context of intensive agriculture, particularly the high yielding variety programme, quality seed are the basis of other developments. Special attention, therefore, would need to be devoted to multiplication and distribution of improved seeds. The State Farm located at Chengam and spread over an area of 4,500 hectares when fully developed is not only expected to fulfil the hybrid seed requirements of the district but the entire State as well. As it is only 800 hectares of land has been reclaimed and brought under cultivation. The Farm, which started functioning towards the end of 1971, is expected to provide employment when fully developed to nearly 3,000 villagers.

RURAL DEVELOPMENT.

13.16. The State's Fourth Plan and Draft Plan has laid emphasis on labour intensive programmes through development of agriculture, rural infrastructure, including communication and transport links, rural electrification, water management, rural industries and dispersal of industrial investments, rural and urban housing programme mainly to absorb the unproductive labour force.

13.17. The extent to which new employment opportunities will be created there will be improvement in the earnings of those already employed in different sectors in the rural areas of the Region in the plan periods cannot be precisely stated. Among the measures generally suggested to alleviate rural employment, the following would merit special attention.

13.18. The special programmes formulated for the small farmers, sub-marginal farmers, landless labourers and dry farming with stress on improved farm technology should envisage a significant expansion in employment opportunities by way of both fuller employment and new avenues by employment. The programmes could be organised in such a way as to be integrated with poultry and dairy farming and inland fisheries which in themselves could provide subsidiary or whole time occupation in the rural side. Out of the total 489,560 holding in the region, 462,066 belong to the above group. Already a small farmers development agency is functioning in Chengam and Pudupalayam Unions of Chengam taluk and the programme could be extended to such other areas in the Region where the following conditions are met with, viz., (1) that there is an adequate number of potentially able small farmers needing assistance; (2) that infrastructure of co-operatives is fairly strong and capable of undertaking the credit operations expeditiously; and (3) that either surface irrigation or ground water potential exist in the area.

13.19. Apart from out lays included in the plan, the Central Government annually provides Rs. 250 million from the budget as grants to drought affected areas. The bulk of this can be so deployed in the drought affected areas, as to generate considerable employment in the rural works. The individual schemes of rural works thus drawn up should be integrated on the one hand with the general programmes of agricultural development in the areas concerned and on the other with the specific programmes of development for

small farmers, sub-marginal farmers and agricultural labour. A drought prone area programme estimated to cost Rs. 200 lakhs is now under execution in the Dharmapuri district, and, is expected to bring considerable relief to the unemployed and under employed in the rural areas of the district. A similar programme is advocated in Chengam, Polur and Tirupattur taluks also.

13.20. Development of medium and minor irrigation schemes along with soil conservation, reclamation of waste, alkaline and ravine lands in the Region is expected to provide substantial employment opportunities to a large number of unskilled and semi-skilled workers. The soil conservation programme and reclamation of waste lands suggested in the agricultural strategy earlier are some of the many measures to find gainful work in the rural areas for those without it. Further, a Rs. 400 lakhs scheme of land development in the Dharmapuri district with the World Bank aid is now under execution, and provision of employment to bulk of the landless labour is inherent in the project.

13.21. A substantial volume of construction activities is inherent in the various schemes relating to transmission and distribution of electricity and rural electrification, which would open employment avenues for various categories of personnel including semi-skilled and unskilled workers. Similarly in the field of rural housing also opportunities exist for large scale employment of workers requiring manual labour. Under the transport sector most of the schemes particularly under railways and roads are highly labour intensive. The main schemes under railways which are expected to generate a large volume of employment relate to the conversion of the metre gauge into broad gauge, doubling of tracks, construction of overbridges and laying in of new lines. Under the roads development programmes, schemes relating to building of bridges on National Highways, reconstruction of weak bridges and culverts and widening of the important sections of the National Highways, the development of village and link roads, which are now under execution in the region, is expected to provide employment to a large of persons in the rural areas.

13.22. The above measures are expected to create opportunities in the rural areas and in such manner as to advance further the process of development. For achieving better results, it is desired that such programmes should form an integral part of a comprehensive developmental plan for the area, so that results achieved may not suffer from the usual deficiency of unco-ordinated and isolated efforts.

PROSPECTS FOR INDUSTRIES.

13.23. The development policy for industrial growth in the Region should aim not only at the establishment of new industries, but also stimulate conditions for its dispersal. It is through a continuing programme of economic development supported by measures to attract industries to backward Regions that the present imbalance can be rectified over a period of time. The entire region is considered as industrially backward and is eligible for interest-free loan and concessional finance for starting industrial units. In addition to the above concession, the taluks of Dharmapuri, Hosur, Krishnagiri, Uttangarai, Harur, Tirupattur, Vaniyambadi, Vellore and Wallajapet are further eligible for a ten per cent subsidy towards capital cost in the establishment of industry. Further, liberal financial assistance and package scheme of incentives for promotion of industries are available through various promotional institutions, such as State Industries Promotion Corporation of Tamil Nadu (SIPCOT), Small Industries Development Corporation (SIDCO), Tamil Nadu Industries Development Corporation (TIDCO), State Industrial Co-operative Development Banks and the Nationalised Banks. With all these incentives and concessions applicable over the entire region, it is possible to create a dispersed industrial climate by sustained promotional activity over a period of time.

13.24. Establishment of 'core' industries and heavy investment industries of basic critical and strategic importance are essentially matters of State and National policy and **have to be viewed** in the All-India context and as such it would be rather difficult to hazard a guess as to their probable location. Large and medium scale units within the region can, therefore, be thought of only on the basis of mainly agricultural raw materials. However, establishment of a few large scale industries is a must, since it will be the basis in which real industrial foundations in the region which is very backward in this respect, could be suit, and further without these large scale establishments, small scale sector will be insecure.

13.25. Based on the study of resources of the Region, the following large and medium scale units have definite possibilities :—

(i) Based on the anticipated increase in sugar cane cultivation in the region, there is scope for one more sugar mill, besides those at Tirupattur and Vellore, which are already posted for commencing production. The sugar mill with an installed crushing capacity of 1,250 tonnes per day could be located at Chengam. The capital investment is likely to be Rs. 300 lakhs. The by-products of the sugar mill can be utilised for the manufacture of straw boards, alcohol and citric acid, the entire production of sugar and by-products organised as an integrated unit.

(ii) It is estimated that nearly 75,000 tonnes of groundnut shell per annum may be available in the Region. At present the shell is mostly used as fuel and not put to any industrial use. These could be profitably used for the manufacture of groundnut shell board, which have very good demand in the country. The board could be used for ceiling, decoration, partition boards, etc. Hence it is suggested that a unit with a capital cost of Rs. 50 lakhs may be established at Tiruvannamalai.

(iii) Groundnut oil and other vegetable oil available in the Region, which is at present used for the manufacture of various products could be processed for the manufacture of Fatty acids and Glycerine, essentially required by soap manufacturing units. One unit for the manufacture of fatty acids and glycerine with a capital of Rs. 50 lakhs could be set up at Vellore.

(iv) It is estimated that 16,000 tonnes of molasses is available from the existing co-operative sugar factory at Ambur. The quantity will increase when four more units at Vellore, Tirupattur, Chengam, and Palacode commences production. Hence there is scope for starting a distillery unit either at Vellore or at Tirupattur, with a 6 million litre capacity per annum. The capital cost is likely to be Rs. 100 lakhs.

(v) A chemical industrial complex with Bromine salt, Basic chroms-Tam crystals, Syntan industry, meater food oil, glue cellatine, spent myrolillon as fertiliser and other units could be established at Ranipet with a capital cost of Rs. 100 lakhs.

(vi) Large reserves of good quality kankar suitable for cement manufacture occur in the Dasampatti, Samalpatti area in Uthangarai taluk adjoining the Tirupattur taluk. A small scale cement plant could be established at Tirpattur at an estimated outlay of Rs. 100 lakhs.

(vii) Expansion of the existing co-operative Sugar factory at Palacode from the present crushing capacity of 1,250 tonnes a day to 2,000 tonnes per day at an estimated cost of Rs. 1.05 crores.

(viii) Establishment of a distillery attached to the Sugar factory, producing 9,000 litres of rectified spirit, at a capital cost of Rs. 75 lakhs.

(ix) A solvent extraction plant of 50 tonnes capacity at Kaveripattinam and 20 tonnes capacity at Baragur at an estimated cost of Rs. 37 lakhs and Rs. 87 lakhs respectively.

(x) A malt Extract plant with a capacity of 3,000 kilograms per day, based on Ragi, to be located at Denkanikottah at an estimated cost of Rs. 40 lakhs.

(xi) A fruit canning and can making plant at Krishnagiri with an initial capacity of 1,600 kilograms per day and an ultimate capacity of 2,400 kilograms per day at an estimated cost of Rs. 27.65 lakhs.

(xii) A spun silk unit with 6,000 spindles and two units of weaving at Hosur at an estimated cost of Rs. 3.72 crores.

(xiii) A large milk processing unit at Hosur organised on the Kaira district model comprising of a milk plant handling 75,000 litres of milk per day; manufacture of 5 tonnes of butter and 5 tonnes of 'baby milk powder' per day, along with four chilling centres Hosur, Krishnagiri, Harur and Denkanikottah. The total cost is estimated at Rs. 28 lakhs for the chilling plants Rs. 100 lakhs for the milk plant, and Rs. 93 lakhs for veterinary services.

(xiv) Establishment of a poultry extension centre at each of the Taluk headquarters at an estimated cost of Rs. 25 lakhs.

(xv) A modern Brick and Tile plant for the manufacture of 10 million bricks or tiles in the first instance at Hosur at an estimated cost of Rs. 31 lakhs.

(xvi) A granite cutting and polishing industry with a capacity of 100 tonnes per day at Krishnagiri at a cost of Rs. 24 lakhs.

(xvii) A large scale furniture manufacturing unit, one medium sized furniture plant and one special plant for panelling materials at Dharmapuri at an estimated cost of Rs. 30 lakhs.

(xviii) A Scooter assembly complex near Krishnagiri producing 24,000 units a year at an estimated cost of Rs. 489 lakhs.

(xiv) An agricultural power tillers, spares and assembly unit near Dharmapuri.

(xx) A mechanised automobile repair plant at Krishnagiri and Sugar Factory at Palacode at an estimated cost of Rs. 13 lakhs.

13.26. The net investment towards capital for the 20 large scale units suggested for the Region is estimated at Rs. 30 crores.

13.27. Large scale industries by their very nature are capital intensive and hence cannot offer much scope for any appreciable non-farm employment. Therefore, the region has to depend to a very large extent on the small and medium industries for industrial dispersal. These units are amenable to dispersal, to small and medium sized towns and backward areas and can advantageously be concentrated through industrial estates. There is no denial, that industrial estates in backward areas, if properly established and given scope to grow will certainly help the rural clustering of Industries and investment leading urban centres into viable market towns. Table 13.3 gives the list of industrial possibilities in the Region in the small scale sector.

TABLE 13 :3.

SMALL SCALE SECTOR LIST OF INDUSTRIES FOR POTENTIALITIES EXIST.

Type of Industry.	Probable location.
(1)	(2)
<i>Agro and forest based Industries.</i>	
1. Low cost Multipurpose food based on groundnut.	Vellore.
2. Solvent Extraction from ricebran and groundnut cake.	Vellore.
3. Straw Board and Special type of paper	Ambur, Vaniyambadi.
4. Liquid glucose from Tapioca starch	Hosur, Dharmapuri.
5. Tamarind Juice concentrate	Krishnagiri.
6. Meat canning industry	Hosur.
7. Chicken soup and Egg powder	Hosur.
8. Fruit processing	Dharmapuri Krishnagiri.
9. Sandal wood oil	Tirupattur.
10. Malt Extract—confectionary grade	Dharmapuri. Krishnagiri.

Mineral based Industries.

1. Silica bricks	Morappur.
2. Ornamental stones	Krishnagiri. Baragur.
3. Red clay building material	Hosur.
4. Mosaic tiles	All Towns.

TABLE 13:3—cont.

SMALL SCALE SECTOR LIST OF INDUSTRIES FOR POTENTIALITIES EXIST—cont.

