THE PERSPECTIVE PLAN FOR TAMIL NADU

1974-84

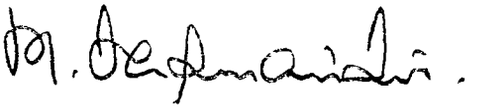
STATE PLANNING COMMISSION
EZHILAGAM, MADRAS-5
MARCH 1974

FOREWORD

Our country has passed through nearly a quarter century of Planned Development. Undoubtedly, India, has achieved significant progress in many fields during the successive Five-Year Plans. However, a few basic problems-mass poverty and unemployment - still remain to be solved despite all our planned efforts. Planning in India has so far been rather over - centralised. Though the concept of planning from below has been advocated in the Second and Third Five-Year Plans, not much has been done in that direction. In a vast democratic country like ours with twenty one States functioning as units in a federal structure it is not possible to draw up a comprehensive overall plan from one end. The resources endowments of the States vary enormously ; there is considerable disparity in their levels of development ; and the needs and problems and the potentialities for development of one State differ from that of another. It is therefore important that each State makes a careful assessment of its resources, focusses attention on its problems and plans for the optimum exploitation of its development possibilities. Also in the modern age, with increasing complexities of economic problems, it is necessary to take a long range view of the economy and prepare a Perspective Plan, within the framework of which Five-Year Plans and Annual Operational Plans can be prepared. A Prespective Plan worked out in sufficient detail brings out the inter - dependencies between the different sectors of the economy and helps in a clearer understanding of possible obstacles to growth. With these in mind, the Government of Tamil Nadu set up a State Planning Commission in 1971, and entrusted it with the responsibility of preparing a Perspective Plan for Tamil Nadu covering the decade 1974-84. The State Planning Commission has been at work for more than two years to accomplish this task. The Commission has adopted a three - fold strategy, which takes into account the sectoral, spatial and temporal aspects of the State's economy, in preparing the Perspective Plan.

The important objectives of the Plan are doubling of the per capita real income by 1984, removal of the worst forms of poverty and provision of full employment. The goals set are no doubt high, but they are well within our capacity to achieve. The achievment of these lofty ideals, call for hard work and sacrifice. We shall have to strive towards the goal with all our will and energy. The success of the Plan largely depends upon the public co-operation and their enthusiastic participation. In a democratic set-up, a plan, which aims at economic growth with social justice, can succeed only with the willing assent of the people and not by coercive powers of the State.

The Perspective Plan is the result of the combined work of many technical experts working in the varied fields of activity. I am grateful to every one of them, who were associated with the State Planning Commission in various capacities to prepare the Perspective Plan. I am sure the Perspective Plan will be welcomed by the people of Tamil Nadu and serve as useful guidelines for the future development of Tamil Nadu.



Chairman, State Planning Commission
Chief Minister, Tamil Nadu

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(May 1971 - April 1974)

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Hon'ble Chief Minister of Tamil Nadu

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STATE PLANNING COMMISSION

(From April 1974.....)

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Hon'ble Chief Minister of Tamil Nadu.

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RURAL DEVELOPMENT AND LOCAL ADMINISTRATION DEPARTMENT.

Secretary

THIRU M. RAGHUPATHY, I.A.S.

PREFACE

THE FUTURE belongs to those who can visualise it and plan for it purposefully.

Since Independence, the country has been on the path of planned development. Although the importance of Planning at the State level has been recognised from the very beginning of the Planning era in India, no separate specialised machinery has been set up at the State level till recently.

It was with a sense of vision that Dr. KALAIGNAR M. KARUNANIDHI, the Chief Minister of the Government of Tamil Nadu set up a State Planning Commission in May 1971.* Its terms of reference included *inter alia* the drafting of a Perspective Plan over a ten year period.

The State and the country are now familiar with Five-Year Plans, but these medium term plans must be part of a long term perspective. Also there are many development projects, irrigation, power, etc. with a gestation period longer than five years. It is therefore necessary to take a long range view and formulate the Five Year Plans in a continuing perspective. We were asked by the Government to look ahead to the year 1984 and chart a programme for accelerating the pace of the State's development. We have been at the task for more than two years. It was a job as exacting as it was exciting. The goals set for the plan are high. Doubling the *per capita* real income and removal of the worst forms of poverty and provision of full employment in the course of a decade are not tasks easy of achievement. But we hold that this plan presents possible ways of reaching these goals. The task is no doubt difficult and will call for hard work and sacrifice; but the price is well worth the goal—the building up of a welfare State where social justice is secured and every citizen assured of a minimum level of consumption.

The Plan we present is a result not merely of our labours, but the combined work of many technical experts working in the varied fields of activity, administrators, scientists, technologists, educationists, economists, faculty members of the Universities, industrialists, farmers, trade union leaders, social workers and public men. We have endeavoured to bring together the combined wisdom and experience from each field of development activity. We also organised in October, 1972, a Seminar on Persepctive Planning Techniques. This Seminar threw up many useful suggestions which helped us formulate the technique for preparing this Plan.

The strategy adopted in preparing this Plan is three-fold. Considering the objectives and resources, a Plan frame and an investment model designed to yield the desired economic results were worked out. Plans were drawn up both on a sectoral basis and on a regional basis. The sectoral plans were prepared by 15 task forces. Thirteen District Planning Cells prepared District Perspective Plans for 23 development districts.† These three—sectoral plan,

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* G.O. Ms. No 773, Finance (Planning), dated 25-5-1971.

† The recently formed District of Pudukkottai is covered by the District Plans of Tiruchirappalli and Thanjavur districts.

district plans and the investment model—were synthesised to evolve the Perspective Plan for the State. For four industrially backward districts, viz., Ramanathapuram, Dharmapuri, Thanjavur and South Arcot, detailed Techno-Economic Surveys were, at the instance of the State Planning Commission, commissioned by the State Government. The reports of these surveys have also been utilised in preparing the plan.

The Task Forces were expert bodies and were assigned the work of studying defined areas of the economy and suggesting guidelines for development. Each Task Force was headed by a Member of the State Planning Commission and included Heads of the concerned Departments and specialists in the field. The Task Forces in their turn, were assisted by a number of working groups. In preparing this plan, we have relied heavily on the Task Force reports.

Planning to be effective, particularly in a vast country like ours, has of necessity to be decentralised. Planning from below and planning from above have to be meshed and harmonised at the State level. Tamil Nadu, the first State to set up a State Planning Commission, was also the first to set up District Planning Cells. A District Planning Cell was set up in each revenue district. However, as the revenue district was rather large, the development district was adopted as the planning unit. The cells divided the development district into homogeneous regions, assessed the resources and identified tlie needs. Their planning was, by and large, confined to ' district level activities ', since sectors like power, transport, higher education, etc., are planned at the State level. The District Perspective Plans are largely need-based plans and the resourch constraints have not been applied strictly in formulating them. The 23 district plans thus completed represent the first fruits of the effort at decentralised planning on a State-wide scale.

The Investment Model worked out is on the basis of the past structure of the economy, resources availability, future pattern of demand and Incremental Capital Output Ratios (I.C.O.R.) with due regard also for output-employment and investment-employment ratios. We believe that the levels of investment indicated are attainable.

The resources for financing the plan have also been projected. For resources, the States have to depend heavily on the Centre. While the financial resources of the Centre are vast and growing, those of the States are inelastic and inadequate in relation to their development responsibilities. The role of Central assistance is indeed so large in the financing of the plan, that resource planning at the State level is some times considered as a futile exercise. Short of reallocation of resources heads between the Centre and States, the quantum of Central assistance to States should at least be known well in advance, if planning at the State level is to be effective. Despite limitations, we have made a resource mobilisation exercise. We believe that the assumptions we have made are reasonable and the quantum of central assistance suggested and additional resource mobilisation envisaged for the State are realistic.

One of the most important goals of the Plan is the doubling of the percapi real income by 1984. At the time we started on our exercise, the per capita income of the State in 1970-71 was estimated at Rs. 654. On the basis of this figure, we have prepared the Perspective Plan. Recently however, on the basis of general guidelines given by the Central Statistical Organisation, the State income series for the period 1960-61 to 1971-72, have undergone revision According to this revised series, the per capita income of the State in the base year of 1970-71 would be Rs. 586. As these figures are still provisional, we have not adopted the revised series. The proposal for a rolling plan mentioned in the last chapter will take care of any change in the per capita income series as well as other imponderables such as the hike in oil prices and the recent inflationary pressures on the economy.

The terms of reference of the Commission required the preparation of an input-output model for the State. However, we found that such an exercise would not be useful as the State is not a closed economic system. Alternatively, consistency, production and investment models were prepared for making the perspective projections for ensuring balance in the system.

The original period suggested for the Perspective Plan was 1971-81. But considering the need for providing a frame work for the Fifth and Sixth Plans, we decided to have the time span of the Perspective Plan as the decade 1974 84.

The Commission has worked closely with the Departments of the State Government and has received a great deal of encouragement from the Chief Minister of Tamil Nadu who is also the Chairman of the Commission, as well as from his cabinet colleagues. It is heartening to note in this context, that many of the ideas appearing in this Plan have already been discussed with Government and some have even been accepted by Government already, e.g., starting of the Tamil Nadu Institute of Management, District Development Corporations, a Harijan Housing and Development Corporation.

The Perspective Plan is a long-term plan. Much can and will change in the next ten years, particularly the prices, rate of investments, I.C.O.R. and other variables that go into the building of a long-term plan.

We, therefore, recommend the concept of a ' Rolling Plan '. Planning is a continuous process, calling for changes, revisions, adjustments and updating of strategies, targets and programmes.

Many a good plan has failed because of faulty implementation. Whil$_e$ it is important to draw up the plan carefully, it is imperative to devise a machinery suitable to implement it effectively. The governmental machinery inherited by us was one designed for regulatory, rather than developmental functions Changes in procedures, training methods and attitudes besides suitable modifica. tions in the machinery are required to ensure efficient implementation. We have made a study of the problems of plan implementation. We also organised

a seminar on the subject in which officials implementing the plan in different sectors at different administrative levels participated. We have commended the declaration adopted by the Seminar to the Government*. In this document we have presented an analysis of the problems of Plan implementation. These problems have to be tackled with the utmost seriousness and the implementation machinery, suitably overhauled. The success of the plan depends upon the efficiency and commitment with which it is implemented.

MADRAS-5,
Dated : 22—3—1974.

M. G. RAJA RAM,
Deputy Chairman.

* The declaration appears as Appendin III.