Type of Industry. (1)	Probable location. (2)
<i>Engineering Industries.</i>	
1. Engineering units for the Manufacture of Electricity Board requirements.	Hosur, Krishnagiri, Dharmapuri, Palacode.
2. Agricultural pumpsets	Karimangalam, Papireddipatti.
3. General purpose engineering workshops	Krishnagiri, Dharmapuri.
4. Agricultural implements	Papireddipatti.
5. Stone crushing units	Krishnagiri, Dharmapuri.
6. Servicing units for Tractors Sprayuse dusters	Thandrambattu, Arni, Pernambut, Gudiyatham, Tiruvannamalai, Tirupattur.
7. Brass fittings for low cisterns	Ranipet.
8. Rewinding shops for electric Motors	All Towns.
9. Baling press	Ambur, Vaniyambadi.
10. Blow moulded containers and injection moulded articles.	Vellore.
11. Foot valves, flangs	Tiruvannamalai, Dharmapuri.
12. Bicycle parts	Vellore.
13. Aluminium builders hardware	Krishnagiri, Vellore.
<i>Chemical Industries.</i>	
1. Paints and Varnishes	All Towns.
2. Sodium Sulphide	Ranipet, Wallajapet.
3. Pheynol and Lysol	Vellore.
4. H. D. Polythine bag	Krishnagiri.
5. Exfoliated vermiculite and vermiculite boards	Tirupattur.
6. Distilled water plant	Vellore.
7. Tablet-making units	Vellore, Dharmapuri, Krishnagiri.
8. Surgical cotton	Krishnagiri, Vellore,
<i>Leather and Tanning Products.</i>	
1. Tanning extract	Tirupattur, Ambur, Vaniyambadi.
2. Common facility centre for finishing of leathers.	Ambur, Walajah.
3. Industrial felt	Walajapet.
4. Glue	Ranipet.
5. Leather board	Ambur, Pernambut.
6. Footwear	All Towns.
7. Leather goods	Ambur, Vaniyambadi.
8. Finished leather	Pernambut, Walajapet.

TABLE 13:3—cont.

SMALL SCALE SECTOR LIST OF INDUSTRIES FOR POTENTIALITIES EXIST—cont.

Type of Industry. (1)	Probable location. (2)		
<i>Engineering Industries—cont.</i>			
<i>Miscellaneous.</i>			
1. Off-set printing press All towns.
2. Retreading of tyres Vellore, Krishnagiri.
3. Envelop and covers Vellore.
4. Ice making All Towns.
5. Korai Mat-weaving All Towns.
6. Coir industry Dharmāpuri, Denkaraihattah.
7. Fluorescent chokes and starters Krishnagiri.
8. Miniature bulbs Krishnagiri.
9. Black insulation adhesive tapes Krishnagiri.

13.28. The list is not exhaustive and is only representative of the type of industries which have scope in the region. The Indian Institute of Public Opinion has estimated that the investment requirements in small-scale industries in the Dharmapuri district is at Rs. 5.5 crores and that of cottage and village industries at Rs. 2.50 crores. Assuming a similar quantum of investment for the rest of the region, the total investment that would be required in small-scale and cottage industries sectors is roughly estimated at Rs. 16 crores. The development policy for the industrial sector, would therefore have to aim at an investment of Rs. 50 crores, during the next decade, if the region were to show a reasonable progress in its attempt to catch up with the rest of the State in the industrial field.

URBAN EMPLOYMENT.

13.29. Non-farm employment is expected to grow at a much faster rate especially in the urban area. The accelerated growth of manufacturing, encouragement of small industries widespread development of repair and maintenance services, the rising level of construction activity, the increased provision for building the infrastructure of communication, transport and power and expansion of training facilities will all contribute to larger opportunities for direct employment in the urban areas. While organised industries are likely to offer large job opening to engineers, technicians, skilled, semi-skilled and unskilled workers, the expansion programme in the field of general and technical education are expected to absorb in large number of trained technical personnel instructors, inspecting and other staff. The setting up of new educational institutions and the extension of existing one would increase the tempo of construction activity in school and college buildings, laboratories, hostels and staff quarters. Similarly, the health and family planning programmes are expected to provide large employment avenues for medical and paramedical personnel and other categories of administrative personnel. The rate of growth of employment will naturally be maximum in the tertiary sector—trade and commerce, transport, storage and communication continuing to provide, large employments in the urban area.

TOURISM.

13.30. Development of tourism and provision of necessary infrastructure needed forms an important part of the strategy for economic growth. As the income rises and with it the average standard of living, holiday expenditure can be expected to increase. From the point of view of earning foreign exchange and offering subsidiary employment to a variety of services, tourism is an important industry. The region has adequate resources for its development of tourism in its pilgrim and religious centres, dam-sites, water falls and natural scenery which attract people all the year around. Tourism can best be promoted by chalking out an integrated programme of providing infrastructure facilities such as good hotels and lodging houses, trained tourist guides at tourist centres, along with the efficient transport and communication system facilitating cheap and rapid

transport from the nearest urban centre to the place of attraction. The public sector transport undertakings may with advantage undertake package tour programmes to places of tourist attraction to boost up tourist trade. Tourist information centres may be opened **in major urban centres of the region where the traditional arts and crafts of the region can find a ready market.** To start with, the infrastructural facilities as boarding and lodging facilities, transport, etc., would need to be strengthened immediately at the important transit points for tourists namely Vellore, Tiruvannamalai, Krishnagiri, Dharmapuri and Tirupattur.

Housing.

13.31. Qualitatively and quantitatively housing in the region has posed a major problem. According to the 1961 census, there was a shortage of nearly 80,000 houses and if the poor and sub-standard stock are also taken into account the magnitude of the shortage will be higher. The figures though approximate indicate the extensiveness of the **problem to be contended with.** Efforts are being made to tackle this problem in the public sector, through the construction of dwellings in major urban centres by the State Housing Board and the co-operative societies. However the experience of public housing is that its unit cost are high and with the constraints on resources it has not been possible for these agencies to touch even the fringe of the problem. Much of the efforts in fulfilling the housing needs of the region may therefore have to come from the private sector only. However, certain positive measures would have to be taken by the Government so that public and private effort may be channelised to tackle this problem effectively.

(i) Massive effort should be put for construction of as many dwelling units as is possible in the major urban centres in the region by the co-operative societies and State Housing Board. This is particularly important in respect of the growth centres suggested in the development strategy of the region as housing as an essential infrastructure would be instrumental for induced growth of these centres. As has been stated already the bulk of the efforts towards meeting the housing requirements has to come from the private sector. However the housing board has to play a pioneering role in the smaller urban centres as the private initiative depends to a very large extent on the success of public agencies. The State Housing Board should therefore chalk out a massive programme of housing activity in Vellore, Gudiyatham, Ambur, Vaniyambadi, Tiruvannamalai, Krishnagiri, Dharmapuri, Hosur, Harur, Tirupattur, Arni, Ranipet, Walajah and other smaller urban centres.

(ii) As general policy, large areas in and around the major urban centres and the growing towns in the Region should be acquired for developing housing colonies by State Housing Board. This will serve two purposes, firstly land values will be pegged down to a reasonable level and secondly indiscriminate expansion of the urban limits could be prevented so that developments can be channelised as per planned programme.

(iii) Cheaper houses should be provided by organising the supply of material and by pursuing research into practicable schemes of cheaper ways of building. State local authorities and statutory bodies have to play a more active role in organising this effort.

13.32. Whatever housing programme is desirable for the Region it has to be accommodated within the overall programme formulated for the State. Here the revolving fund scheme can be advantageously utilised towards meeting the housing requirements of the region. The scheme involves the acquisition development and sale of house sites, houses, the proceeds being used to initiate further acquisition and development. The scheme may also be utilised for providing housing to the economically weaker section of the population.

13.33. The essential tasks in the sphere of village housing will be to get appropriate **layouts made for the growing villages, to provide basic amenities such as water and sanitation facilities and to stimulate private building and renewal activity.** The progress made in this direction has been tardy. The village housing project scheme has suffered by lack of priority and co-ordination with the complementary programmes for improvement of rural areas. Village housing is essentially aimed at the amelioration of the **economically weaker section in the homesteads of families of landless agricultural**

labourers of whom belong to Scheduled Castes and Backward Classes and who live on land belonging to others. The Kudiyruppu scheme recently formulated by the State Government is a commendable effort to provide with the landless agricultural labourers, land and housing facilities, and should be extended gradually so as to cover the entire Region.

13.34. Provision of infrastructure and services is one of the sure way of channelising development in the desired direction. It is therefore essential to chalk out a careful programme of investments for infrastructure such as water supply and drainage, educational and transportation facilities. In respect of rural water supply, schemes may be formulated for each Panchayat Union so that groups of settlements may benefit. While investments with respect to housing, industrial plots and transport facilities have to be organised in the growth centres identified in the development strategy, in respect of service centres investments will be mainly in social infrastructure in educational, medical, banking and marketing facilities, so that they can serve the rural areas well.

CHAPTER 14

STRATEGY OF DEVELOPMENTS

14.01. At present only about 17 per cent of the Region's population live in urban areas. This proportion is expected to raise to nearly 30 per cent in the next two decades. An increase of such magnitude would call for a carefully planned redistribution of the urban population in the selected centres, as would result in the even distribution of urban population and urban centres, over the entire Region. Viewing the town building process in terms of requirements of economic growth, its major functions can be broadly classified into two categories. Firstly there is need for a sufficiently extensive net work of towns to achieve a proper market integration of the economy. Secondly cities and towns are needed as centres of industrial growth. To achieve a marketing integration of the economy, the need clearly is for a sufficiently large number of medium sized towns suitably interspersed all over the region. For industrial growth, one can think in terms of an alternative between concentration in large cities and manufacturing relatively widely distributed over cities and towns. Under conditions of spontaneous growth, the pattern would essentially of the former type, but this would deprive the region with adequate market towns, as industrial growth will be concentrated only in a few cities. But under conditions of planned growth, the latter type of growth can be deliberately fostered, which would bring about not only an integration of the economy, through a net work of towns serving as a suitable marketing and servicing centres, but also an integration of a type that has benefits of industrial growth spatially distributed evenly over the Regions. The need obviously is for industrial growth to spread out into the country side, for a proper integration between major industrial urban centres, neighbouring servicing and marketing towns and the surrounding rural areas.

14.02. As far as the existing spatial distribution of urban centres are concerned, the draw back is not as much as the numbers which are adequate, but rather the uneven distribution of the same, as between eastern part of the region and the west, i.e., Dharma-puri District and the stunted growth of many of them. Many of the urban centres are small towns, mostly panchayat union headquarters or small commercial centres, and a few are medium sized towns. In the absence of integrated policy measures to promote their growth, they have remained predominantly geared to just one or two specific purposes. It is these small towns which should be actiated into marketing and servicing centres, through the provision of adequate infractructure facilities, and the medium sized town into thriving industrial centres, through fostering deliberate promotion of industries.

14.03. Under the strategy outlined above, the village panchayat will be the unit for agricultural production, with the block on the Panchayat Union headquarters towns and such other towns in the union which reflect signs of growth, developing into viable marketing towns serving the surrounding villages and will be the centres for all villages, cottage and rural industries. The taluk headquarters town or the medium sized town will be the urbanised industrial town, serving all the blocks within its area, as it affords maximum rural coverage for a centralised industrial town and has an age old centralised location which it would be casier to build and develop on.

14.04. The development of these centres, would depend upon two broad approaches. The first one would be to encourage growth in all the taluk centres and establish a few new centres to subserve the needs of balanced regional growth. The second would be to identify a few existing taluk urban centres and such other medium sized towns where potential exists for speeding up growth and take these up for massive development. The first approach would evidently require improvements to existing infrastructure facilities and provision of new facilities where they are absent in all urban centres. It has already been seen that almost all the taluk towns in the Region have a low level of infrastructural facilities and hence their approach would call for very large investments besides the need to initiate developmental efforts in a large number of places simultaneously. On the other hand the second alternative would only call for selective development of urban centres which have a fair level of infrastructure facilities and where sufficient momentum exists. This approach has the advantagaes of lower costs resulting from the economics of scale in the provision of infrastructure and in quicker execution since developmental efforts will be confined to smaller number of areas.

14.05. The success of the second approach would depend upon the correct identification of the urban centres where such massive development have to be under taken. The study of the region's resources, manpower, rail and road links, urban distribution and level of development would indicate that the main axes of development in the region is likely to be along two parallel belts viz. the Vellore-Krishnagiri belt in the north and the Tiruvannamalai-Dharmapuri belt in the south, with connecting corridors of urban centres at appropriate levels and locations. (vide map annexed.)

14.06. In Vellore-Krishnagiri belt are found most of the industrial activities of the Region, bulk of the underground water resources, and quite a few medium sized towns. The industrial strategy for the region has also identified a number of medium sized industries, which could be conveniently located in these urban centres. The strategy proposed is therefore to induce most of the future industrial and urban development in **this belt in an articulated manner, with major concentrations at Vellore and Krishnagiri and large scale expansions, along the belt at Walaja-Ranipet-Arcot and Vaniyambadi-Ambur.**

14.07. In Tiruvannamalai-Dharmapuri belt are found bulk of the mineral resources of the region iron ore at Tiruvannamalai and Theerthamalai, limestone at Samalpatti, **Corundam at Paparapetti and block granite at Dharmapuri.** Hence it is proposed that the second line of industrial and urban development should take place along this belt with urban concentration at Tiruvannamalai, Harur and Dharmapuri with large scale expansions at Chengam and Uttangarai, Arani, Polur, Tirupattur, Kaveripattinam and Palacode located between there two belts, will serve as the connecting corridors, linking these two belts. The development strategy also provides for limited expansion of development of the other urban centres, so as to strengthen their role as servicing and marketing centres.

14.08. The suggested distribution of the future urban population in the major urban centres and in the rest of the service and marketing centres is set out in Table 14:1. (vide map annexed.)

TABLE 14:1.

PROPOSED DISTRIBUTION OF URBAN POPULATION IN VELLORE-DHARMAPURI REGION, 1991.

Urban Centre.	(Population in '000)	
	Population. 1971.	Proposed population, 1991.
(1)	(2)	(3)
I. Vellore-Krishnagiri Axis—		
1. Vellore Metropolitan areas including 9 other urban settlements in its orbit	175	300
2. Ambur-Vaniyambadi and its environs including Udayandram, Devasthanam and Jaffarabad ..	119	200
3. Arcot group including Ranipet, Walajapet and Melvisharam — — — ..	92	150
4. Krishnagiri including Bargur and Kaveripattanam.	47	150
II. Tiruvannamalai-Dharmapuri Axis—		
5. Tiruvannamalai and environs — — — ..	60	100
6. Chengam, Sathanur and Thundrampet ..	..	50
7. Harur-Morappur	14	50
8. Dharmapuri and Environs	40	100

TABLE 14 : 1

PROPOSED DISTRIBUTION OF URBAN POPULATION IN VELLORE-DHARMAPURI REGION 1991

Urban Centre.	(Population in '000)	
	Population. 1971	Proposed population 1991.
(1)	(2)	(3)
<i>III. Corridors.—</i>		
9. Gudiyatham including Pallikonda	77	125
10. Tirupattur including Jolarpet	60	100
11. Arni	38	50
12. Polur	18	30
13. Palacode	12	50
14. Hosur-Mathagiri	16	50
15. Uttangarai-Singarapatti .. ..	..	30
16. Denkanikotta	14	30
Total	782	1,565
<i>IV. Other urban centres (service centres and Market towns) numbering 61</i>		
Total .. ..	..	535
Total .. ..	..	2,100

CHAPTER 15

REGIONAL TRANSPORTATION PLAN

15.01 The development strategy for the Region, envisages a regional population of 7 millions, of which 2.1 millions will be distributed in urban centres in a parabolic belt along the National Highway from Walajapet to Hosur and in a chain of growth centres surrounding this belt. Such a high intensity of development would call for the efficient **organisation of the region's transportation system, which would facilitate the easy movement of men and material from one part of the region and to the other, and to the urban centres from their hinter lands and vice-versa.** The Regional transportation system, would therefore have to be planned as an integrated system, where the various mods of **transport play a mutually complimentary role in meeting the needs of the community,** with a minimum of cost and maximum of efficiency to the region's economy.

15.02. Despite substantial progress made in road development during the last decade, under the five year plans, the road system of the Region has still large deficiencies. The National Highways and the State Highways including major district roads, suffer from various handicaps. Besides having only single lane widths, in large stretches, especially **where they pass through congested builtup areas, the Region's Highway system have inadequate road length, substandard surface, narrow width and weak bridges.** A number of roads originally meant for light traffic require to be strengthened for much higher intensities of traffic that have developed or anticipated to develop. The more backward areas of the Region like Chengam, Tirupattur, Harur, Hosur, Denkanikotta and Polur taluks where hills and forests abound, have poor communications and the settlements located **on the border of forests and on the foot hills, including urban centres have no proper connecting roads.** A large number of villages still lack road links with market towns and with one another. In growing towns like Vellore, Gudiyatham, Ambur and Tiruvannamalai, the development of the road system, has failed to meet adequately the growing needs of an admixture of fast and slow moving vehicular and pedestrian traffic.

15.03 The necessary improvements to the Regional transportation system would therefore have to include not only improvements to the road net work, but also extension of the same to areas which hitherto have not been properly served with road communication systems especially the rural areas. The prime factors that would help improved operation of the Regional road net work are the classification and usages of the roads, as expressways, arterials, local roads or urban roads and upgrading of the level of existing service appropriately to meet the increasing needs. The entire net work has to be organised as a trunk and feeder system to obtain maximum operational efficiency.

15.04 From the point of view of offering linkages to the largest number of urban centres, and catering to the maximum traffic as well, the Madras-Bangalore, the Madras-Chittoor and the Salem-Bangalore. Tiruvannamalai-Vellore Highways are the important arterials of the Region. Almost all the important urban centres of the Region are located on these Highways, and besides catering to the needs of the Regional traffic, they carry a heavy load of inter Regional and inter State goods traffic. However in terms of efficiency, these arterials offer very low level of service since they perform the role of local roads, where it passes through congested settlements especially near urban settlements. **A number of culverts and bridges are narrow and approaches to them hazardous because of bad geometrics, and has railway crossings at grades at several places.** These arterials would therefore require to be brought to the express way standard as a part of the overall programme of the State. While all the railway crossings at grade would have to be replaced by the over bridges in a phased manner, by-passes have to be provided where these Highways passes through the congested settlements such as Arcot, Melvisharam, Vellore, Vaniyambadi, Tiruvannamalai, Krishnagiri, and Kaveripattanam. Work on improving the efficiency of the National Highways has already been taken up by the State Highways Department with World Bank Aid with the aid of special staff under a chief Engineer.

15.05 The other important roads in the Region are those connecting Vellore with Salem via Tirupathur, Uttangarai and Harur on the one hand and via Dharmapuri on the other. Dharmapuri with Harur, Polur with Krishnagiri via Chengam and Uttangarai, Vellore with Gingee via Arani and Chetpet and Tiruvannamalai with Harur via Thandrapatti. These roads at many places have width for single lane traffic only, have narrow culverts, bridges and causeways. In the first instance, it would be necessary to widen stretches of road and bring it to the standards of arterial roads and wherever necessary, culverts and bridges have to be rebuilt and causeways to be replaced by bridges. Special mention would have to be made of the causeways between Kalasapakkam and Polur on the Tiruvannamalai-Vellore Road, between Arni and Chetpet on the Arni-Gingee Road and between Hogenakkal-Pennagaram across the river Chinner, all of which requires immediate replacement by bridges as these roads have on more than one occasion become inaccessible during the period of heavy rain, thereby dislocating through traffic.

15.06. The Regional Development Strategy has identified a number of growth centres and service centres which will act as links between the regional metropolis and urban settlements and the rural areas. The present net work of roads connecting these would need to be upgraded and brought to State Highways standards. Similarly special emphasis would need to be laid on the development of rural roads. They are necessary for the growth of the rural economy and play an active role in the increasing of agricultural production. While such rural settlements which are located nearer to arterial roads and urban centres are more fortunate in this respect, it is the remote villages that require quick establishment of useful links with the nearest market towns for easy transportation of agricultural produce. Village settlements located on the border of forest areas and along the foot hills, in the region are those which require immediate attention. While roads connecting village to village is in an unsatisfactory state, the link roads connecting the main roads to the village site or the harvesting site are even worse. These are at best make shift earthen roads, unfit for vehicular traffic during the rainy season. However since programmes for the strengthening and improvement of link roads and village roads forms an integral part of the overall strategy for agricultural development in the region, schemes for these, would therefore have to be appropriately elaborated and integrated within the main and secondary road system suggested above.

15.07 Besides these there are certain links to be established or improved to provide maximum accessibility to the hill resorts and the proposed regional recreation centres. These would not only develop tourism but also help in the fuller exploitation of forest produce and minerals. The main links requiring improvements are:—

- (1) Tirupathur to Elaigiri Road.
- (2) Alangayam to Polur across Javadhi Hills and via Komittiyur.
- (3) The circulatory road on Javadhi Hills.
- (4) Opening up of Yercod of Shevroys to Dharmapuri district from Bommidi.
- (5) Opening of the Anchetty reserve forest area by connecting Anchetty with Pennagaram by upgrading the existing but unmaintained forest road.
- (6) Improving the Thandrapet-Harur road link.

ROAD TRANSPORT.

15.08 The road transport services provided by the State operated buses and the organised public carrier operators can be considered to be adequate for the present requirements. All the important urban and industrial centres are covered by these services and the proposed improvement to the road system would improve their operational efficiency considerably. As the road transport has to take the main burden of the region's transport even in future, it is necessary to expand it adequately both for collector and distributor service and for long distance haul. While the additional vehicles required may be easily forthcoming, service facilities and service centres required for the transport operations can be had only with considerable effort. A chain of service centres located at the

major urban centres and all the growth centres and service centres suggested in the strategy together with warehousing and interchange facilities to cater to and ensure optimum operational efficiency for the anticipated scale of movements is an essential step that needs to be initiated immediately. While major facilities would need to be provided at the growth centres suggested in the Regional strategy, services of a lower order would need to be provided in the various service centres proposed in the region.

15.09 The improvements proposed for the regional transportation system would also have to include measures to meet the needs of commuter transportation facilities to work, school and off-time activities, at all the major urban centres, consequent on the massive urbanisation programme. This aspect of development would require special attention particularly in the case of Walajapet-Ranipet-Arcot urban complex, Vaniyambadi-Ambur Town groups, Tiruvannamalai and Vellore metropolitan area. The possibilities of optimising facilities, introduction of new facilities for all their major urban concentration will have to be initiated through detailed studies.

THE RAILWAYS.

15.10. The region's railway system runs almost parallel to the main arterial roads, and hence from the point of view of accessibility they serve only a small belt of the region's transportation requirements. Also the railways have to meet stiff competition from the road transport system in the handling of passenger and goods traffic. Hence there is urgent need for evolving a system, whereby, the railways and road transportation may work in mutual collaboration in catering to the needs of the region's passenger and goods traffic, without cutting into each others sphere of influence and efficiency. Perhaps a system under which the railways could cater to the needs of long distance and through traffic and the road transport to operate short distance routes and between major centres and small towns and vice-versa and between major rail heads and their hinter land is worth examining.

15.11. In view of the competition from the road transport it is economically not prudent to suggest new rail links in the region. However, revival of service disbanded rail links between Krishnagiri and Tirupattur and Dharmapuri and Morappur and provision of a new link connecting Tiruvannamalai and Madras via Gingee, Vandavasi, Cheyyar and Kancheepuram, and a new link connecting Krishnagiri with Salem-Bangalore line at Royakkotta may be considered after detailed investigations regarding their economic viability. Important roles have been assigned to Tiruvannamalai, Vellore, Krishnagiri, Dharmapuri and other urban centres in the matter of industrial development. Exploitation of the low grade iron ore reserves in the Tiruvannamalai area mainly for export to Japan through the port of Cuddalore is likely to increase the density of goods traffic between Tiruvannamalai and Cuddalore. Here as in other parts of the State, the existence of two gauges would be a great impediment. For operational convenience and maximum efficiency, the scheme of conversion of the existing metre gauge should be accelerated and higher priority assigned for the conversion of metre gauge lines between Dharmapuri and Hosur on the Salem-Bangalore line and between Katpadi and Cuddalore on the Renigunta-Tiruchi line.

AIRWAYS.

15.12. Considering the location of Vellore in between Madras and Bangalore, the existing airstrip can be utilised to put Vellore on the domestic air net work of the country perhaps with minimum of cost. This link up with Madras City on the east, Bangalore on the west, Tirupathi on the North Salem on the south will considerably help to improve the trading prospects of the region.

CHAPTER 16

PHYSICAL DEVELOPMENT PROGRAMME

The importance of a physical development programme in the proper and timely implementation of the plan need hardly be over emphasized. Once the overall dimensions of the problems to be tackled and the precise nature of objectives to be followed are visualised the extent and character of each activity and its chronological order would have to be determined through a physical development programme. The framework of a Regional Physical Plan would provide guide lines for the preparation of detailed physical plans at block levels or area development plans as are more commonly understood. The **frame work of area development plans at block levels** should portray two important spatial dimensions; one, a frame work of a land use plan (particularly of agricultural land) and the other, the proposed integration of villages around some important settlements as the **focal points**. These should spell out the nature of services and the amenities needed by people at the focal point and in the surrounding villages and other specialised functions such as agro-industries and ancillary industries. The cost implications and the different inputs needed should be indicated so that the public outlay could then be so channelised as to benefit larger areas.

16.02. In visualising a development policy for the region, it was stated, that region's efforts towards sustained economic growth would depend essentially on three crucial aspects namently—

(1) Consolidation of the improvements in the agricultural production and practices that have taken place in the eastern plains and the Palar basin and boosting up and diversification of agricultural production in the Dharmapuri district through integrated Dry Land Farming;

(2) dispersal of medium and small industries, nearer to the countryside by encouraging location of such industries in a number of urban centres identified in the Regional strategy, so as to make available the benefits of industrial growth to the largest area possible; and

(3) identification and development of a number of small towns in the Region as **viable market and servicing centres to serve the surrounding villages.**

16.03. While sub-regional plans would have to be prepared for each of the five sub-regions identified, to work out detailed proposals for the development of the rural and urban areas, in an integrated manner, the physical plan programme at the Regional level can only suggest the broad frame work, and the guide lines under which such sub-regional or area development plans would have to be prepared, and the action programme that would need to be initiated under the various sectors of development.