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TAMIL NADU
Scale 1 Inch = 36 Miles
(1 : 2280,960)
ADMINISTRATIVE DIVISIONS 1973
ANDHRA PRADESH
KARNATAKA
KERALA
ARABIAN SEA
BAY OF BENGAL
PALK STRAIT
GULF OF MANAAR
TO BOMBAY
TO DELHI
TO HYDERABAD
CALCUTTA
TO BANGALORE
FROM BANGALORE
TO COCHIN
TO TRIVANDRUM
NORTH ARCOT
CHINGLEPUT
DHARMAPURI
SOUTH ARCOT
SALEM
NILGIRIS
COIMBATORE
TIRUCHIRAPPALLI
THANJAVUR
MADURAI
RAMANATHAPURAM
TIRUNELVELI
KANYAKUMARI
PONDICHERRY
CUDDALORE
KARAIKKAL
REFERENCE
State boundary
District boundary
Divisional boundary
National Highways
State Highways
Railway line (Broad gauge)
Railway line (Metre gauge)
River
District, Taluk head quarters
Divisional head quarters
State Tourist bungalow
Major Port
Other important places
Kuttalam
NOTE:-The State boundary between Madras & Andhra Pradesh wherever shown in the Map as per the award of Shri Pillai is only approximate

CHAPTER 1

Approach to the Perssspective Plan

OI BJECTIVES

1.1 The Perspective Plan 1974-84, has the foll owiing main objectives:—

(ii) Doubling the per capita real income of the State by 1984;

(iii) Provision of full employment;

(iiii) Attacking in a selective manner the worst formms of poverty through implementing the National Mininiimum Needs Programme ;

(iv) Reducing economic and social inequalities ;

(v) Accelerating the process of social change by tiramsforming the social structure and social attitituides ;

(vi) Humanising economic development by prommotiing cultural activities and community participatiion ; and

(vii) Decentralising Planning, development and resource mobilisation.

1.2.2 *Compatibility with the National Objectives*— The Constitution has made both the Union Govevernment and the State Governments responsible for social and economic planning by placing the subjeccii im the concurrent list. Success of planning requiiires that planning at the National and State levelsls is towards similar goals. The objectives of the PPerspective Plan of Tamil Nadu are compatible with the main objectives of Self Reliance and Removal of Poverty adopted by the National Fifth Plan.

DOUBBLIING THE PER CAPITA REAL INCOME

1.3 The population of Tamil Nadu in 1971 was 41·2 millions. The per capita income at 1970-71 prices (old series) was Rs. 654. The objective thereffore is to achieve a Per Capita income of Rs. 1,308 in 1983–84 (at 1970–71 prices) for a population estimated to be 53·69 millions in 1984. This is an ambitious task. While the going will be tough, the objective is attainable. To achieve this, a strategy which combines production and distribution functions with employment as the central aim has been adopted.

PROVISIOON OF FULL EMPLOYMENT

1.4 It is estimated that about 1·70 million persons will be unemployed at the beginning of the Perspective Plan period. This backlog and the future additionss to the working force are to be given employment during the Plan period. The Plan has therefore selected an investment pattern which will generate large scale employment in the fields of agriculture, animal husbandry, fisheries and small industriess. Special steps have been proposed for mitigatiion of seasonal unemployment among agriculturists. The problem of educated unemployed will be tackled both from the demand and supply sides. Schemes for self-employment will be fully encouraged.

ATTACKKINNG IN A SELECTIVE MANNER THE WORST FORMSS OF POVERTY

1.5 More than 52 per cent of the population is estimated to be living below the 'poverty-line'. Their private consumption expenditure per capita per month is below Rs. 20 at 1960–61 prices of Rs. 35·200 at 1970–71 prices. In this group, daily food consumption is estimated to be only 1,000 to 1,800 calories per person. The National Minimum Needs Programme will be implemented to combat malnutrition, disease, illiteracy and squalor in this section of the population. This envisages programmes for nutrition, education, health, housing and protected water-supply Special programmes for preschool children, nursing mothers and pregnant mothers will tackle malnutrition in the most vulnerable segment of the population.

ENSURINGG SOCIAL JUSTICE

1.6 Since independence many steps have been taken in the direction of reducing economic inequalities. These steps have largely been in the agrarian sector which is the most important sector in our economy.. Particularly in Tamil Nadu many laws

intended to improve the status of the small agriculturists have been enacted. Ceiling on land holdings has been imposed and steps were taken to distribute surplus land of big holders among landless persons. Security of tenancy has been ensured by registering tenants and regulating changes of tenancy.. House-sites are also allotted to the landless people under Kudiyiruppu Act. The minimum agricultural wage has been fixed by the State.

1.7 In the plan period, emphasis will be placed on full implementation of land reforms and elimination of absentee-landlord system. Measures to reduce inequality in urban areas are also called for. Urban property regulations will be enacted and enforced.

1.8 The average per capita income in 1970-71 was Rs. 428 in the primary (agricultural) sector, Rs. 933 in the secondary (industrial) sector and Rs. 1,117 in the tertiary (business) sector. The Perspective Plan aims at narrowing down these differences and taking the State nearer the ideal of social justice.

Social Change

1.9 Our society continues to be class-ridden. Its structure is not conducive to speedy economic growth. Deliberate action is necessary to rid the society of its feudal character and transform the social structure and attitudes to one suited for rapid economic growth. The Perspective Plan aims to bring about such changes by massive investments in social development services, formation of village clubs and through special programmes for the backward classes. The magnitude of the effort envisaged in social development (education, science and technology, health, social welfare, etc.) is indicated by the fact that about one-third of the current development outlay will be devoted to these programmes in the Perspective Plan. This investment in human resources will result in formation of human capital in terms of health, enlightened individuals with creative abilities and professional skills. Such human capital formation is as important as physical capital formation for the efficient utilisation of physical resources.

Promoting Cultural Activities and Community Participation

1.10 It is necessary to conserve and develop the rich cultural heritage of Tamil Nadu. The Plan will promote schemes for development of Tamil music, drama, literature, poetry, fine arts, films, folk dance and folk-lore. These activities will also enthuse people in the task of economic growth.

Decentralised Planning, Development and Resource Mobilisation

1.11. The need for decentralisation of Planning is well accepted. District level planning is advocated for the Plan period. 23 district Perspective Plans which provide for development of the 23 development districts of Tamil Nadu have been prepared taking into account local needs and resources. Creation of an implementing agency at the district level is recommended for effective implementation of the district plans. Resource mobilisation can be speeded up by enabling autonomous boards or Corporations functioning at District level to raise resources.

Size of the Plan

1.12 To achieve the objective of doubling the per-capita income, the Plan provides for a rate of growth of aggregate income of 4.55 per cent in 1974-75. This figure will increase to 6.78 per cent by 1978-79, the last year of the Fifth Plan. The rate of growth will be 7.33 per cent in 1979-80 and 11.03 per cent in 1983-84, the last year of the Perspective Plan. To achieve these rates of growth, the following levels of investment are contemplated :—

(Rs. in Crores.)

Investing Agency	*Fifth Plan,* 1974-79	*Sixth Plan,* 1979-84
(0)	(1)	(2)
State Sector	1,365	2,734
Direct Central Investment ..	780	1,562
Private Sector	1,105	2,214
Total	3,250	6,510

Investment priorities and the roles of the State Governments, the Central Government and the Private Sector are shown in Table 4.6.

ROLE OF CENTRAL AND PRIVATE SECTORS

1.13 The State economy comprises of the operations of---

(i) The Union Government;

(ii) the State Governments; and

(iii) the Private Sector.

Hence the success of the Plan obviously depends on the performance of the Union Government, the State Governments and the Private Sector in the sectors allotted to them.

Direct Investment by the Union Government

1.14 Development of important areas like railways, post and telegraphs, mining, basic industries and automic energy, is the responsibility of the Union Government. It is a matter of great concern that during the latter part of the Fourth Plan period and even in the Fifth Plan no major capital investment has been made in the State by the Union Government. In the year 1973-74, the Union Government has allocated only a sum of Rs. 40 crores for its projects inside this State out of a total of Rs. 1,500 crores for the country as a whole. The Perspective Plan envisages a substantial investment in the State by the Union Government. The projected rates of growth in State income and the pattern of income generation envisaged in Perspective Plan would be of little meaning, if the expected magnitudes of direct Union Government investment were not to materialise.

1.15 *Centrally-Sponsored Schemes*—Performance of the State in sectors allotted to it is often hampered by lack of funds. The Union Government, however, is launching a large number of Centrally-Sponsored Schemes in fields like Agriculture, Health, Education and Social Welfare, which are in the State Sector. These subjects are placed in the State Sector as they require a Planning approach suited to the State. The phenomenon of large centrally-sponsored schemes in these fields defeats the original objectives It is necessary that centrally-sponsored schemes are reduced to the minimum and the funds made available for implementing the plans drawn up at the State level taking into account regional requirements.

Inter-State Co-operation—Zonal Planning

1.16 The vicissitudes that several areas in the country passed through in the recent period owing to severe drought conditions and power shortages led to an awakening of the State Governments to the adwantages of bilateral co-operation between the States. The recent arrangement between the Governments of Kerala and Tamil Nadu for sharing their surpluses in Power, Rice, Cement, etc., is a striking example in this regard. This is indicative of the immense opportunities for such inter-State Co-operation among the States for an accelerated development of their region by making full use of each other's resource endowments and production possibilities for mutual benefit. The Southern States of Tamil Nadu, Kerala, Karnataka and Andhra Pradesh possess several possibilities for fuller and more rational utilisation of resources, especially in respect of the crucial inputs like water and power. Such zonal planning for the utilisation of key resources of the region would be of great advantage not only to the concerned States but to the country as a whole.

1.17 It is at State level of Planning that detailed knowledge is obtained of the resources of the State. Such an assessment would bring out the fields in which resource endowments are liberal, permitting their utilisation even beyond the borders of the State. It would also indicate the areas in which the resource constraints in the State could be overcome by drawing upon surpluses from the neighbouring States. Therefore, it would be most appropriate if the initiative is taken at the State Planning level towards working out specific areas for zonal planning; and suggesting concrete measures for inter-State co-operation.