16.04. From the point of view of securing maximum growth in agriculture, in the Region some system of priorities is required as to in what order, does the modernisation of agriculture can be extended over different parts of the Region. What is required is a kind of land classification that combines an estimate of the inherent capacity of each area for agricultural production with an estimate of the immediacy of its potential for agricultural growth. This would involve the preparation of a series of agriculture land use plans for the entire region in compact blocks, taking into consideration soil capabilities and its response to irrigation, application of fertiliser and pesticides, response to different type of crops and optional set of institutional and agri-input requirements. In the light of the agricultural situation in the region the objectives in the preparation of such detailed **agricultural land use plans may include among other things.**

(1) Localisation of areas which are to be converted from single crop to multiple crop with reference to and feasibility of supply so that the area located for double cropping may be in a compact zone.

(2) A crash programme for the propagation of High yielding varieties of paddy,umbu and cholam, or massive summer cropping programme for pulses or export oriented groundnut cultivation programme.

(3) Zonalisation of compact areas for the cultivation of sugarcane to feed the nearby sugar mill or raising of mulberry trees to feed cocoons to silk weaving units.

(4) A crash programme for the introduction of sunflower and tobacco cultivation.

16.05. From the point of view of immediacy potential for agricultural growth, the Region is divisible into three categories. The first type is composed of areas of immediate high potential for agricultural growth. Regions in which soils are good, rainfall is adequate or the area is efficiently served by irrigation facilities and completed research has already produced technology that has been proved to provide the basis for substantial agricultural growth with respect to at least one major crop of the region. The Palari basin sub-region and the eastern plains sub-region, belong to this category. There are the areas where the high yielding varieties of paddy, groundnuts, pulses and plantation crops have been propagated with a fair amount of success, and where agricultural growth can most readily be accelerated in the near future. To exploit this possibility as rapidly as possible, the major needs are complete transportation access and a full complement of local agri-support activities. In these areas priority should be given to adoptive research in order to keep agricultural production increasing progressively. (Vide map annexed).

16.06 The second type is made up of areas of future high potential, i.e., Regions where soil conditions, rainfall and irrigation though not favourable, research to develop highly productive technology, particularly suited to the local conditions, for achieving higher production, has been successfully demonstrated through field trials. The central plains sub-region belong to this category. Efforts at achieving a break through in agriculture in this sub-region longly depends upon the success with which the new technology of integrated Dry Land Farming is adopted extensively. Here the most urgent need is not only to engage in research continuously and arrange for a series of successful demonstration trials preferably in the farmer's land, to propagate the techniques of dry land farming adequately, but also to make investments in irrigation, roads institutional credit and such other agri-inputs, that will convert the region into one of immediate high potential. In other words, the integrated dry land farming in this area, should be organised in a way similar to intensive agricultural development programmes, now operating in the other parts of the State and the country.

16.07 The third type would include areas of low agricultural potential, where circumstances are such that farming can never be a highly productive occupation without major technological changes. Such regions may be one in which the topography is too rough for cultivation or soils are too poor or water resources to provide irrigation are inadequate. The Chengam sub-region and the western sub-region belong to this category. A major effort to provide local agri-support activities in all localities in these areas would be wasteful, since it is very unlikely that a highly productive agriculture will ever develop there. Hence a selective approach in agricultural development in these areas would be necessary, at least till a technological break through for achieving a higher production, is achieved. In all these three types of regions, plans for agricultural production and practices, would have to be essentially based on detailed land use or farm plans suited to local condition.

16.08 In the dispersal of medium and small industries, the policy followed should be one as to actively encourage the private entrepreneurs to establish their units in the medium sized towns along the Walaja-Krishnagiri axis and Tiruvannamalai-Dharmapuri axis and the connecting corridors identified in the regional strategy. The objective could perhaps be best achieved by organising the units in the form of industrial estates, with the necessary infrastructure facilities, such as roads, factory-sheds, water, drainage and electricity. The common facilities required by the industries such as tool room, common-lease shop, foundry, etc., can also be provided by the government. Industrial plots may also be developed and given to the entrepreneurs on easy purchase terms in these centres as is being done at Ranipet. These measures will help in establishing a sound industrial base which will in additional industrial growth by sheer accretion.

16.09 In order to regulate and plan for their development, Master Plans would have to be prepared immediately for Vellore, Ambur-Vaniyambadi, Arcot Town groups, Tiruvannamalai, Dharmapuri, Krishnagiri, Gudiyatham and Arni, besides other urban centres identified in the regional strategy. (Vide map annexed). As a general principle, a belt of land should be reserved for urban expansion around each of the centres, so that

development of industry housing and large institutions are not located beyond these belts. This is from the point of view of preventing urban sprawl encroaching into valuable agricultural lands and also developing these investments as integral parts of the concerned centres.

16.10 Besides channelising and encouraging development in different urban centres of the region, the Regional strategy has identified sixty-one service centres which will serve as marketing and servicing towns to its surrounding agricultural hinterland. Most of these centres at present are nothing more than big rural centres, with minor service facilities, serving a very small segment of the rural population. These centres can be transformed into viable market and service towns through investment and establishment of service facilities as initial stimuli and thereafter by the combined impact of indirect and autonomous growth as the continuing development generates momentum. The service centres themselves cannot be expected to begin modernising their tradition bound community. The initial overtures must come from without for which funds are available for some of the critical installations within the fabric of the five-year plans. The problem is one of the concentrating increments of these large State and Regional programmes on selected service centres.

16.11 Without requiring any new plan funds, it should be possible to provide the service, centres, with at least the following installations namely :—

- (1) Grain storage facilities of modern efficient rodent proof design.
- (2) Commercial fertiliser mixing and storage facilities.
- (3) A high voltage power line to make electric power available to the grain storage centre, fertiliser mixing plant and to other basic installations.
- (4) Unpolluted portable water.
- (5) A modern three ton rice mill capable of processing the paddy for a score of adjacent villages along with a modern paddy drying plant.
- (6) A sub-depot for storage of seeds, pesticides and farm implements and multi-purpose servicing centres which can undertake repairs and maintenance of agriculture implements, tractors, etc.
- (7) New village to town roads and the widening, ballasting, ditching and bridging of existing roads.
- (8) Extension of regulated market yards to the service centres to promote orderly marketing of agricultural produce and maintain and improve the facilities provided to help the sellers and the buyers who use the market, and
- (9) a multi-purpose school.

16.12 The number and spatial distribution of service centres in the Region would very much depend on two factors namely, the number of existing centres which perform such functions and the effective area to be served by such centres, which can be termed as service area or a farming locality. Some of the facilities that the service centres have to offer, already exists, in many of the small urban centres of the region. While a majority of the block headquarters are located in these urban centres, a few of them are located outside the urban centres. A few urban centres and non-urban settlements which though not block headquarters are poised for growth because of their nodal location. In the strategy for development of infrastructure and other facilities in the service centres, the urban centres which are block headquarters will have to be developed on a priority basis, followed by urban centres which are not block headquarters but show signs of growth, and finally the other block headquarters, which are now located in non-urban settlements.

16.13 With the gradual development of growth centres and service centres over a period of time, it would be possible to visualise a hierarchy of functional settlements with the village as the primary agricultural production unit, the service centre to serve the needs of the villages, besides being a thriving market town, the medium sized urban centres as the middle order industrial towns and serving as the regional wholesale markets for the service centres, and the metropolitan urban centre meeting the entire Regional needs.

CHAPTER 17

INVESTMENT PATTERN

17.01. Besides suggesting promotion of tourism, strengthening of communication, provision of utilities like water-supply, and drainage and building up social infrastructure to raise income levels as living standards in the region, the development policy for **Vellore-Dharmapuri Region**, lay stress on four important objectives namely;

(1) Continued growth of agriculture through the propagation of high yielding varieties of Paddy and Pulses in the eastern part of the Region and through integrated dry land Farming in the western part;

(2) **Location of medium and small industries in the various urban centres identified in the plan;**

(3) Strengthening of service facilities in the smaller towns so as to make them as viable marketing and servicing centres to serve the surrounding rural areas; and

(4) Increasing employment in labour intensive works in small areas.

17.02. The above objectives can be realised only through a carefully thought out set of programmes and projects. The sectoral allocations available, therefore, require to be tied up with specific projects located in such a way as to optimise use of the limited financial and material resources.

17.03. The working out of such a plan involves in main three steps, viz.;

(1) Deciding the most desirable allocation of finances to the different sectors such as agriculture, industry and infrastructure,

(2) Identification of projects which will maximise the total benefits in each sector, and

(3) Deciding on the spatial allocation of the projects that will maximise the range of influence of development.

17.04. The first problem would, therefore, be to assess the total resources available for development over a given period. There are two main sectors here, the public and private sector. While one might with some degree of certainty to assess resources and identify projects in the public sector, the development of resources and identification of projects in the private sector is extremely difficult since the number of variables here are very large. Hence, an attempt has been made to indicate broadly the investments in the public sector only.

17.05. The finances available for development in our country are largely limited by the extent of State and Central taxation and the regenerating nature of investments. There can, therefore, be only limited resources to fulfil the competing needs in a developing State or Region. The State of Tamil Nadu has since Independence carried out four five-year plans, and the fifth plan is on the anvil. For the State as a whole, the investment in the public sector has increased from Rs. 80 crores in the first five-year plan to Rs. 530 crores in the fourth plan, i.e., a doubling of investment at every succeeding plan, 35 per cent of the total investment under the fourth plan has been in power and irrigation projects of State wide significance, 15 per cent in agriculture and allied activities, 7 per cent in community development and rural works, 10 per cent in industries, 5 per cent in roads and communication and about 30 per cent in social services. The fourth plan investment in the Vellore-Dharmapuri Region is roughly estimated at 5 per cent of the State Plan outlay.

17.06. The draft fifth five-year plan document for 1974-79 of the State, has provided for a total outlay of Rs. 3,900 crores (at 1970-71 prices) of which, the public sector accounts for Rs. 2,690 crores. The private sector is expected to undertake an investment outlay of Rs. 1,210 crores, over the five year period. In the public sector plan outlay, the central sector outlay (on projects directly executed by the Union Government in Tamil Nadu) is envisaged at Rs. 1,010 crores. The proposed State sector

outlay, therefore, is of the order of Rs. 1,680 crores. In this, a sum of Rs. 1,300 crores represents the plan expenditure on State Government schemes and the balance of Rs. 380 crores refers to plan expenditure on schemes sponsored and fully financed by the Centre but executed by the State Government.

17.07. On the basis of State Sector outlay at Rs. 1,680 crores during the fifth plan, the sixth plan outlay in the State sector is likely to be of the order of Rs. 3,400 crores. Considering that the needs and claims of the backward regions like the vellore-Dharmapuri Region, would have to receive greater attention in the fifth and sixth plans, than hitherto, so as to reduce Regional imbalances, it would be reasonable to assume that the Region should receive at least 10 per cent of the State plan allocation. The size of the Regional plan for 1974-1979 and 1979-1984 is, therefore, likely to be of the order of Rs. 168 crores and 340 crores respectively. The various projects to be identified should, therefore, fit into this allocation.

17.08. As far as development of agriculture in the coming decades, is concerned, special attention will have to be paid to Dharmapuri district, for raising high yielding varieties of crops other than paddy under non-irrigated conditions through integrated dry land farming besides consolidating the gains made already in the portions of North Arcot district in the propagation of high yielding varieties especially paddy. A prerequisite for maintaining the tempo of agricultural growth in the region is (a) conduct of soil survey for areas which are yet to be surveyed, to decide on the best cropping pattern and (b) cultivation of soil conservation and water management measures. The programmes under riverine fisheries, dairying, animal husbandry and poultry farming would also need to be intensified.

17.09. The sector that should receive greater attention is undoubtedly the industrial sector which has not made much head way during the past. The Region is fairly productive in agriculture and industries based on agriculture raw materials and oriented to agricultural and many foot loose industries have scope for development. The Regional strategy has identified a number of industries, which could be conveniently located in the Region. An industrial climate in the Region, can be created by not only making higher investments under the fifth plan, but also by offering special concessions to the industrialists and by the development of well planned and equipped industrial estates. To obtain maximum results, it would be desirable to locate the industries in the major urban centres identified in the plan.

17.10. Most of investments in the urban sector in the field of housing, water-supply and drainage, roads and technical education would necessarily have to be made in the major urban centres identified in the regional strategy, so that an integrated development on the urban sector could be achieved.

17.11. As regards rural development also, a similar approach is called for. The sub-regional plans proposed to be undertaken should establish the hierarchy of settlements above the village level, viz.: Central villages and service centres, where concerted efforts to promote rural industries, marketing facilities and utilities like power, water-supply, etc., and social infrastructure like health centres, schools, banks, credit institutions, workshop for repairing agricultural equipments may be made. The programme of providing link roads should be dovetailed into this programme, so that every village and settlement gets access to the next higher order of settlement. It may not, however, be possible to develop all the settlements at once, and hence the sub-regional plan should list a priority for centres at each level in such a way that every part of the region is covered at one period of time. The total investment in the rural sectors has necessarily to be at a much higher rate than that provided in the last plan, since these schemes alone take development to rural areas and in addition provide for a larger measure of employment which is badly needed in the rural areas.

17.12. Preparation of such a spatially linked plan frame would involve study in greater depth at sub-regional level than has been attempted, and investments worked out on basis of detailed project reports on each of the scheme. What is indicated below, is a broad investment pattern for the Region during the next ten years based on the subjective assessments of the problems and requirements and hence may be considered as tentative.

TABLE 17:1.

PROPOSED INVESTMENT PATTERN IN VELLORE-DHARMAPURI REGION 1974-84
(RUPEES IN LAKHS).

Head of development.	Investment 1974-1979.	Major Project.	Investment. 1979-1984.
(1)	(2)	(3)	(4)
RURAL SECTOR.	11,150.00		22,000.00
<i>I Agriculture and allied programmes.</i>			
1. Soil Conservation and water management.	500.00	Soil conservation measures on 200 thousand hectares.	—
2. Agriculture develop- ment.	6,500.00	Cost of fertiliser at Rs. 200 per hectare, HYV seed require- ments, One main research station and three substations and field demonstration.	
3. Minor irrigation —	300.00	—	—
4. Dairy, Animal Husban- dry and Poultry Farming.	100.00	Dairy extension and poultry centres in the 60 service centres identified in regional plans, one growth point serving a rural population of 50,000.	..
5. Forest ..	100.00	Afforestation schemes in the Dharmapuri and North Arcot Districts.	..
6. Fisheries ..	100.00	Fishing programmes in the Sathanur and Krishnagiri reservoir's and other areas in the Region.	..
<i>II. Industry</i>			
1. Village	100.00	A rural industrial complex in each of the 60 service centres.	..
2. Small Scale ..	300.00		
<i>III. Rural Infrastructure.</i>			
1. Water Supply and Sanitation.	1,000.00	Protected water supply in 60 service centres and 100 central villages.	..
2. Health and Family Planning.	200.00	One health centre in each of 60 service centres.	..
3. Schools and vocational training.	500.00		
4. Rural Roads ..	1,000.00	Links from villages to central villages and service centres.	..
5. Warehousing and marketing.	150.00	one centre in each of the 30 service centres,	
6. Electricity and power supply.	200.00		
7. Social welfare ..	50.00		
8. Tourism — ..	50.00	Development of tourist centres.	

TABLE 17.1—cont.

PROPOSED INVESTMENT PATTERN IN VELLORE-DHARMAPURI REGION 1974-84
(RUPEES IN LAKES).

RURAL SECTOR—cont.

Head of development. (1)	Investment 1974-1979. (2)	Major Project. (3)	Investment. 1979-1984. (4)
URBAN SECTOR :	4,680.00		10,000.00
<i>I. Agricultural and allied activities.</i>			
1. Dairying and milk supply.	100.00	Expansion of dairy facilities in the ten major urban centres of the Region.	
2. Fishries	50.00	Provision of cold storage facilities in ten major urban centres.	
<i>II. Industry.</i>			
1. Large and medium ..	1,500.00	Establishment of eight large and medium units.	
2. Small Scale	300.00	50 Small scale units in urban centres.	
3. Industrial estates and developed plots.	100.00	One each at Tiruvannamalai, Dharmapuri, Hosur, Ambur-Vaniyambadi.	
<i>III. Urban Infrastructure.</i>			
1. Water supply and drainage.	1,000.00	Vellore, Dharmapuri, Tiruvannamalai, and Krishnagiri, Ambur, Gudiyatham, and Vaniyambadi.	
2. Health	300.00	Expansion of Hospital facilities at Vellore Dharmapuri, Krishnagiri and Tiruvannamalai.	
3. Education including technical education.	200.00		
4. Housing and Town-Planning.	500.00	Acquisition and development of land for housing colonies at Vellore, Tiruvannamalai, Dharmapuri, Krishnagiri and other major centres.	
5. Urban roads ..	500.00	Vellore, Krishnagiri, Tiruvannamalai, Dharmapuri union and other major urban roads.	
6. Marketing and warehousing.	80.00	Expansion of marketing and warehousing facilities at Vellore, Krishnagiri, Dharmapuri, Tiruvannamalai, Ambur, Gudiyatham, Vaniyambadi and Arcot.	
Tourism	50.00	Provision of Tourist facilities at Vellore, Tiruvannamalai, Dharmapuri, Krishnagiri and Hosur.	
<i>Common Sector.</i>			
Power and Irrigation.	1,000.00	Irrigation Projects across rivers, mostly in Dharmapuri District especially in Hogneikal.	2,000.00
Total	16,830.00		34,000.00

SOIL CONSERVATION.

17.13. Nearly 400,000 hectares mainly in the Dharmapuri district, require various type of soil conservation measures. The cost of reconnaissance survey and mapping of the soil series is estimated at Rs. 3 lakhs. It is assumed that 40,000 hectares will be covered in each year under the soil conservation measures, so that the entire work is expected to be completed in 10 years time. An uniform rate at Rs. 250 per hectare has been assumed, towards cost of conservation.

AGRICULTURAL DEVELOPMENT.

17.14. The major works under this category are production and distribution of Hybrid seeds, distribution of plant nutrients, organisation of demonstration plots on the farmer's fields and development of Chengam farm. Hybrid seeds are required under Paddy, Ragi, Chola, Cumbu, Cow peas, Blackgram, Sunflower and Groundnut. It is estimated that roughly 15,000 tonnes of hybrid seeds may be required for the Region, costing nearly Rs. 4 crores for every year. However, since hybrid seeds are sold to the farmers and revenue realised, no expenditure on the part of the State is incurred except towards cost and maintenance of State Seeds Farms; even these could be met from the profit made out of sale of seeds. However, a 25 per cent subsidy, for the farmers, for purchasing the hybrid seeds has been assumed. The cost of subsidy works to Rs. 500 lakhs annually.

17.15. It has been estimated that the cost of applying optimum dosage of fertilisers to different crops in the Region, on an average works to Rs. 200 per hectare. On the above basis, the cost of supplying fertilisers for the region during the next decade works out to approximately Rs. 21 crores the supply to be made mainly through organised agencies. Assuming that 50 per cent of the quantity is to be made available through co-operatives, on loan basis, the outlay required is estimated roughly at Rs. 5.4 crores.

17.16. The cost of one main research station and three sub-stations has been assumed both recurring and non-recurring at Rs. 50 lakhs. The cost of arranging 50 field demonstrations all over the Region in the farmers field at the rate of 25,000 per demonstrates is estimated Rs. 75 lakhs for the next five years. A lump sum provision of Rs. 25 lakhs has been provided towards the development of Chengam farm.

INDUSTRY.

17.17. The eight huge and medium units envisaged during the fifth plan in the region include new sugar mills at Tirupattur and Vellore, expansion of the existing sugar mill at Palacode, Silk spinning and weaving unit at Hosur, Solvent extract plant at Kaveripattinam and Bargur, Milk Processing Plant at Hosur, Fruit canning and can making plant at Krishnagiri and Ragi Malt plant at Denkanikottah. The industries suggested in the Dharmapuri district are based on the report of the Techno-Economic Survey for the district by the Indian Institute of Public Opinion.

17.18. The cost of Industrial Estate is assumed at Rs. 25 lakhs per Estate.

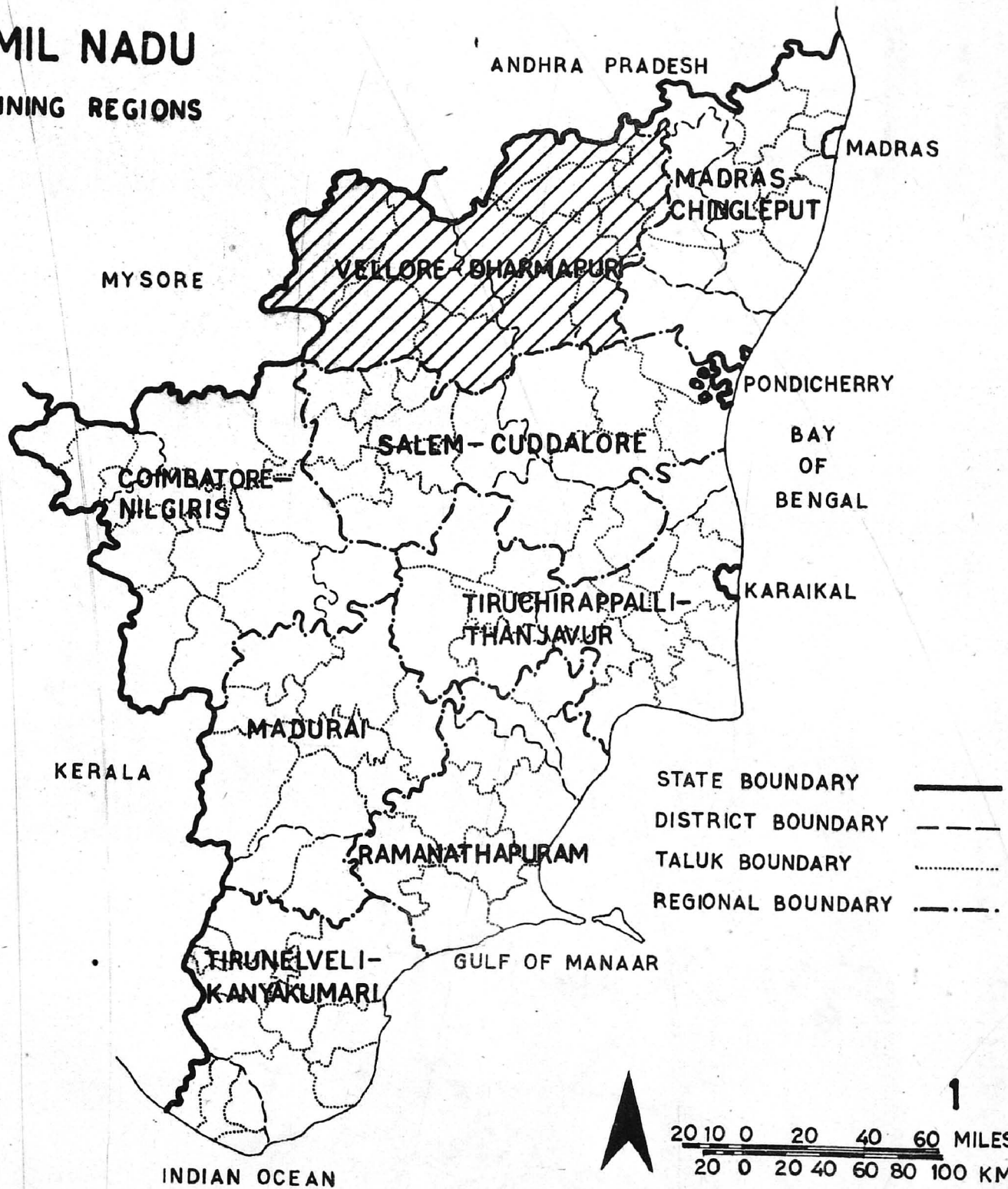
IRRIGATION.

17.19. Under surface irrigation, most of the projects are proposed in the Dharmapuri district. The projects are reservoirs across the Ponnai near Kalavarnapalli and Vanniar near Mullikadu in Hosur taluk, Pamboi near Uttangari, Kallar near Kottampatti village in Hosur taluk, Naganathi near Anjanavalli in Dharmapuri, Kessarigulihalla near Tirumalavadi in Dharmapuri, Chinnar near Maruhalli in Hosur taluk and a tank across a stream in Sastramatub village. The estimated cost of these projects is Rs. 7.5 crores. It is assumed that at least four of these projects will be taken up during the fifth plan.

17.20. Under minor irrigation, i.e., wells, it is assumed that in Dharmapuri district 5,500 new deep wells will be sunk in addition to deepening of 20,000 wells during the next ten years, the cost of which is estimated at Rs. 13.5 crores. In the North Arcot district, the proposal is to sink 4,200 wells in the taluks of Tiruvannamalai, Vellore, Gudiyatham, Chengam, Tirupattur at an estimate cost of Rs. 4.92 crores. A sum of Rs. 300 lakhs is therefore provided under the head of minor irrigation during the fifth plan period.