The Private Sector

1.18 Our economy is a mixed economy. While democratic socialism is our goal, the private sector in the economy is still substantial. The Perspective Plan expects the Private Sector to play a significant role in the development of the economy. Co-operation between the public and private sectors in the 'joint sector' is also envisaged. The private sector is sensitive to policy instruments that are now wielded largely by the Union Government and partly by the State Government. It is necessary to co-ordinate the policies of the Union and the State Governments towards development of the private sector. That sector should be allowed to play its part in National development.

The Strategy

1.19 The objectives of the Perspective Plan will be achieved by balanced programmes in different sectors of the economy. A bird's eye view of the programme is given below :—

Agriculture and Allied Activities

Agriculture

1.20 The Agricultural production programmes are oriented towards providing balanced diet to the population and supply of raw material to the agro-based industries. Programmes for the extension of the area under high-yielding varieties and for stepping up the production of protective foods like pulses, vegetable oils, fruits and vegetables and extension of the Intensive Agricultural Development Programme to all the districts, except Madras, are envisaged. Extension of Intensive Cotton Development Programme to the entire State, intensive development of sugarcane cultivation and oil seeds through area development projects are programmed. Schemes for the timely and adequate supply of improved seeds, quality fertilisers and plant protection chemicals and intensification of research particularly in dry farming are also envisagged. The Green Revolution is to be extended to other crops, viz., pulses cotton, oil seeds, vegetables and fruits.

Irrigation and Soil Conservation

1.21 Important programmes are to be taaken up in the sphere of water management such as remodelling and lining of channels and improvements to tanks, exploitation of ground water sources, drainage schemes, etc.

Animal Husbandry, Dairying and Milk Supply

1.22. The availability of milk is planned to be increased by about 5 times, eggs by about 9 times and meat including fish by at least two times. For achieving this goal, programmes such as Intensive Cattle Development for upgrading the indigenous cattle, propagation of Yorkshire pigs, improvement of the quality of sheep for mutton, skin and wool, increasing feed and fodder production including sewage farms, improvement of marketing facilities for milk and eggs, widening the existing network of Veterinary Institutions and the establishment of large size layer farms and hatcheries for Poultry Development are contemplated.

Forests

1.23 Development of forest would include plantation of trees of industrial and commercial value and substantial expansion of rubber, tea, coffee, cinchona and cashew plantations. A sandal oil factory is also proposed to be set up. The State forest policy during the Perspective Plan period will aim at increasing forest lands from the present 16.84 per cent of total area to 18.06 per cent.

Fisheries

1.24 In Fisheries, introduction of large-sized mechanised boats and trawlers, development of deep-sea fishing, better marketing and refrigerated storage facilities, development of fishing harbours, etc., are planned. In inland fisheries, integrated fish seed production and distribution schemes, reservoir-fisheries development, reclamation of swamps and tanks for taking up fish-culture will be intensified. Measures suggested for the economic and social upliftment of fishermen include better housing, water-supply and communication facilities, assistance to fishermen's co-operatives and a feasibility study on the scope of establishing different cottage and subsidiary industries in fishing hamlets.

Co-operation and Community Development

1.25 In the Co-operative sector, strengthening and expansion of the Agricultural Credit Societies, development of the activities of marketing societies and processing units and also revitalising the financially weak co-operative wholesale and primary stores are envisaged.

1.26 Extension of existing programmes and introduction of new schemes in respect of social education, establishment of community recreation centres, radio forums, libraries, Youth clubs and Mahalir Manrams for the welfare of women and children are proposed. In addition to this, improvement of rural arts and crafts, extension of protected water-supply in rural areas, construction of additional link roads and improvements to the existing are also suggested.

Industry and Mining

Large and Medium Industries

1.27 In the Perspective Plan period, the emphasis will be on the expansion of existing agro-based and processing industries, mineral-based industries and

also industries like sugar, textiles, paper, cellulosic and mineral-based fibre, petro-chemicals, electrical and electronic equipments, fertilizers and chemicals, automobile and allied industries, etc. Starting of new industries in the backward regions of the State so as to raise the living standards of the local people, and encouragement to export-oriented industries are also proposed.

Village and Small Industries

1.28 Programmes suggested include promotion of functional industrial estates, provision of work facilities, implements and guidance for artisans in semi-urban areas, and expansion of industries producing commodities such as leather products, furniture, house building materials, plastic items, accessories for mechanical engineering, electrical engineering and automobile industries, electronic components, electrical appliances, etc. Development of handlooms and sericulture are also emphasised. A Raw Material Bank, special financial arrangements for low income artisans, provision of infrastructural facilities, arrangements for marketing and quality control, etc., are also suggested as special measures for the development of this labour intensive sector.

Mineral Development

1.29 Programmes for Mineral development include detailed investigation of mineral deposits of commercial importance in each district, adoption of sophisticated methods of exploration, pilot testing for the possibility of utilising low grade ores expansion of mineral, metal and chemical-based industries contribute to the overall development of the industrial sector and the establishment of a State-owned Mineral Development Corporation.

ECONOMIC OVERHEADS

Power

1.30 Power is identified as the crucial input for economic development. Very high priority is suggested for power development. Power requirement by 1984 is projected as 5,983 MW as against present availability of 1,569 MW.

The increased requirements of electric power will have to be met by (*a*) commissioning of the Atomic Power Plant at Kalpakkam, (*b*) taking up of new Hydel schhemes. (*c*) 600 MW Thermal Station a Tuticorin and new Thermal Capacity of about 400 MW eelsewhere in the State, (*d*) Second mine cut and seconnd thermal station of about 1,000 MW capacity att Neyveli, (*e*) addition of another 400 MW capacity at t Kalpakkam Atomic Project, and (*f*) second Atomic Poower Project of about 1,000 MW capacity around TTuticorin. Closer co-operation with the neighbouriing States to exploit and utilise the hydro-resources of these States is suggested.

Transport and Communications

1.31 *Rooads.*— Development of the 1804 kilometre Natiional Highways and the construction of the East Coasst Highway are envisaged. Development works undder the State Highways, and major district roads covver such items as improvement of bridges, widening aand increasing the number of lanes, cement concreting,, improvements to geometrics of roads including special provision for pedestrian traffic, formation of by-pass roads and link roads. A ring road connnecting the three National Highways outside Maadras city limits with a length of 32·4 kilo metres andd a road to relieve the rapidly increasing congestion in Anna Salai to be built parallel to it as a lso widenning of the South Cooum Road are planned.

1.32 *Raililways.*— Railway development comprises of such wvorks as (i) "cut and cover" under-ground railway inn the North-South Eastern corridor of Madras Ciity, (ii) electrification of Madras-Arkonam line, (iii) eextending suburban service to Tiruvallur and Gumnmudipoondi, (iv) conversion of most of the trunk l lines into broad gauge and (v) opening of new broadd gauge lines from Karur to Madurai and Salem to Karur.

1.33 *Inldand Waterways.*— Widening and deepening of the Buckingham Canal and Vedaranyam Canal for bbetter navigation facilities and the running of pleasuree and passenger boats in the Coum river and Buckiingham Canal will be undertaken.

1.34 *Portss and Harbours.*—Additional facilities at the Cuddalilore Port, development of Tuticorin Port and minoor ports such as Nagapattinam, Rameswaram, Veeppalodai, Punnaikayal and Ennore are proposed. The Sethusamudram Project is inclu ded in the Plann.

DEVELOPMENT SERVICES

General Education and Technical Education

1.35 The major objectives of the Plan in the sphere of education are—

(i) to provide complete education to the age group 6-15 and in particular to the 9 lakh children, who are all from the 60 per cent poor group, who drop out of school in Classes I,, II, III and IV every year and 222·5 lakh people of Tamil Nadu who have now no education at all; and

(ii) to relate this right to education directly with right to employment.

1.36 To this end, the programme envisaged will include—

(*a*) a ten-year schooling broken into stages to enable students smoothly to leave school at various points for employment or work at home and re-enter the schools ;

(*b*) Out-of-school education is to be given to all who leave school before Class V. The aim is to give all children in Tamil Nadu a minimum of five years complete schooling which is now not available to 60 per cent who enter Class I and drop out later. Organisation of functional literacy centres to benefit all illiterate adults is also suggested ;

(*c*) merging of school and out-of-school education by using the buildings, equipment, teachers, libraries, laboratories and workshops of the schools to provide continuing education to those who wish for it through correspondence courses, evening classes, radio and television instruction ;

(*d*) reforming curricula and teaching methods to make them functional and related to the urban, rural, economic, social and cultural realities of Tamil Nadu, and vocationalising secondary education ;

(*e*) the development of our Universities as Centres of excellence in post-graduate teaching and research with the possibility of entrusting under-graduate education to a State Council of Academic Awards and the starting of a separate Technological University ;

(*f*) promotion of scientific and developmental research and training through the following projects:—

The Tamil Nadu Science Foundation ;

The Tamil Nadu Academy of Basic and Applied Sciences ;

Hall of Science and Industry in Tamil Nadu;

Information, Storage and Retrieval Services ;

Tamil Nadu Institute of Management.

(*g*) The expansion and development of International Institute of Tamil Studies and allied projects ;

(*h*) State financing of education to be based on free education up to Class X and free out-of-school education so that the 60 per cent poor people of Tamil Nadu have the minimum of schooling and in the case of adults, the necessary literacy ; and financing of improved science and craft education at school. All higher education will be fee-based ; scholarships will be based on merit-*cum* means.

Health, Nutrition, Family Planning, Water-Supply and Sanitation

1.37 The Plan provides for

(*a*) improvement of health and medical services ;

(*b*) improvement of nutrition with particular attention to the vulnerable segments of the population ;

(*c*) a more vigorous campaign for family planning ; and

(*d*) the provision of protected and adequate water-supply and sanitary facilities to all households, starting with the most backward blocks.

1.38 The family planning programme aims at reducing the present birth rate of 35 births per thousand to 25 by 1978–79 and to 22 by 1983–84. The Perspective Plan proposes a balanced emphasis on Clinical methods as well as Social and Psychological education for the promotion of family planning.

1.39 Over 70 per cent of all urban areas have already been provided with piped and protected water-supply. The remaining 30 per cent or 562 towns are covered by on-going schemes which should be completed by 1976–77. Assured sources of potable water as distinct from what is used for irrigation will be provided to in all villages.

1.40 Construction of additional sanitary latrines, scavenge-pits, and other environmental sanitation works in the rural areas will be undertaken. Industries will be provided with safe disposal arrangements. Monitoring of the rivers and air for pollution will be arranged.