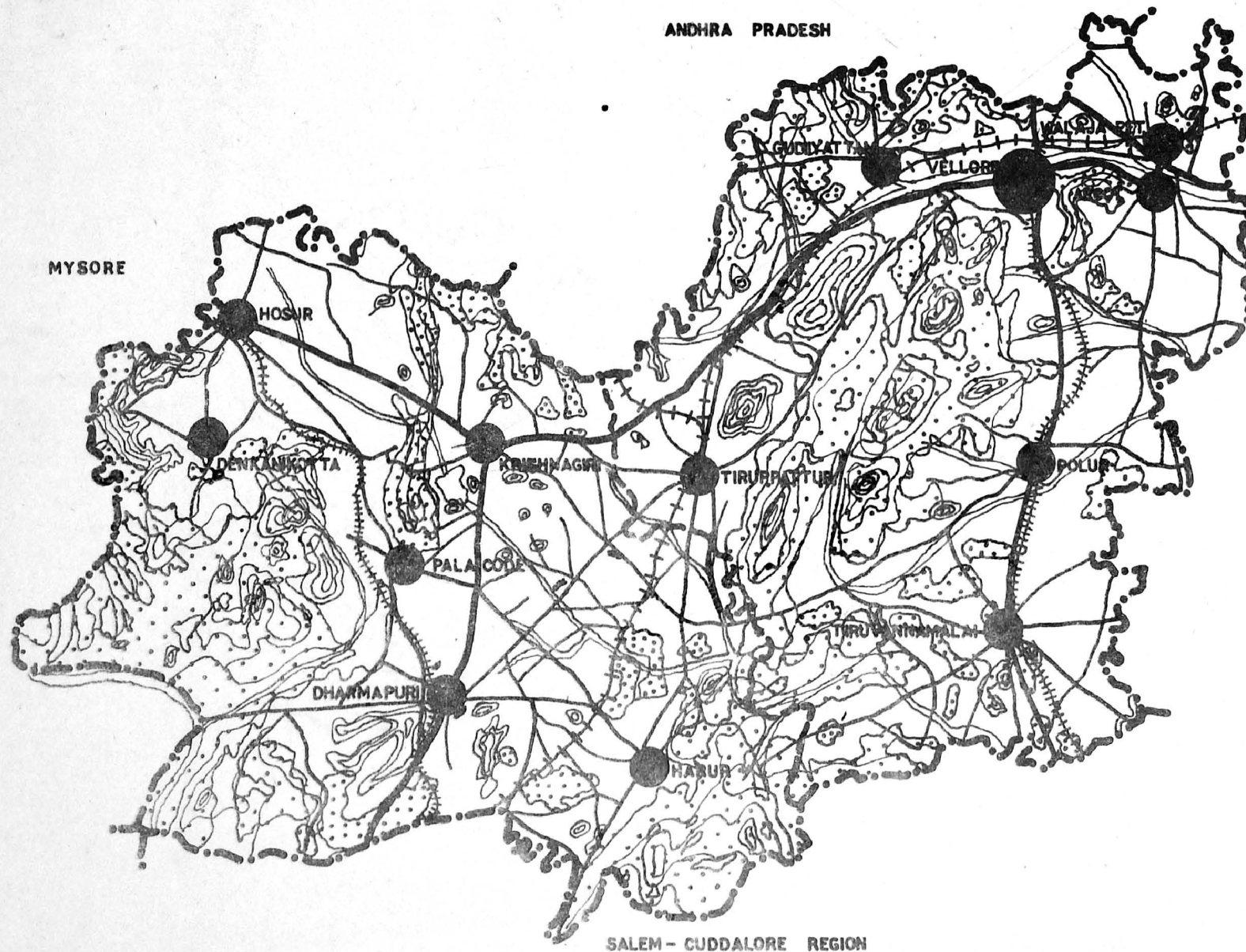
TAMIL NADU











PLANNING REGIONS

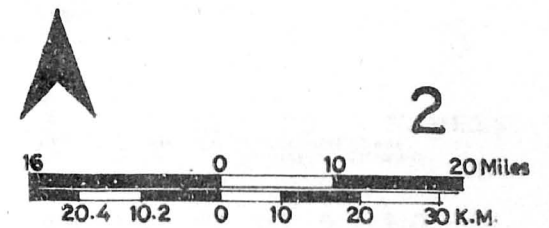


VELLORE - DHARMAPURI REGION

REGIONAL PLANS DIVISION
DIRECTORATE OF TOWN PLANNING
GOVERNMENT OF TAMIL NADU



-  REGIONAL BOUNDARY
-  NATIONAL HIGHWAYS
-  STATE HIGHWAYS
-  MAJOR DISTRICT ROADS
-  OTHER DISTRICT ROADS
-  RAILWAY LINE (M.G.)
-  RAILWAY LINE (B.G.)
-  RIVERS & CHANNELS
-  FOREST
-  HILLOCKS

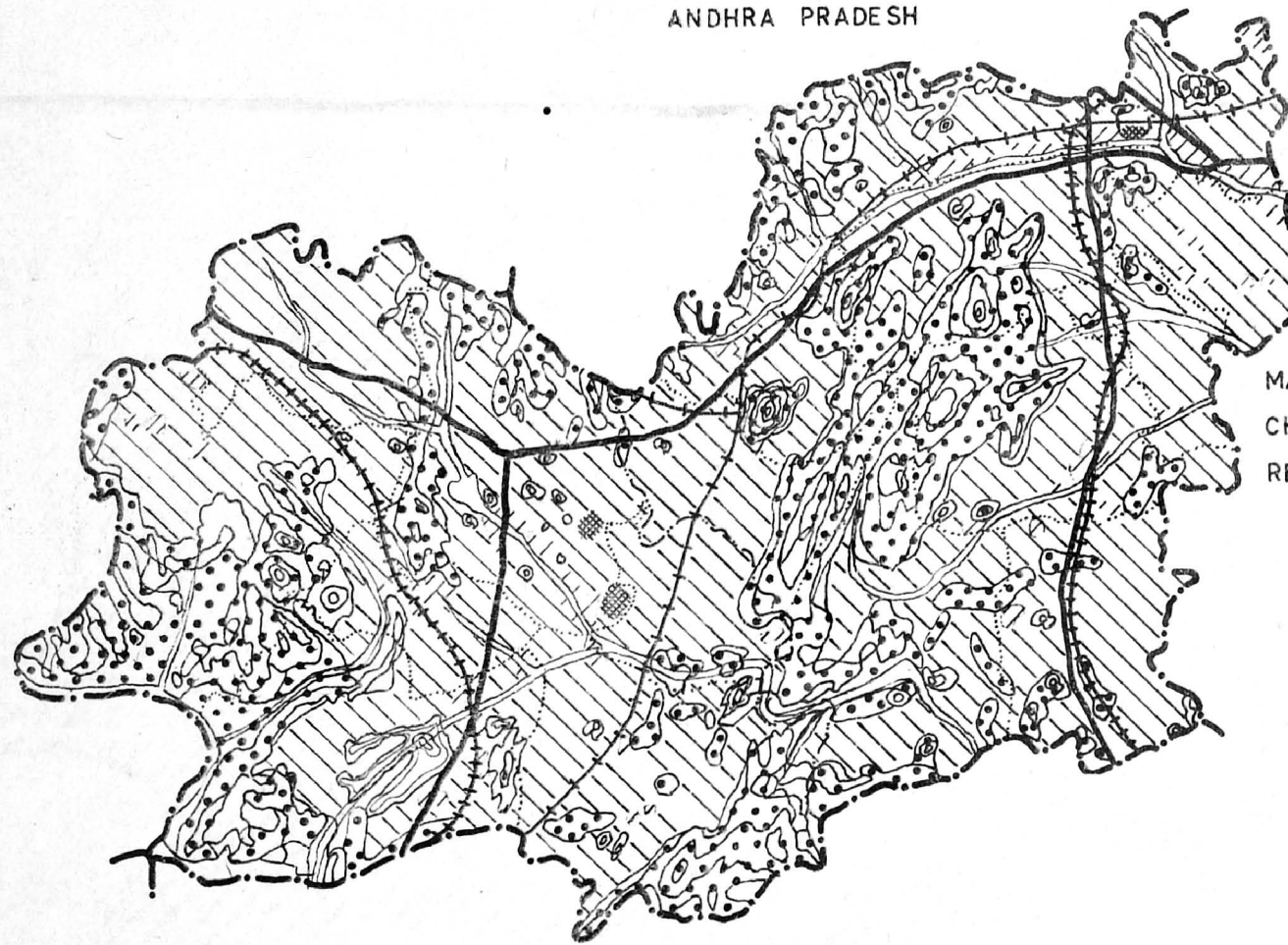


VELLORE - DHARMAPURI REGION PHYSICAL FEATURES & TRANSPORTATION - 1971

REGIONAL PLANS DIVISION
DIRECTORATE OF TOWN PLANNING
GOVERNMENT OF TAMILNADU

ANDHRA PRADESH

MYSORE



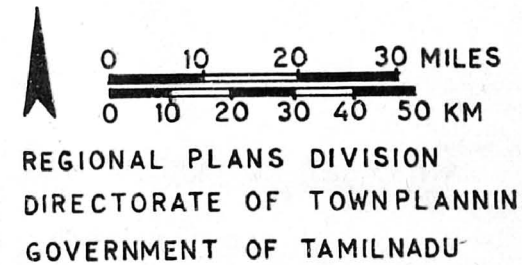
MADRAS -
CHINGLEPUT
REGION

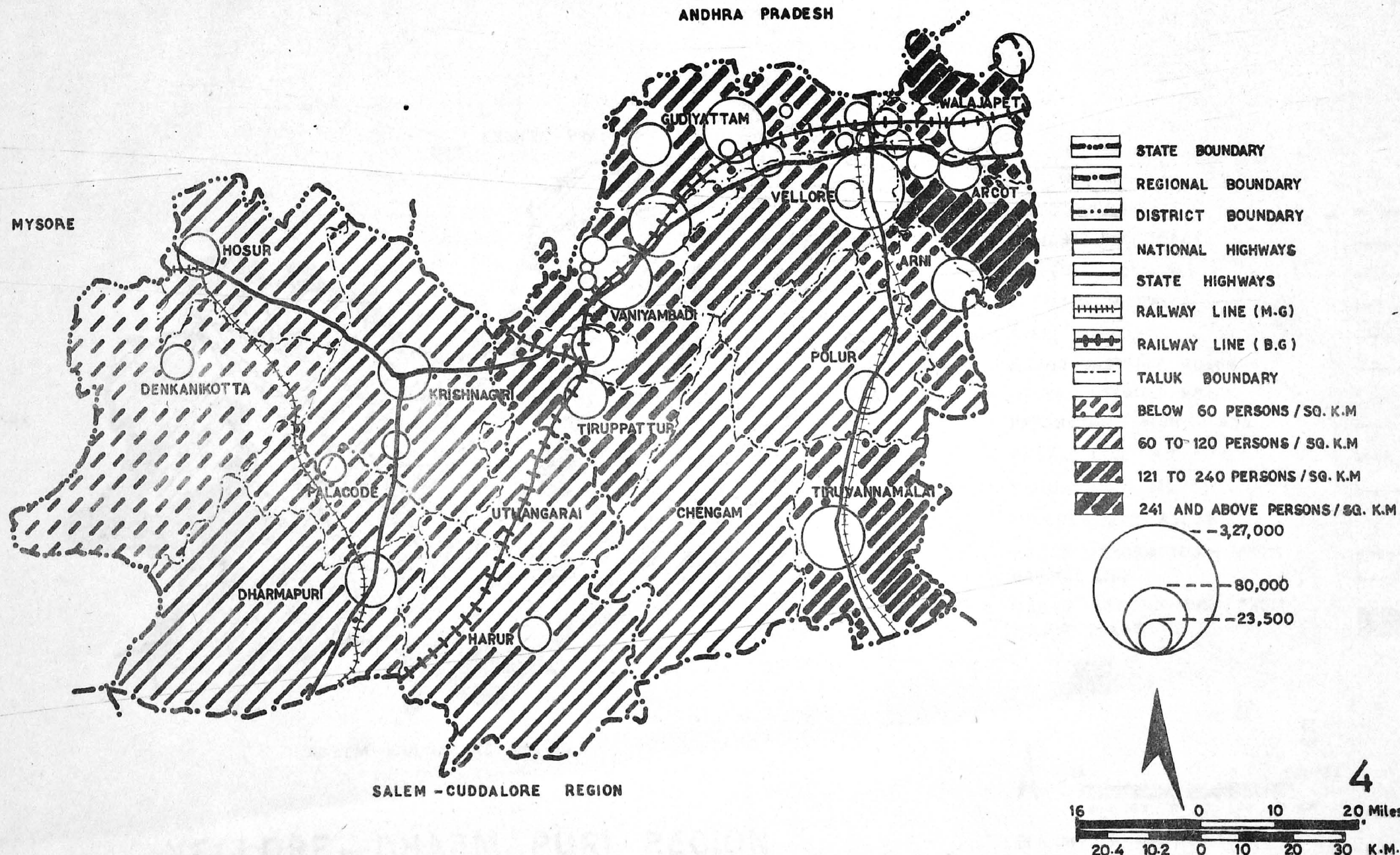
SALEM - CUDDALORE REGION

VELLORE - DHARMAPURI REGION EXISTING LAND USE

REGIONAL BOUNDARY	---
DISTRICT BOUNDARY	- - -
TALUK BOUNDARY	.....
NATIONAL HIGHWAYS	==
STATE HIGHWAYS	---
RAILWAY LINE B.G.	+ + +
RAILWAY LINE M.G.	+ + + + +
RIVERS	~~~~~
WET LAND	\\
DRY LAND	///
PLANTATION	■
FOREST	●
HILLS	⊖