Housing and Urban Development

1.41 According to present estimates, the total number of new houses required is 9,50,000 dwelling units in the urban areas. This excludes the number required to replace the pucca and semi-pucca houses that have outlived their utility. All Municipal towns in the State will take up housing schemes in their respective areas by way of developing plots and selling them to individuals. The problem of rural housing, particularly of Harijans and Backward Classes will be tackled by establishing a Rural Housing Corporation for this purpose.

Tourism

1.42 With the formation of a separate Tourism Development Corporation, it will be possible to pay special attention to Tourism and develop attractions for Tourists both internal and foreign. Propaganda and publicity in respect of the rich cultural heritage of the State as well as beauty spots, archaeological finds and temple architecture are necessary. Provision has been made for printing attractive pamphlets and folders in colour for distribution among tourists and for exhibiting the handicrafts and art mementos at important cities. A special scheme for training tourist guides and also enabling them to learn more languages is also suggested.

SOCIAL CHANGE AND DEVELOPMENT OF BACKWARD CLASSES AND AREAS

Social Change

1.43 Realising the need to improve the social climate making it conducive for economic activity, the creation of a casteless and classless society is considered an urgent necessity and this goal will be approached from different angles—ideological, educational, social, legal and economic. The socially underprivileged sections, especially the Scheduled Castes and other Backward Classes will be effectively taken care of. The deterrents to economic initiative like superstition, casteism and inferior status of women will be tackled by deliberate state policy. Social change is desired not only as a means to economic development but as an end in itself assuring self-respect and dignity of the human being.

Welfare of Work Force, Labour and Management Relations

1.44 Having in mind the welfare of the working class in farms and in factories and having initiated studies for improvement of the machinery for settling industrial disputes, for preparation of incentive schemes and social security measures, efforts would be put in the direction of (i) fuller utilisation of installed capacity in factories, (ii) optimum use of agricultural and urban land, (iii) higher productivity of labour and capital, (iv) higher level of skill formation and (v) rationalisation and scientific management of agriculture and industry with a view to ensuring that the benefits of production accrue equitably to all participants in economic activity.

1.45 *Employment and Training.*—Development schemes envisaged under this rule include expansion of employment services, establishment of a Man-Power Centre, training schemes for craftsmen and the working out of newemployment projects.

1.46. *Social Welfare and Labour Welfare.*—An integrated approach for women and child welfare programmes is suggested. Schemes of education and economic and social uplift of Scheduled Castes, Scheduled Tribes, Denotified Tribes and Backward Classes have been suggested. A preventive approach has been commended for Social Defence Programmes. In addition to better labour welfare measures in the form of better housing and recreational facilities, the concept of good faith in bargaining to settle industrial disputes has been advocated.

PART I

The Background

CHAPTER 2

Resources

GEOGRAPHICAL FEATURES

2.1 Tamil Nadu forms the southern-most part of the Indian Peninsula. The State is bounded on the north by Andhra Pradesh and Karnataka States, on the south by the Indian Ocean and on the west by a long and continuous stretch of hills—the Western Ghats— which separates the State from Kerala. The 998 Km. long eastern coast is washed by the Bay of Bengal. The geographical area of the State is 1.30 lakh square kilometres (or 50,154 square miles). Broadly speaking, the State can be divided into four distinct parts according to the physio-geographical features :

(i) Coastal Plains

(*a*) Coromandel (Cholamandalam) Plains comprising of the districts of Chingleput, South Arcot and North Arcot.

(*b*) The alluvial plains of Cauvery delta which include the whole of Thanjavur district and part off Tiruchirappalli district.

(*c*) The dry plains in Madurai, Ramanathapuram and part of Tirunelveli district.

(ii) Eastern Ghats

The coastal plains are backed by a discontinuous line of hills, Javadhu, Shevroy, Kalrayan, Pachamalai and Kollimalai. There are also broken hills north of the Palar River, the Varushanad area, the Andipatti range and the cardamom hills of Madurai district. These form the Eastern Ghats.

(iii) Western Ghats

The entire district of the Nilgiris lies in the Western Ghats range. The average elevation of this region is 4,000 feet above mean sea-level and the highest peak rises up to 8,500 feet.

(iv) Plateau

Between the hills of Javadhu and the Western Ghats lies a Plateau with an average elevation of 1,000 feet. The districts of Salem, Dharmapuri, North Arcot and Coimbatore form part of this **Plateau.**

Soils

2.2 The major types of soils found in the State are : (1) Red Loam ; (2) Black soil ; (3) Alluvial (sandy Coastal). Some patches of aranaceous soils are found along the coastal line and also latericeous soil in parts of Nilgiris district. Red soil predominates in the area. This type is found in almost all the districts. The highest concentration is in Madurai and North Arcot districts. Though this is not very fertile and is deficient in nitrogen and organic matter, yet it is suitable for the cultivation of a large variety of crops. Black soil covers 25 per cent or the area and is found in most parts of the State, i.e., in parts of South Arcot, North Arcot, Salem, Dharmapuri, Coimbatore, Ramanathapuram, Madurai, Tirunelveli and Nilgiris districts. This soil is quite fertile, but it requires regular water-supply for cultivation purposes and also lacks in nitrogen and phosphoric acid. Most part of the cultivated area in Ramanathapuram and South Arcot districts is of the black soil type.

2.3 The most fertile alluvial soils are concentrated in the Cauvery delta, in the district of Thanjavur and part of Tiruchirappalli district. Though the nitrogen content is low and there is deficiency in phosphoric acid, this soil is rich in its lime, potash and magnesium content.

Soil Classification

Type of soil	*Districts where found*
(0)	(1)
I. Red Loam ..	Parts of Chingleput, South Arcot, North Arcot, Salem, Dharmapuri, Coimbatore, Tiruchirappalli, Thanjavur, Ramanathapuram, Madurai, Tirunelveli and Nilgiris.
II. Latericeous Soil ..	Parts of Nilgiris.

(0)	(1)
III. Black Soil ..	Parts of Chingleput, South Arcot, North Arcot, Salem (including Dharmapuri), Coimbatore, Ramanathapuram, Madurai, Tirunelveli and Nilgiris.
IV. Sandy Coastal Alluvium.	Coastal regions of Ramanathapuram, Thanjavur, South Arcot, Chingleput and Kanyakumari.
V. Red Sandy Soil ..	Small patches in Coimbatore and Nilgiris.

Rivers

2.4 The important rivers which traverse the State are : (1) Palar, (2) Ponnaiyar, (3) Cheyyar, (4) Cauvery and its tributaries, Bhavani and Amaravathi, (5) Vaippar, (6) Vaigai and (7) Thambraparani. Most of these rivers originate in the Western Ghats and flow eastward and ultimately join the Bay of Bengal. All these rivers are rainfed. Only Cauvery and its tributaries and Thambraparani are perennial and the other rivers remain dry for the major portion of the year and hence are not suitable for development of power or major irrigation works. The perennial rivers form the important sources of canal irrigation in the State. Besides these, there are several other smaller and less important rivers in the State like Noyal, Moyar, Vellar, etc.

Mountains

2.5 The Western Ghats form the important stretch of mountains in the State. Commencing in Maharashtra, it extends southward through South Kanara and Coorg (in Karnataka), Malabar and Cochin (in Kerala), Coimbatore, Nilgiris, Madurai and Tirunelveli districts (Tamil Nadu) and terminates near Kanyakumari. The range is continuous and unbroken except for a 16-mile natural breach between Coimbatore and Malabar constituting the Palghat gap and a smaller gap near Shencottah. The Western Ghats rise from 3,000′ to 8,500′ above mean sea-level. The forest areas are concentrated on the Western Ghats. Coffee, tea, eucalyptus and cardamom are some of the important plantations raised on the hilly areas. The important hill-stations which attract large number of tourists are Ootacamund in Nilgiris district and Kodaikanal in Madurai district. Other summer resorts are Yercaud and Courtallam. The Palani hills which run out from the main line of the Western Ghats in a north-easterly direction lie in Madurai district. The Javadhu hills of North Arcot district, the Kalrayan, Kollimalai and Shevroy ranges of Salem district and the Pachamalai of Tiruchirappalli district constitute the Eastern Ghats.

Climate and rainfall

2.6 The State's economy is much dependent on the monsoons as most of the rivers which are the major sources of irrigation are rainfed. Over large tracts of Tamil Nadu rainfall is poor and uncertain. Rainfall occurs in two major seasons:

(1) South-West Monsoon period (June to September).

(2) North-East Monsoon period (October to December).

The mountain-district of Nilgiris receives the heaviest rainfall during the South-West Monsoon. Kanyakumari district and parts of Coimbatore, Salem and Tiruchirappalli districts also get more rainfall during this season. The North-East monsoon brings more rains to the coastal plains, i.e., Coromandel and Cauvery delta. But the rainfall during this season is closely associated with seasonal depressions in Bay of Bengal. Kanyakumari district gets medium rainfall while the central plateau can be classified as low rainfed area. Parts of Coimbatore district and Ramanathapuram district receive the lowest rainfall. The normal rainfall is 945·7 mm. per year, but there is appreciable variation from year to year ; in 1966–67 it was 1,152.6 mm. ; in 1968–69 it was 682.5 mm. ; in 1969–70, 1,036.7 mm. in 1970–71, 918.0 mm. and in 1971–72, 968.8 mm.

2.7 The climate of the State is tropical, but it is neither too hot in summer nor very cold in winter. The maximum temperature rarely rises beyond 110°F. (43°C). The minimum temperature is 65°F (18°C). The climate is mostly dry and hot in the plains, the coolest month being January with an average temperature of about 24°C. April, May and June,

are the hottest months with a maximum temperature of around 40°C. Humidity in the coastal region is around 65 per cent to 80 per cent in Tamil Nadu.

Normal and Average Rainfall in Tamil Nadu 1958-59 to 1972-73.

(in mm.)

Year	*South-West Monsoon period*	*North-East Monsoon period*	*Winter period*	*Hot weather period*	*Grand Total*
(0)	(1)	(2)	(3)	(4)	(5)
Normal ..	307·3	449·7	50·9	137 8	945·7
ACTUALS.					
1958–59	226·1	330·0	38 3	114 5	708·
1959–60	253·4	433·5	16 4	129·2	832
1960–61	317·3	486·4	86·6	87·8	97: 3
1961–62	370·9	309·9	31·1	155·1	86 0
1962–63	324·7	394·6	76·1	136·1	931·5
1963–64	315·0	506·1	10·7	75·8	907·6
1964–65	346·6	405·5	7·7	99·3	859·1
1965–66	314·9	441·4	18·9	95·7	870 9
1966–67	415·8	606·0	29·3	101·7	1,152·8
1967–68	265·0	495·9	12·2	165·7	958·8
1968–69	270·9	312·1	8·2	91·3	682 5
1969–70	238·4	612·6	33·1	152·6	1,036·7
1970–71	318·0	420·1	28·5	151·4	918·0
1971–72	322·5	488·5	4·6*	153 2	968·8
1972–73	292·7*	608·3*	0·3*	72·9	974 2*

*Provisional

Note : Normal represents the average for 50 years ended with 1950

Districts by Range of Normal Rainfall.

(in mm.)

Range of rainfall	*Districts*
(0)	(1)
1. Below 800 ..	Coimbatore.
2. 800—1000 ..	Tirunelveli, Ramanathaapuram, Madurai, Salemn, Dharmapuri, North Arcoot and Tiruchirappalli.
3. 1000—1200 ..	Thanjavur and South Arcot.
4. 1200—1400 ..	Madras and Chingleput.
5. 1400—1800 ..	Kanyakumari.
6. 1800 and above.	The Nilgiris.

Natural Resources

(*a*) Forests

2.8 The area under forests in Tamil Nadu in 1970–71 was 21,950 sq.Kms. (including 883 sq. Kms. of private forests) accounting for 16·84 per cent of the total land area, as against the all-India average of 23 per cent and the optimum requirement of 33 per cent needed to maintain ecological, edaphic, hydrological and climatic balance. There is a concentration of forests in the Western Ghats especially in Nilgiris district which accounts for 58 per cent of the State's forest area. The other concentration is in the Eastern Ghats region, i.e., Javadhu hills in the districts of North Arcot and Salem, which together account for another 20 per cent of the forest area. The remaining forest area is spread over in other districts. The wide variations in the climate, ranging from tropical to temperate, with rainfall as low as 600 mm on the semi-arid plains to over 5000 mm on the Western Ghats contribute to a variety of natural vegetation in Tamil Nadu.

2.9 Forest resources play a vital role in the industrial development of the State. They supply raw materials to a number of forest-based industries, and also timber for construction. The important forest products in Tamil Nadu are wattle, blue gum, myrabolam, bamboo and soft wood, which are the major raw materials for paper, rayon, leather tanning and match industries ; in addition, sandalwood is a valuable commercial product. Teak-wood, rose-wood, casuarina and a host of other varieties of wood used for construction and domestic purposes are also available. There are cashew, rubber, eucalyptus, and minorforest produce like tamarind, etc., too. Forests supply considerable quantity of fuelwood for domestic use, and the green leaves are utilised as manure. Of the forest area, a total of 14,473 sq. Kms. contain exploitable timber, fuel and bamboo while in another 3,360 sq. Kms scrub forests with sandalwood are found. An area of 1,439 sq. Kms. of forests is on steep rocky slopes. Plantation is raised in an area of 1,576 sq. Kms.

2.10 With all these the forestry sector in Tamil Nadu contributes only 0·3 per cent to the State income. The contribution of forests to Government exchequer is however growing from year to year. The revenue (gross) from forests which was Rs. 152·28 lakhs in 1961–62, increased to Rs.280·78 lakhs in 1965–66 and to Rs. 366·08 lakhs in 1970-71.

(*b*) **Minerals**

2.11 While Tamil Nadu is not very rich in mineral wealth, it is endowed with some rare minerals. The State possesses some of the oldest rocks in the world called Archaean rocks, and these are the repositories of most of the mineral wealth. The mineral deposits occuring in these rocks include iron ore, magnesite, corundum, mica, chromite, barytes, beryl, limestone, copper, etc. Tamil Nadu is the only State in the country having large lignite resources. Ilmenite and rutile are found in the beach sands of Kanyakumari district.

Lignite

2.12 Almost the entire production of lignite in India is in Tamil Nadu. Around Neyveli in South Arcot district, lignite deposits estimated at over 2,,000 million tonnes are found in an area of 259 sq.Kms. An area of 14·25 sq.Kms. in Neyveli with an estimated reserve of 200 million tonnes has already been taken up for exploitation. The lignite is used for generation of thermal power, and for productiom of fertilizer and carbonised briquets. The current extraction of lignite is around 3.7 million tonnes per annum which accounts for 65 per cent of the total value of mineral production in the State.

2.13 The coal horizon struck in the Ramanatthapuram district has a fuel value of 9,000—10,(000 BTU/lb—twice that of lignite suitable for power generation. The reserves are estimated to be around 300 million tonnes. Exploitation has not commenced.

Magnesite

2.14 The deposits of magnesite are concentrated in Salem district. The reserves are estimated to be 44 million tonnes.

Bauxite

2.15 Bauxite occurs in Salem, Madurai and Nilgiris districts. The total reserve of bauxite in the State has been estimated at 13·5 million tonnes, out of which, 5·3 million tonnes with 45 per cent aluminium content are found in the Shevroy ranges of Salem district. The Nilgiris district has a reserve of 3·4 million tonnes in the Kotagiri-Ootacamumd Unit. Another 2·33 million tonnes of bauxiite deposits have been discovered in Palani hills near Kodaikanal. The latest discovery of bauxiite deposits in the State by the Geological Survey of India in the Kollimalai hills places the reserve around 2·59 million tonnes.

Iron Ore

2.16 The major occurrence of iron ore is in the Kanjamalai region of Salem district. The total estimated reserves in Tamil Nadu has been placed at 800 million tonnes, out of which Kanjamalai region accounts for 240 million tonnes. The Thiruvannamalai region accounts for another 248 million tonnes. Iron ore found in Tamil Nadu is of magnetite type with ferrous content of 30-45 per cent. The Salem Steels Limited which has already commenced operations in the Kanjamalai region is the first major venture in the field of iron ore exploitation in this State. It is considered that economic mining could be carried out with an annual concentrate of 0·8 million to one million tonne per year.

Gypsum

2.17 Tamil Nadu has sizable reserves of gypsum which are estimated to be of the order of 153 million tonnes. Gypsum is found mostly in the Tiruchirappalli district. Some small deposits are also found in Ramanathapuram, Coimbatore and Tirunelveli districts. Fertilizer and cement industries are the two important consumers of gypsum. The production of gypsum in 1961 was 74,676 tonnes and this rose to 1,04,318 tonnes in 1971.

Other Minerals

2.18 The other important minerals found in the State are : (1) Chromite with an estimated reserve of about one million tonnes ; (2) Graphite with an estimated reserve of 1,80,000 tonnes of graphite-bearing rocks ; (3) Limestone, an important raw material for cement with an estimated reserve of 300 million tonnes ; (4) Vermiculite deposits in North Arcot district with an estimated reserve of 3·5 lakh tonnes ; (5) Quartz with an estimated reserve of 3 lakh tonnes and Feldspar 2·35 lakh tonnes ; (6) Copper, lead and zinc—estimated at 0·9 million tonnes. Copper content of the ore is 0·63 per cent, that of lead 2·0 per cent and that of Zinc 2·73 per cent. Extensive deposits of clay suitable for stoneware, sanitaryware, insulators, and ceramics are also found in the State. Besides these, Apatite, Rock phosphate and Dolomite deposits are also found in certain parts of the State.

Salt

2·19 Salt is extracted all along the coastal line of Tamil Nadu particularly around Madras, Cuddalore and Tuticorin by solar evaporation. Next to Bombay, Madras is the most important producer of salt. The total licensed area under salt pans was 23,287 acres in 1971. Area under salt extraction was 18,856 acres and the total production in the licensed sector was around 8 lakh tonnes. The area under unlicensed sector was about 7,000 acres and their production about 3 lakh tonnes.

2·20 Of the total production, 1·5 lakh tonnes of salt is being used by Messrs. Dharangadhra Chemicals Limited and Messrs. Mettur Chemicals and Industrial Corporation Limited. About 4 lakh tonnes of salt is being used for domestic consumption in Tamil Nadu and the rest is exported to other states and countries. Ramanathapuram district with a long coastal line and dry climate is well suited for salt production by solar evaporation. The Mariyur Swamp of about 5,600 acres along the coastal line of Mudukulathur taluk has the potential for development of salt-based industries. There is also scope for development of salt pans in about 3,000 acres more around Vaipar, Malamanthai, Mandapam, Alangankulam, Sayalkudi, Pambanar and Taravai as well as of 20,000 acres more in the Vedaranyam Swamp in Thanjavur district where WIMCO and Mettur Chemicals have already started quality salt production.

2·21 The newly-formed Tamil Nadu Salt Board has programmed to implement a Rs. 5 crore scheme for quadrupling salt production in the State. A major salt factory near the Mariyur Swamp in Ramanathapuram district to feed the proposed 400 tonnes Soda ash factory linked to the Southern Petro Chemicals Complex and two other big factories near Madras and Tuticorin to produce half to one million tonne salt to be exported from the State will form the major part of the programme. That will take about 15 years for implementation. When completed, it will add about 40,000 acres of salt pans on the 998 km. coast.

(*c*) Fisheries

2·22 Tamil Nadu with a long coastal line of 998 Kms. and dotted all over by a number of reservoirs, tanks and several estuaries and backwaters has immense fisheries resources. The State accounts for nearly 14 per cent of the all-India fisheries production. It ranks third, next to Kerala and Maharashtra, in marine fish production.

2·23 The Food and Agricultural Organisation has estimated the annual production of living organism in the oceans at 100 million tonnes. According to the Indian Ocean Programme of F.A.O., 1971, the estimated potential of the Indian Ocean Fisheries is of the order of 14.1 million tonnes. The total area of the continental shelf (upto a depth of 200 meters) along the Indian Coast including Laccadives and Andamans is about 4.12 lakh square kilometers. These are exploited at present upto a depth of 50 meters in only about 1.81 lakh square kilometers. The present level of catch is far below the estimated potential yield. The fishing grounds in the continental shelf are divided into inshore area (upto 29 meters) and deep sea (beyond 80 meters). The inshore fishing potential in 1968 has been estimated at 1,61,644 tonnes as compared to the catch of 128,289 tonnes. The offshore catch is insignificant against a potential of 83,496 tonnes. Thus vast fishery resources remain unexploited.

2·24 Fresh-water fish production in Tamil Nadu was of the order of 1.20 lakh tonnes in 1970. The State has an inland waterspread of about 3.51 lakh hecttares with twnety-eight reservoirs of 48,760 hecttares and about 5,400 major and 30,000 minor irriggation tanks offering good scope for developing inland fisheries. Besides, there are about 3,000 small ponds in villages.