3



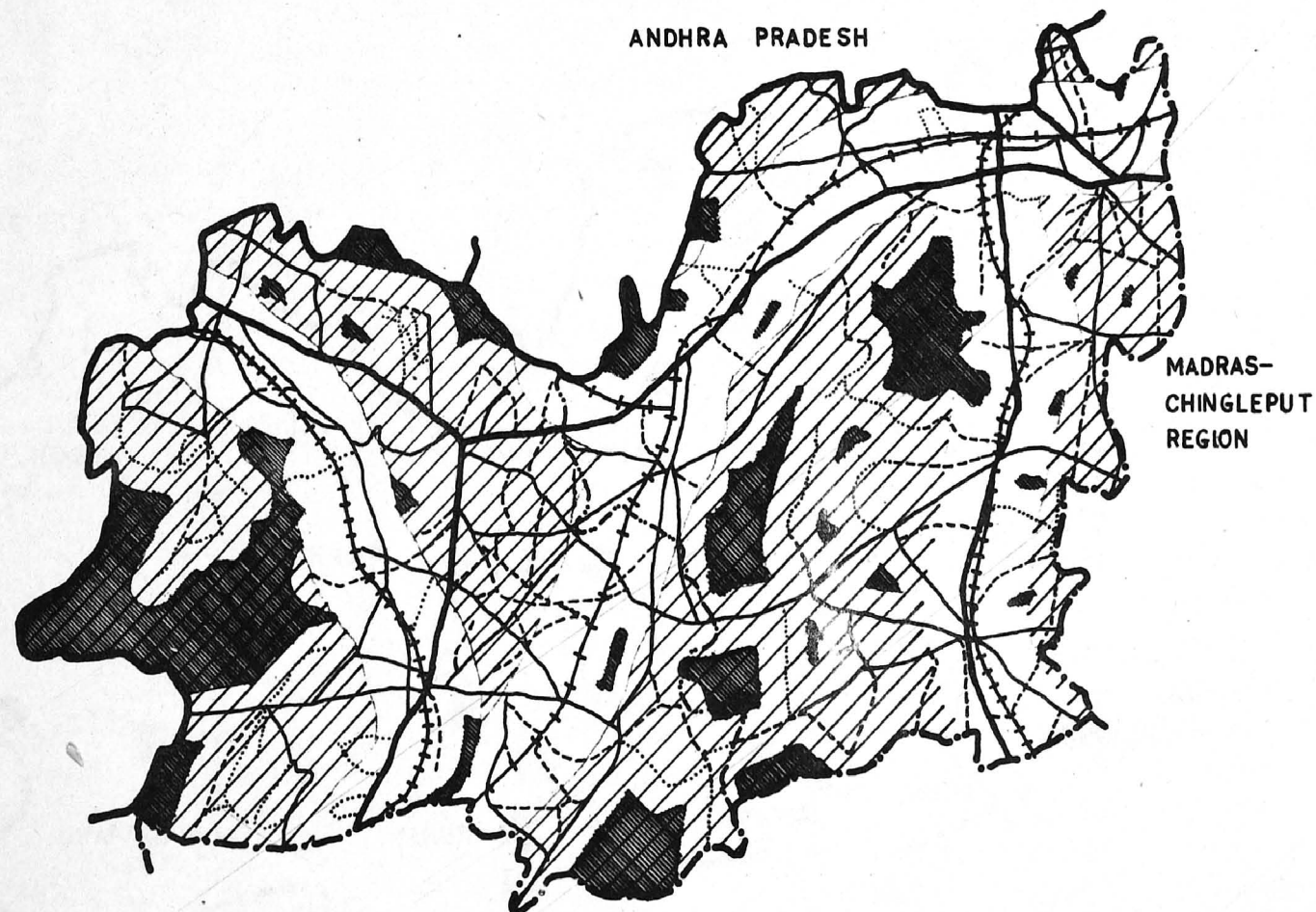


VELLORE - DHARMAPURI REGION — POPULATION DENSITY - 1971

REGIONAL PLANS DIVISION
DIRECTORATE OF TOWN PLANNING
GOVERNMENT OF TAMILNADU

ANDHRA PRADESH

MYSORE



SALEM - CUDDALORE REGION

VELLORE - DHARMAPURI REGION ACCESSIBILITY

STATE BOUNDARY

REGIONAL BOUNDARY

DISTRICT BOUNDARY

NATIONAL HIGHWAYS

STATE HIGHWAYS

MAJOR DISTRICT ROADS

OTHER DISTRICT ROADS

PANCHAYAT UNION ROADS

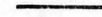
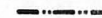
RAILWAY LINE B.G.

RAILWAY LINE M.G.

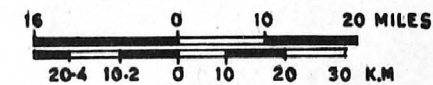
INACCESSIBLE AREAS

AREAS BEYOND 12 KM FROM
RAILWAY LINE

AREAS BEYOND 6 KM FROM
MAJOR ROADS



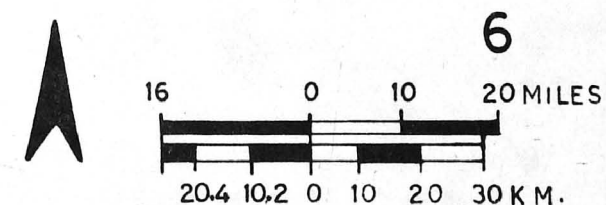
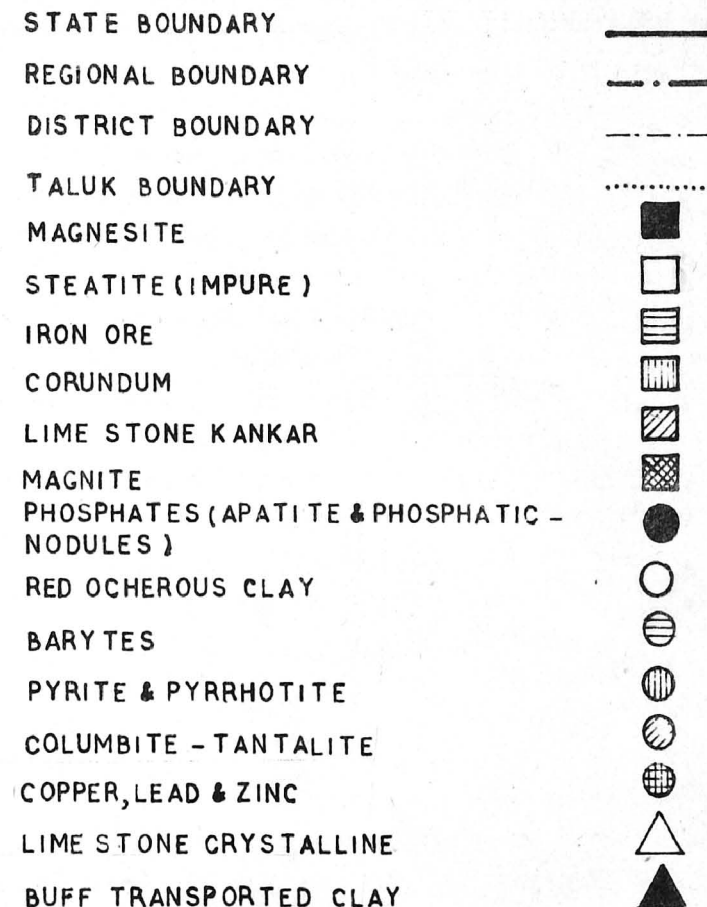
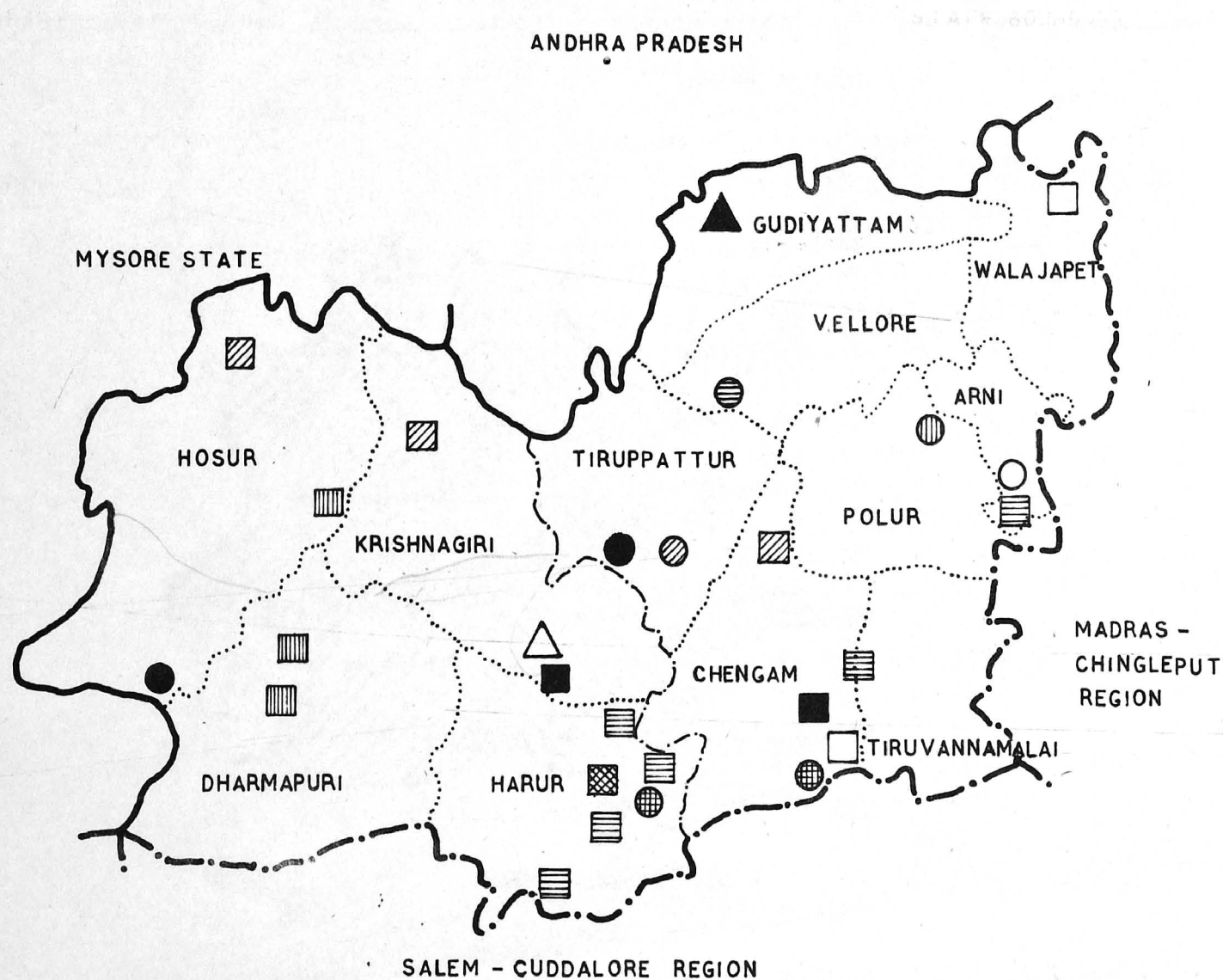
5