Waterspread	*Area in hectares*
(0)	(1)
Major Reservoirs and Dams	48,960
Major Irrigation Tanks, either perennial or retaining water for more than eight months in a year	97,690
Major and Minor irrigation tanks which are seasonal	127,430
Ponds	30,000
Estuaries and Backwaters	46,750
Total	**350,830**

2·25 The estimated potential yield from these sources by 1974 is placed at two lakh tonnes. The State has a marine fishermen population of nearly three lakhs, of whom about a lakh are engaged in active fishing with about 30,000 country crafts. The inland fishermen population is about 35,000. The State has also resources of pearl and chank fisheries especially in the sea off Tirunelveli and Ramanathapuram districts.

(*d*) Water

2·26 The surface flow of water in the State including flows from their own catchment into the tanks is estimated to be 34,000 million cubic metres or 3.4 million hectare-metres per annum. The surface water resources are utilised almost fully through efficient water and land management techniques. Rain water, stored in major and medium irrigation projects and in tanks is made available for irrigation through the river systems and canals at the appropriate time. The utilisation of surface water flow is already more than 95 per cent and only about 0·12 million hectare-metre is classified as " waste " being unutilisable in coastal areas. Extent of land irrigated in the State from surface flow is of the order of 2.2 million hectares.

2·27 Tamil Nadu has good ground water potential. It has been estimated that the total ground water potential available for extraction is 1.44 million hectare-metres annually. The present exploitation is only about 1.03 million hectare-metre. The area irrigated from ground water resources in the State is estimated at 0.38 million hectare.

Power Resources

2·28 One of the major sources of power generation in Tamil Nadu is its hydro-resources. Lignite mined in Tamil Nadu is yet another important source of energy used in the thermal station at Neyveli. Tamil Nadu depends for coal on other states for its coal-based thermal stations. Neither oil nor gas has been located in the State so far, though exploration in the Cauvery basin has been done.

2.29 Most of the hydro resources have already been harnessed. The Pykara Hydro Electric Project is the first power project undertaken by the Government of Madras in 1929 utilising the waters of Pykara rivers. The project was completed in three stages, the last stage in 1955. The installed capacity of the power house is 70 MW. Moyar Hydro Electric Project which was completed in 1952 has an installed capacity of 36 MW. The biggest hydro electric scheme in Tamil Nadu is the Kundah Hydro Electric Project which has an installed capacity of 425 MW. The Periyar Hydro Electric Scheme, the second stage of which was completed in 1964, has a total installed capacity of 140 MW. The Mettur Hydro Electric Project adds another 40 MW of power supply to the Tamil Nadu grid. The Mettur Tunnel Scheme has been designed to utilise the irrigation discharge fully for power generation of 200 MW during the irrigation period. The Parambikulam Aliyar Project, planned to provide irrigation facilities to Coimbatore district and power, adds another 185 MW to the Tamil Nadu grid. The Papanasam Hydro Electric Scheme in Tirunelveli district has an installed capacity of 28 MW. The Kodayar Hydro Electric Scheme has an installed capacity of 100 MW. The hydro-potential exploited so far amounts to 1,224 MW.

2·30 Although the major and more economical hydro resources have already been exploited, there are several smaller hydro resources with a potential for a total capacity of 2,270 MW which can profitably be exploited.

2.31. The third and fourth stages of Kundah with an installed capacity of 110 MW and Suruliyar Project with 35 MW capacity are under execution. The Servalar (20), Nellithurai (50), Pandiyar-Moyar I stage (100), Cholatti Puzha (30), Paraliyar (35), Kadamparai pumped storage I stage (200), Coonoor (50), Upper Amaravathi (20), Lower Moyar (30) and Shanmuganadhi (30) Projects have already been investigated and the total installed capacity of these schemes will be 565 MW. The schemes under investigation are Upper Thambaraparani Project (165), Upper Manimuthar (90), Lower Moyar Project (40), and Akumalai Project (25). If these are found feasible, they will add another 320 MW to the Tamil Nadu grid. Besides, there is scope for adding another 1,240 MW if the following potential schemes come to fruition after investigation : (1) Pykara ultimate stage (100), Kundah ultimate stage (205), Pandiyar Moyar II stage (50), Kadamparai pumped storage (200), Koniar pumped storage (100), Valar pumped storage (100), Nirar (35), Upper Cauvery (250) and a few

other projects with a total capacity of 200 MW. In all, the total hydro power resources both exploited and potential, is estimated to be around 3,494 MW.

Thermal Power

2.32 The Ennore and Basin Bridge Thermal stations together have an installed capacity of 430 MW while the Neyveli thermal power station has an installed capacity of 600 MW.

Nuclear Power

2.33 Tamil Nadu has the third nuclear power project in India. The Madras Atomic Power Project at Kalpakkam having two CANDU Type nuclear power units of 235 MW each is expected to contribute significantly to the economic development of the State. The first unit is expected to be commissioned in 1975–76 and the second in 1976–77.

AGRICULTURAL RESOURCES

2.34 After two decades of planned development, a break-through has been achieved in the 'A' sector (Agriculture, Fisheries, Forestry and animal Husbandry). Today, this sector along with the well-developed infrastructure in the State provides a strong base for an accelerated economic growth of the State.

2.35 A little over 69 per cent of the State's population live in rural areas and most of them depend on agriculture and allied activities for their livelihood. The income generated in the A-sector accounted for 41 per cent of the net State domestic produce in 1970–71 at current prices. The total value of agricultural commodities produced in 1970–71 has been estimated as Rs. 925 crores. Agriculture provides employment to about 76 percent of the working population—39·91 per cent as cultivators and 36·36 percent as agricultural labourers.

2.36 The net area cultivated in 1970–71 was of the order of 6·28 million hectares constituting 48·3 per cent of the State's geographical area. The gross cropped area being 7·53 million hectares, the intensity of cropping works out to 1·2.* Out of the cultivated area, 2·59 million hectares or 41·2 per cent is irrigated. The gross area irrigated is 3·28 million hectares representing 43·5 per cent of the total cropped area. The major sources of irrigation are Government canals, tanks and wells. Government canals provide irrigation facilities to 8·83 lakh hectares which accounts for 34·1 per cent of the total irrigated area. A total area of 8·98 lakh hectares (34·7 per cent of the total irrigated land) is irrigated by the tanks. The area under well-irrigation is of the order of 7·75 lakh hectares while another 0·35 lakh hectares are irrigated from other minor sources like springs, channels, etc.

2.37 The per capita arable land in Tamil Nadu works out to only 0·153 hectare which is far lower than that of several other States. The scope for bringing significant additional area under the plough is limited, nor is there much scope for any large extension of irrigation under major irrigation schemes. Further, agricultural production over a large tract is susceptible to wide fluctuations on account of poor and uncertain rainfall. About 60 per cent of the net sown area depends on rainfall for successful agriculture. These are some of the constraints to agricultural development in the State. Viewed against this background, the main plank in the strategy for agricultural development will be intensive cultivation and increased output per unit area of cultivated land achievable by (1) multiple cropping, (2) introduction of high-yielding variety seeds and (3) improved dry farming techniques.

2.38 The important food crops grown in the State are Paddy, Cholam (Jowar), Cumbu (Bajra) and Ragi. Among pulses, red gram and black gram are cultivated in the State. Sugarcane, groundnut, cotton and chillies are the important commercial crops grown in the State. Crops like potato, onion, tapioca, gingelly and tobacco are also grown.

2.39 Food crops are cultivated in 56·21 lakh hectares representing about 76 per cent of the gross cropped area. And out of this, more than 35 per cent or about 26·36 lakh hectares are under paddy. Cholam is grown in an area of 7·42 lakh hectares. The total area under other crops such as Ragi, Cumbu, other cereals and millets and pulses is 17·32 lakh hectares, while cotton and sugarcane are grown in 3·13 and 1·14 lakh hectares respectively.

2.40. Rice production touched the level of 50·07 lakh tonnes in 1970–71 and this represents about 12·5 per cent of the total rice production in the country. There has been a substantial increase in the productivity of rice during 1961–71, when it

* Intensity of cropping is gross cropped area ÷ net cultivated area.

recorded a compound growth rate of 3·4 iper cent per annum. With 1,974 kgs. of yield per hectare, Tamil Nadu ranks first in India, in productivity of rice.

2.41 Production of Cholam was 5·43 lakh tonnes and productivity 732 kgs. per hectare. Production of other millets—cumbu and ragi were 3·13 lakh tonnes and 3·34 lakh tonnes respectively.

2.42 Groundnut production in 1970—71 was 9·89 lakh tonnes and the yield works out to 1,,004 kgs. per hectare. Cotton production in 1970 71 has been estimated at 3·23 lakh bales. Productivity of cotton in the State increased from 135 kgs. per hectare in 1950–51 to 167 kgs. in 1960–61., 207 kgs. in 1969–70 and 196 kgs. in 1970–71.

2.43 Tamil Nadu accounts for about 7 per cent of the total area under sugarcane in the country and for about 8 per cent of all-India production (in terms of Gur). Sugarcane production (expressed in terms of Gur) was 10·74 lakh tonnes in 1970–71. There has been a steady increase in the productivity of sugarcane during 1951–71. The yield per hectare increased from 6,500 kgs. in 1950–51 to 8,,454 kgs. in 1960–61 and to 9,430 kgs. in 1970–71.

Plantation Crops

2.44 The Plantation industry is confined to the hill areas of the State. The four major crops, viz., tea, coffee, rubber and cardamom cover about 75,000 hectares or 1·25 per cent of the cultivated land in the State and provide employment to 2·5 lakh persons. The industry represents an investment of Rs. 120 crores at replacement value and annually produces crops valued at Rs. 48 crores.

Extent of Mechanisation

2.45 Farm mechanisation in the State has been rather slow. But the farmers, particullarly the progressive among them, have recognised the importance and advantages of mechanisingg agricultural operations. Tractors are slowly replacing the primitive wooden plough. The number of tractors which was only 224 in 1951 increased to 1,450 in 1961. It further rose to 3,278 in 1968 and to 5,254 in 1970–71. Compared with States like Uttar Pradesh, Haryana, Punjab and Rajasthan, the level of mechanisation in Tamil Nadu is rather low.

Economic Infrastructure

Transport

2.46 Tamil Nadu has a fairly well-developed road network, besides the railways which connect important centres in the State with the rest of the country. The major port at Madras and the intermediate ports at Cuddalore, Nagapattinam and Tuticorin (which is being improved as a major port) together cater to the coastal and overseas trade. The four airports at Madras, Madurai, Coimbatore and Tiruchirappalli link the capitals of neighbouring States and other important cities in the country.

Roads

2.47 Tamil Nadu is better placed compared with other States in respect of the intensity of roads, both surfaced and unsurfaced. The total length of roads in Tamil Nadu is estimated to be 73,905 Kms. in 1971,out of which,52,375 Kms. are surfaced and 21,530 Kms. are unsurfaced. A total length of 1,205 Kms. is cement concreted, 23,352 Kms. black topped and 27,818 Kms. metalled. While the entire length of national highways, State highways and major district roads is surfaced, about half of the total length of the roads maintained by Panchayat Unions and Panchayats is unmetalled. These are mostly mud or improvised metalled roads. The important production, marketing and consumption centres in the State are connected by all-weather roads. However, there are some villages without proper access.

2.48 There has also been a perceptible increase in the number of vehicles on the road, during the last decade. The number of motor vehicles of all categories on the road as on March 1971 was 125,274. Motor Cars (including taxi cabs) number 55,920. Buses, catering to the passenger traffic, number about 7,534 and goods-vehicles about 17,600.

Railways

2.49 The total length of railway lines in the State is 3,758 Kms. Out of this, 869 Kms. are broad-gauge lines and 2,889 Kms. metre gauge. In the broad gauge section, only a length of 444 Kms.is of double line. In the metre gauge section, practically the whole length is of single line. The section from Madras Beach to Villupuram, a distance of 163 Kms. is electrified. Over the other sections steam or

diesel traction is used. The passenger traffic and goods traffic have increased considerably during the sixties. Bulk of the goods traffic and a significant portion of long distance passenger traffic are handled by the railways.

Ports

2.50 Tamil Nadu is an important maritime State. At present Madras is the only major port. The intermediate port at Tuticorin is being developed as a major port. Cuddalore and Nagapattinam are the two other intermediate ports. Besides, there are nine minor ports. During 1970–71 the Madras Port handled 6.93 million tonnes of cargo, out of which 3.74 million tonnes were imports and 3.19 million tonnes exports. The important items imported are fertilisers, coal, iron and steel. The exports include iron ore, hides and skins. The passenger traffic is mainly to and from Malayasia. The Tuticorin Port offers tremendous scope for the development of its hinter land. The main exports from this port will be salt, cotton and dried fish. Imports will be coal, fertiliers and machinery. Cuddalore Port, because of its strategic location and the immense potentialities of its hinter land especially the Salem-Neyveli industrial complex, offers bright prospects for development into a third major port on the east coast of Tamil Nadu.

Air ways

2.51 Tamil Nadu is well covered by air services. The airports at Madras, Madurai, Tiruchirappalli and Coimbatore are important centres for air-borne traffic. Madras is connected by air to Bombay, Delhi and Calcutta and also to the neighbouring State capitals such as Trivandrum, Bangalore and Hyderabad. Tamil Nadu has also air links with Sri Lanka from Madras and Tiruchirappalli. The International Services of Air India to Singapore and Far East touch Madras on their outward and inward flights. Two more airports, one at Salem and another at Tuticorin can be advantageously constructed in view of the rapid development of the Steel Plant and the Petro-Chemical Complex.

Power

2.52 Tamil Nadu enjoys a predominant place in the field of power generation in the country. The total installed capacity of hydro and thermal power during 1970–71 was 1365 MW excluding Neyveli Thermal Power Station which has an installed capacity of 600 MW. The output of electricity in the same period was 3,600 million units. Besides, the State purchased electricity from Neyveli, Mysore, Andhra Pradesh and Kerala to the extent of 2,585 million units in 1970–71, in addition to what was generated here.

2.53 Tamil Nadu has given top priority to power development in all its plans. During the First Plan Rs. 30.21 Crores (representing 37.7 per cent of the total plan outlay) was spent on development of power. In the Second Plan Rs. 79 crores, in the Third Plan Rs. 120 crores and during the three Annual Plans Rs. 104.26 crores were spent. In the Fourth Plan, the anticipated expenditure on power development is about Rs. 197·25 crores. The installed capacity increased from a mere 156 MW in 1950–51 to 560 MW in 1961–62 and to about 1365 MW in 1970–71. The per capita power consumption in the State was 130 Kwh. as against 90 Kwh. for All-India in 1970–71.

SOCIAL OVERHEADS

Education

2.54 The State has been giving priority to the promotion of education in the Five-Year Plans. There has been expansion of education at all levels in the last ten years. Education up to S.S.L.C. level has been made free to all since 1964–65 and free education extended to the Pre-University Class including Pre-technical courses from 1969–70. These have greatly facilitated the poor and the less-privileged sections of the society in climbing the educational ladder. The fact that today Tamil Nadu ranks second in the country in literacy with 39·46 per cent of literates, shows the progress of education in the State.

2.55 All the villages, which have a population of 300 and above and which have no elementary school within a radius of a mile, have been provided with a primary school, and free and compulsory education is provided for children in the age-group 6—11. Already 94 per cent of the children in this age group are attending schools and by the end of Fourth Plan 100 per cent enrolment in this age-group will be attained. The enrolment of pupils in the age-group 11—14 at the end of 1970–71 was 55·1 per cent. There are about 31,881 primary

schools (including middle schools) in this State. Nearly 6·5 million pupils in the age groups 6–11 and 11–14 are attending the schools. As much as 50 per cent of the total outlay on education is spent on primary education.

2.56 Nearly 7 lakhs of pupils constituting about 35·3 per cent of the population in the age group 14—17 are studying in 2,635 high schools in the State.

2.57. Tamil Nadu has been a pioneer in starting the Mid-day Meal Scheme by which really poor children get a noon meal. This has gone a long way in preventing massive drop-outs.

2.58 There are now four Universities in the State, of which, one is an Agricultural University. The Annamalai University has an Engineering faculty, and Agricultural faculty besides Arts and Science faculties. The Madras and Madurai Universities together have eight Medical Colleges, 12 Engineering Colleges, 35 Polytechnics, 14 Technical High Schools, 169 Arts and Science Colleges, one Law College and one Veterinary College. The annual intake in all the Medical Colleges for M.B.B.S. course is 1,015, for B.D.S., 35 and for B. Pharm., 60. There are facilities for post-graduate studies also. In the field of technical education, the seven Engineering colleges in the public sector admit 1,578 students annually (1972–73). Besides, there are five other Engineering colleges in the private sector. In the Polytechnics 4,800 seats are available. The total number of students studying in all the Arts and Science colleges during 1971–72 was 1·83 lakhs.

2.59 There are also 26 special Institutions of Higher Education including Oriental Colleges, Physical Education Colleges and Rural Institutes.

Health

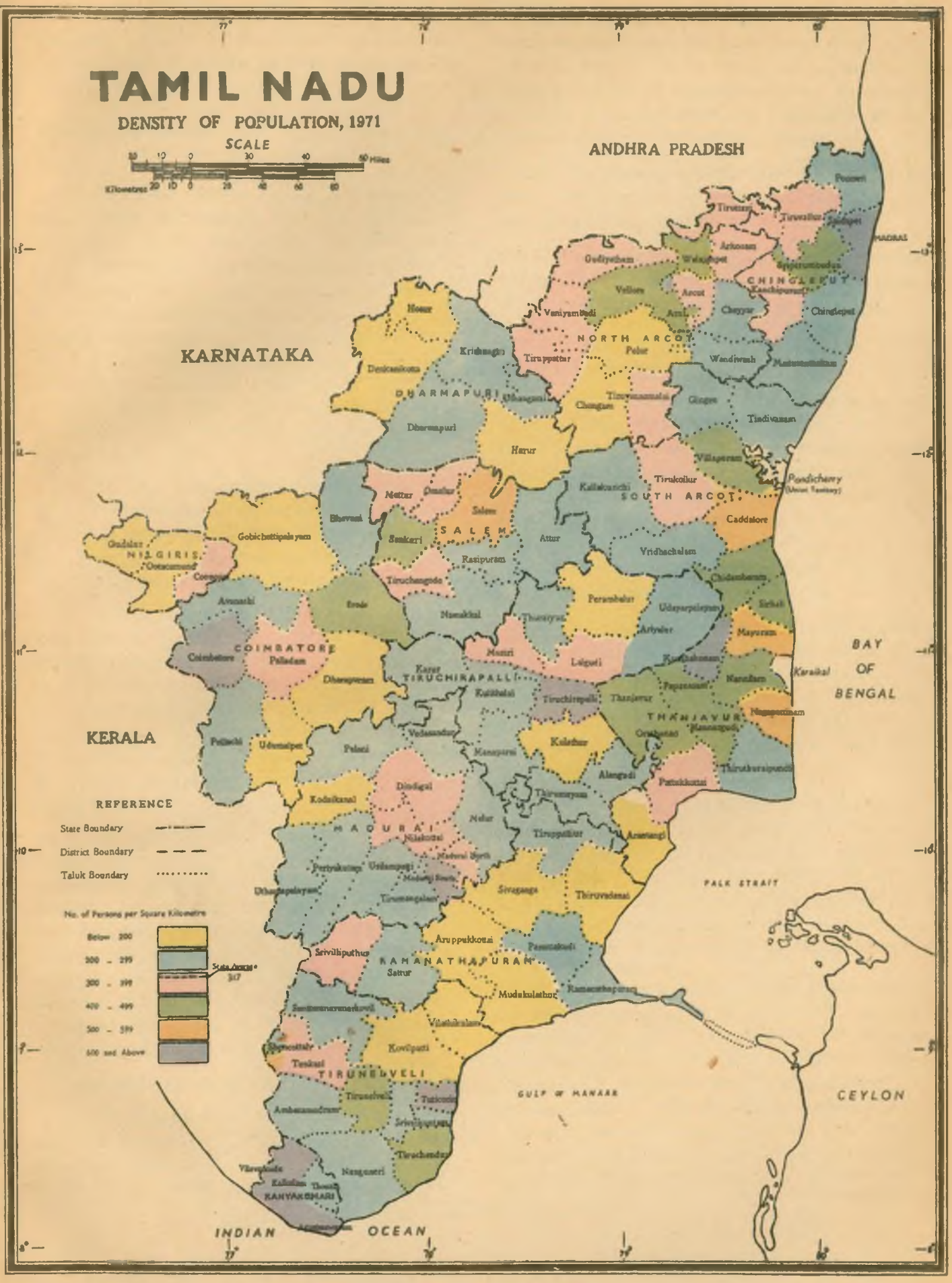
2.60 The State has been attaching the greatest importance to the maintenance of sound health of the people through broadbased and efficient health and medical services by establishing hospitals and dispensaries in rural areas to cover even people living in the remotest villages. The State is also taking effective steps for the control of communicable and other diseases like Tuberculosis, Leprosy and Cancer. Supply of pure and standard drugs is also ensured by the Government.