REGIONAL PLANS DIVISION

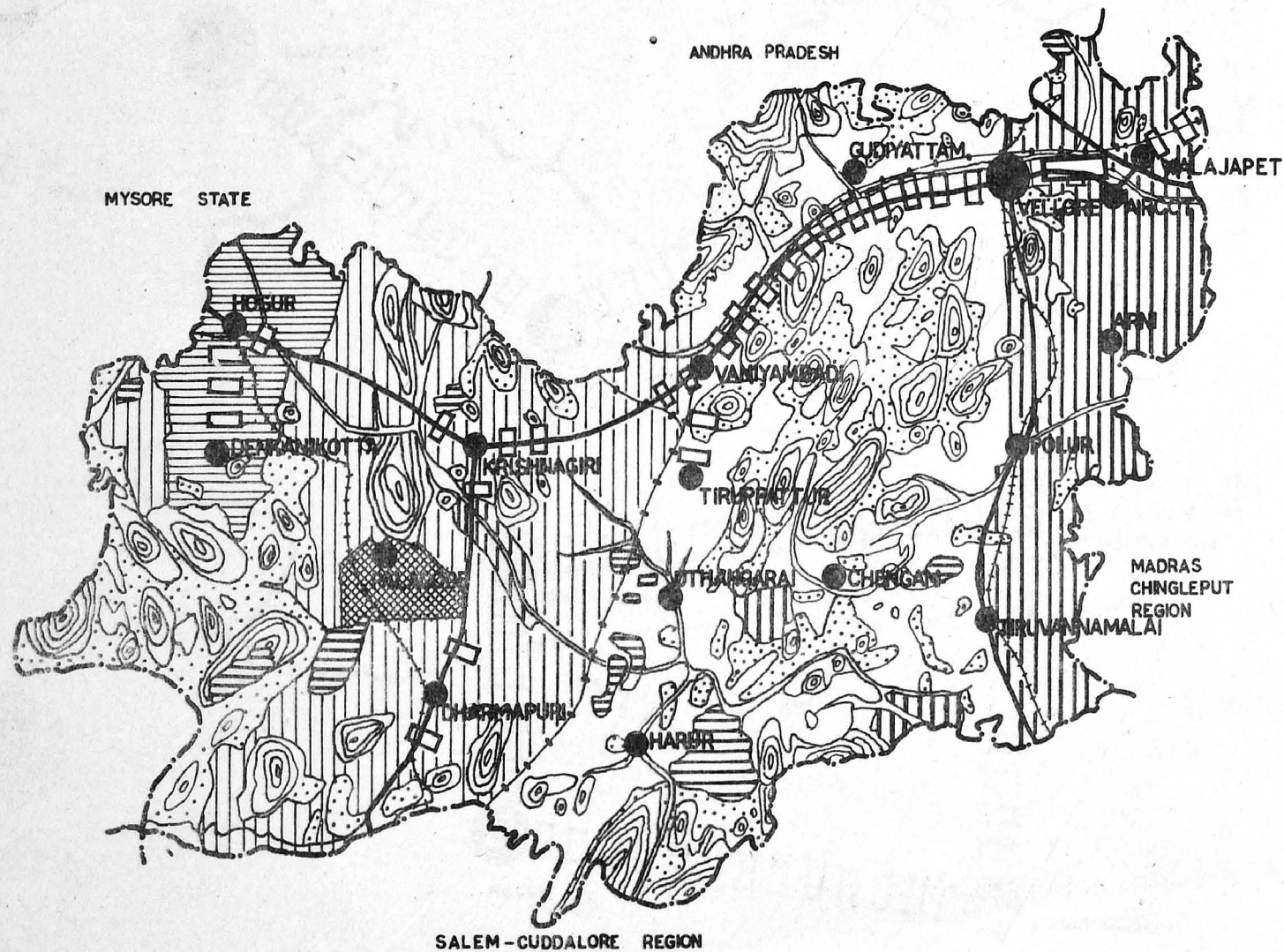
DIRECTORATE OF TOWN PLANNING

GOVERNMENT OF TAMILNADU



VELLORE - DHARMAPURI REGION MINERALS AND POWER RESOURCES

REGIONAL PLANS DIVISION
DIRECTORATE OF TOWN PLANNING
GOVERNMENT OF TAMIL NADU



REGIONAL BOUNDARY

NATIONAL HIGHWAYS

STATE HIGHWAYS

RAILWAY LINE (M.G.)

RAILWAY LINE (B.G.)

INTENSIVE MULBERRY CULTIVATION AREA

INTENSIVE SUGARCANE CULTIVATION AREA

INTENSIVE CULTIVATION OF PADDY

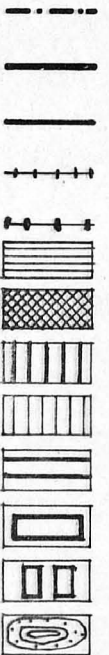
AREA UNDER INTEGRATED DRYLAND

MINERAL AREA

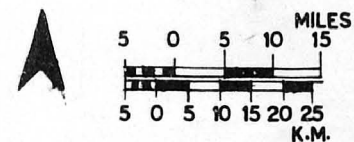
GROUND WATER

INDUSTRIAL BELT

AREA OF HILLS AND RESERVED FOREST TO BE PRESERVED



8

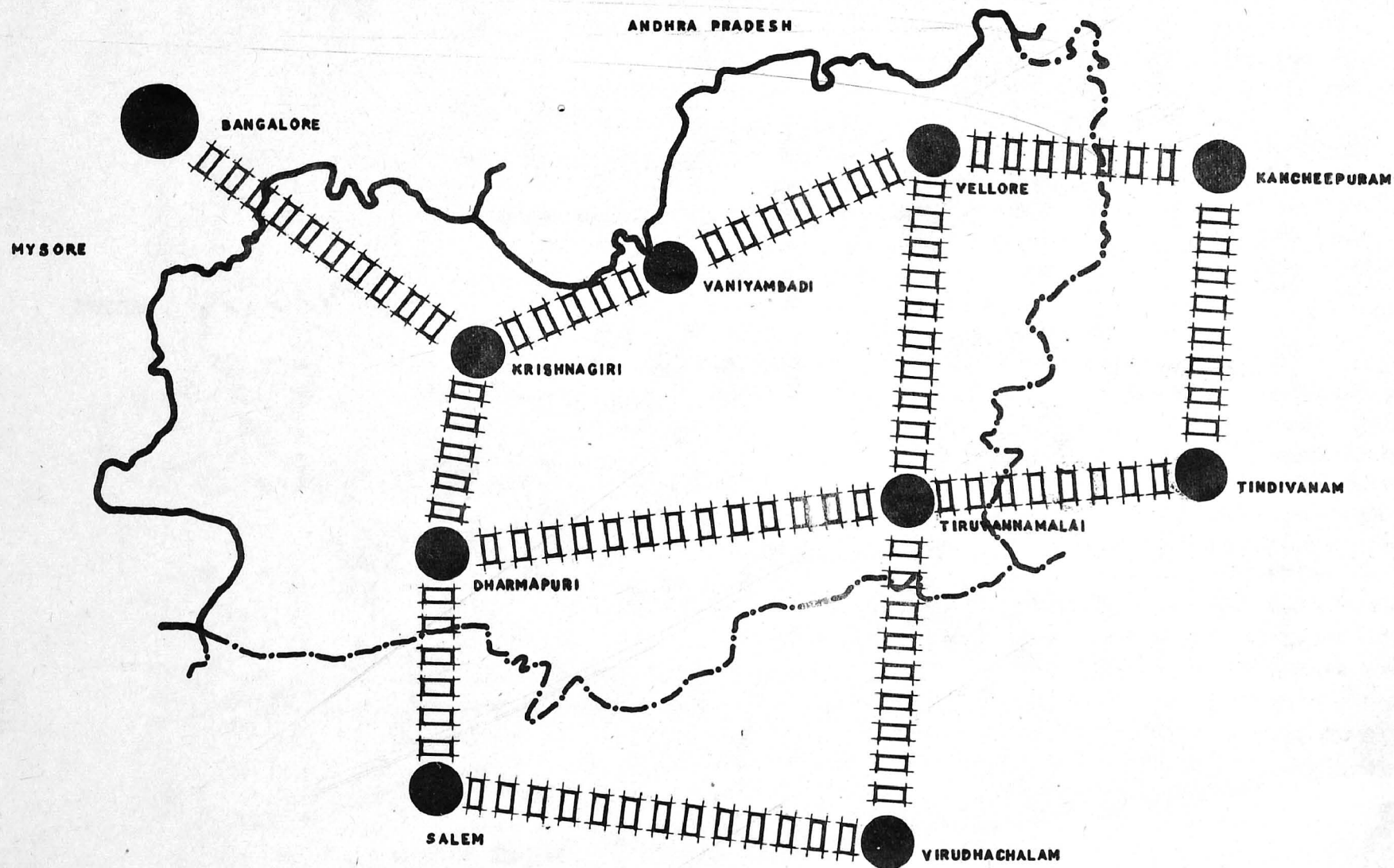


VELLORE - DHARMAPURI REGION - PROPOSALS-1991.
CONSERVATION AREAS

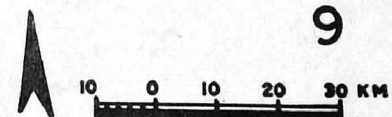
REGIONAL PLANS DIVISION

DIRECTORATE OF TOWN PLANNING

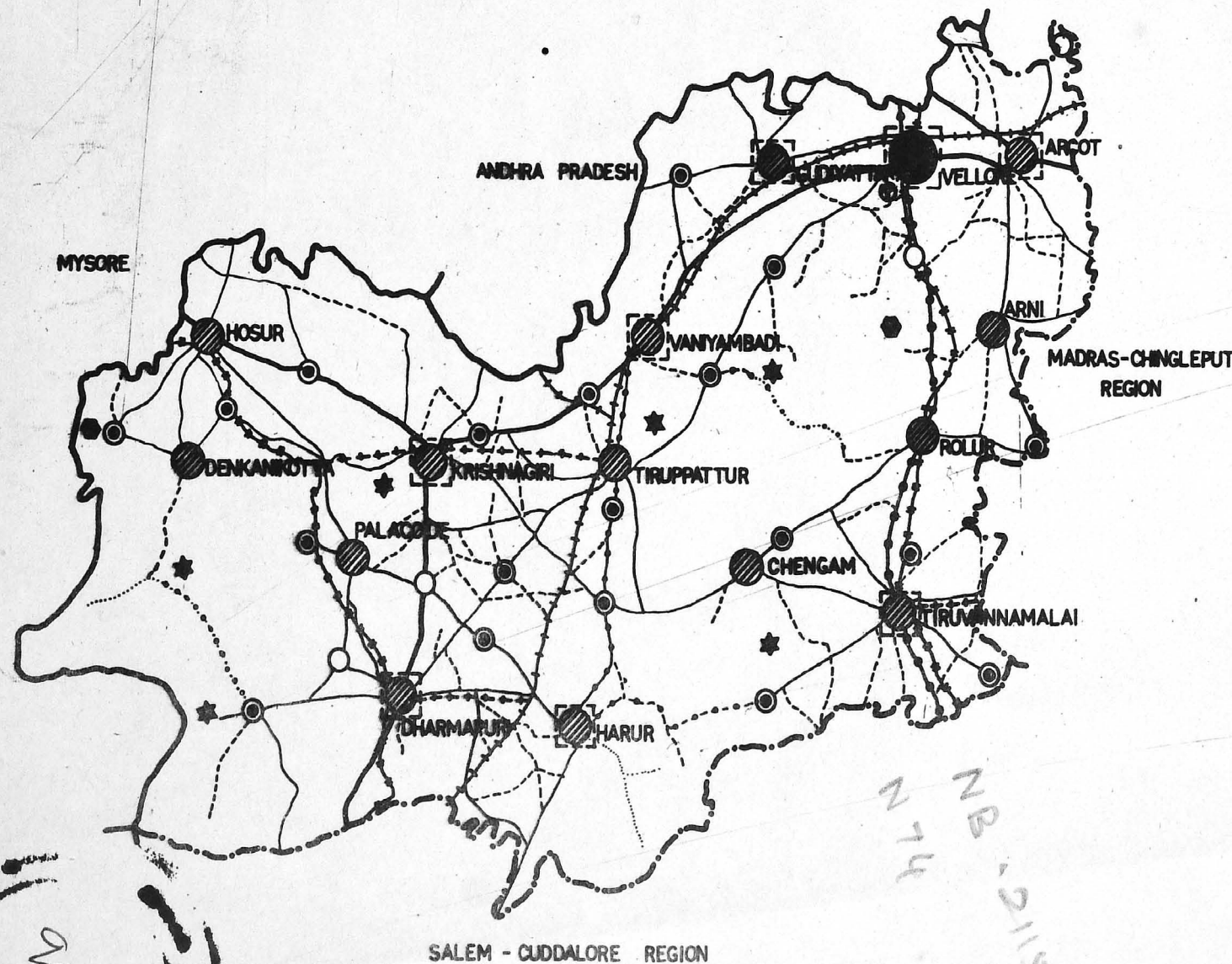
GOVERNMENT OF TAMILNADU



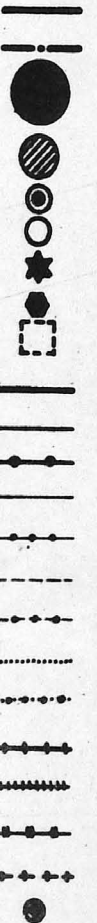
VELLORE - DHARMAPURI REGION FUTURE URBAN PATTERN - 1991



REGIONAL PLANS DIVISION
DIRECTORATE OF TOWNPLANNING
GOVERNMENT OF TAMILNADU



- STATE BOUNDARY
- REGIONAL BOUNDARY
- MAJOR URBAN CENTRE
- GROWTH CENTRES
- SERVICE CENTRES
- OTHER IMPORTANT URBAN CENTRES
- MAJOR RECREATION CENTRES
- OTHER RECREATION CENTRES
- PRIORITY FOR PREPARATION OF MASTER PLAN
- NATIONAL HIGHWAYS
- STATE HIGHWAYS
- STATE HIGHWAYS TO BE IMPROVED
- MAJOR DISTRICT ROADS
- MAJOR DISTRICT ROADS TO BE IMPROVED
- OTHER DISTRICT ROADS
- OTHER DISTRICT ROADS TO BE IMPROVED
- FOREST ROADS
- FOREST ROADS TO BE IMPROVED
- RAILWAY LINE (B.G)
- RAILWAY LINE (M.G)
- RAILWAY LINE (M.G.) TO BE IMPROVED
- RAILWAY LINE — PROPOSED
- AIR PORT



VELLORE-DHARMAPURI REGION-PROPOSALS-1991 URBAN AREAS AND TRANSPORTATION