2.61 Under health administration, Panchayat Union dispensaries numbering about 493 provide health services to the rural people. There are also 112 non-taluk Government hospitals with bed strength varying from 10 to 15, besides 73 Government dispensaries. Each such institution is run by a Medical Officer with supporting para-medical staff. There are 379 Primary Health Centres in 374 Panchayat Unions. About 8 sub-centres are attached to each Primary Health Centre, so that a sub-centre can serve a population of 10,000. Each Primary Health Centre has two wings, viz., General Wing and Family Planning Wing.

2.62 There are 86 taluk-headquarters hospitals. The average number of taluk hospitals in each district is six to eight. These hospitals are managed by a minimum of two medical officers with supporting para-medical staff.

2.63 There are 13 district-headquarters hospitals with bed strength ranging from 150 to 500 and a Siddha wing with 10 beds. These hospitals are equipped with laboratory and X-ray facilities. They also have some specialists, honorary medical officers besides eight to nine medical officers and the District Medical Officer. There are also 20 medical institutions which are attached to the eight Government medical colleges. The total bed strength of these institutions is 12,056.

2.64 Besides the Government-run hospitals, there are a number of private clinics and dispensaries run by private practitioners and voluntary organisations Though these are mostly concentrated in urban areas, doctors are slowly moving to rural area, thanks to the efforts and incentives provided by the Government and the nationalised banks. The doctor-population ratio in the State works out to 1 : 5,000 which compares favourably with other States. The bed–population ratio in Tamil Nadu is 1 : 2,000. The increased medical facilities, both preventive and curative, have greatly helped the people and the incidence of certain epidemics of fatal and communicable nature, like Cholera, Malaria, Small-pox, etc., has been controlled to a large extent. The infant mortality-rate, which was 120.5 per 1,000 live births in 1950–51, has been brought down to 62.5 in 1970. Similarly there has been a marked decline in the death rate also from 17.1 per thousand in 1951 to 11.4 in 1970. The estimated average



(BY COURTESY OF THE DIRECTORATE OF CENSUS OPERATIONS, MADRAS.)

exxpectation of life at birth of males is 52 years and thhat of females 50.5 years in 1970 as compared to 4646·5 and 45.6 years respectively in 1961.

FFinancial Institutions

BBanks

2.65 There are 1,583 branch offices of commercial bbanks (both nationalised and non-nationalised) fuunctioning in the State as on December 1972. OOn an average, one branch covered a population of 2266,500 people in the State as against the national avverage of one office for 37,000 people. The deposits inn these banks (relating to 1,397 reporting banks only) stotood at Rs. 451.92 crores as on June 1972 and the aadvances by these banks amounted to Rs. 528.72 crrores on March 1969. The per capita deposit in TTamil Nadu is Rs. 107 and the corresponding figure foor India is Rs. 143*.

2.66 The chit fund organisations in Tamil Nadu hhave established themselves as part of the trade and ccommerce set up in the State. There were 5,774 chhits functioning in the State as on March 1970 and thhe chit amount accounted for Rs. 26.75 millions.

2.67 Village money-lenders still play a predominaant role in rural areas. Though they charge exxhorbitant rates of interest, many people especially srsmall agriculturists and small traders, go to them foor credit, because of their easy accessibility. Accordinng to a survey conducted by the Directorate of AAgriculture in Thanjavur district, 69 per cent of thhe credit needs of the farmers are still met by village mmoney-lenders.

2.68 The Life Insurance Corporation of India inn the public sector, mobilises the savings on a large-scale and provides cover for the lives of persons and faamilies. Also, it extends credit facilities for developmment schemes like housing, water-supply, etc. DDuring 1969–70 the number of policies was 1.56 lahkhs and the sum assured was Rs. 9,020 lakhs. TThere was an increase of 10.6 per cent in the number offf policies insured and 81.21 per cent in the sum assssured during the decade.

CCo-operatives in Agricultural Sector

2.69 The Co-operative movement has taken a deeep root in the State. There are 5,929 primary aggricultural credit societies in the State. All the vilillages are covered by co-operative societies which meeteett the credit needs for purposes of development of laland through sinking of new wells, purchase of electecttric motors, oil engines, pumpsets, reclamation of laland, soil conservation and purchase of agriculturalrall implements like tractors, sprayers, etc.

2.72.770 The District Co-operative Central Banks, with thi their branches in rural areas, play an active role ile i in mobilising rural savings.

2.72.771 Co-operative marketing societies, numbering abouount 123, act as agents for sale of the agricultura prododduce of their members at reasonable prices.

HUMMAN RESOURCES

2.72.772 The population of Tamil Nadu according to 19 19971 Census was 41.19 millions which accounts for 7 7.5 per cent of India's population. Tamil Naduduu ranks seventh among the States in India with a derdeensity of 317 persons per square kilometer. It ranksikss second in literacy (next only to Kerala) with 39.46.466 per cent of literates. About 69 per cent of the popupuulation live in rural areas. About 37 per cent of ththhe population form the labour force.

2.72.773 The population of the State has steadily been en i increasing since the beginning of this century. Fromomm 19.3 millions in 1901, it more than doubled to 41 411.1 millions in 1971, an increase of 113 per cent over er · the last 70 years. During the decade 1961–71 the g g growth of population in the State was 22.3 per c c cent.

2.72.774 More than a third of the population, about 37.77 777 per cent are in the age group 0–14. The old-age p: ppopulation, i.e., 60 years and above constitutes 5.75 j5 j per cent. There are approximately 70 dependents its s to every 100 persons in the working age-groupupp. This high dependency ratio is one of the limitiitiing factors of economic growth in the State.

2.72.775 A significant section of the population in the w wworking age-group is unemployed for lack of propeopeer opportunities. According to an estimate by ththhe State Planning Commission, a little less than one-fe-fofourth of the labour force was unemployed in the ye yyear 1970–71. The problem of under-employment nt t and seasonal employment is wide-spread since ee e a major portion of the labour force is dependent mainlinhly on the agricultural sector. Measurement

* Source: R.B.I. bulletin April 1973—Supplement on Banking ng g Statistics.

of unemployment and under-employment iss beset with numerous problems, especially in an economy like ours, with its preponderance of self-emplcoyment and production within the household sector. However, judging from the output of educated ppersons from the Colleges and Universities during tthe last few years, and the employment generation in the organised sector (if the statistics of live-regissters of employment Exchange are any indicatiorn), the problem of unemployment seems to be a seriorus one. Massive expansion of education in the recernt past has led to the entry of educated persons in the labour force besides the vast majority of unskilled labour coming into the fold in the normal course. It has been recognised on all hands that the Fivve-Year Plans have not fully solved the problem of unermployment. By all accounts, it is evident that a significant section of the labour force is unutilised and ai considerable portion is under-utilised.

2.76 Intensive cultivation, adopting the new agricultural practices and multiple cropping methods leading to use of more labour and/or finding alternative employment by organising effectively village and agro-based industries, or dispersing industries in the rural areas and extensive public-works programmes will solve to some extent the problem of disguised and open unemployment in villages.

2.77 Productivity of labour, particularly in the agricultural sector is low. This is partly due to overcrowding in this sector. The output per worker in agriculture and allied activities works out to Rs. 1,173 in 1970–71, as compared to Rs. 2,306 in the manufacturing sector and Rs. 4,257 in the service sector. This explains the low level of living of a vast majority of the workers. A shift in the employment pattern with a bias towards the secondary and tertiary sectors will, to some extent, absorb the surplus labour from primary sector.

CHAPTER 3

An Assessment of Planned Development in Tamil Nadu

3.1 Planning is a continuous process and each plan designed to achieve certain specified socio-economic objective represents a distinct milestone in the onward march towards higher standards of well-being. The end of a Five-Year Plan also marks the beginning of the next plan. A careful assessment of the successes or shortfalls of the plan just concluded is therefore essential for the formulation of the succeeding plan. Such an assessment will disclose how the gaps in the earlier plan arose, how they were sought to be closed and what the constraints were, so that they can successfully be overcome in the future plans. While formulating a Perspective Plan for the State covering a span of ten years, it is necessary to bear in mind the past performance of the economy, the present trends and the potential for future growth. An attempt is made in the following few pages to assess the overall progress of the State economy during the last two decades of planned development. The sectoral profiles in Part IV of this volume will give a greater insight into the progress made in respect of each sector in the eariler plans besides bringing to light the constraints that have inhibited growth.

THE FIRST PLAN (1951–52 TO 1955–56).

3.2 Tamil Nadu was ushered into the era of planning along with the rest of the country with the launching of the First Five-Year Plan (1951–56). The First Plan was a consolidation of several development programmes and schemes formulated (and were under various stages of implementation) as part of the Post-War Reconstruction Plan to which were added a number of well-thought-out new schemes. These were all integrated into a well-knit plan of economic and social development embracing all the sectors of the economy.

3.3 The First Plan aimed at creating the base for rapid economic and industrial advancement. Excepting for the slight shortfall in the financial target that plan proved a success, although a moderate one. In any case it laid the foundations for economic growth iin the State. The concept of planning and the resulltant benefits infused confidence among the people iin general and in the Central and State Governments. In particular, the idea that planned development will help solve the problems facing the economyy in a relatively short period received wide acceptance.

3.4 The First Plan provided for a total outlay of Rs. 866.04 crores but only Rs 80.39 crores were spent. Increase of food production assumed importance and agricultural development programmes were given top priority. A sum of Rs. 9.57 crores on agricultural programmes and another of Rs. 50.43 crores on irrigation and power were spent, accounting for nearly 75 per cent of the total outlay. Agricultural (cereals) production increased from 31.63 lakh tonnes in 1950–51 to 45.35 lakh tonnes at the end of the Plan. Rice production rose to 29.55 lakh tonnes from 19.50 lakh tonnes. All this increase was largely due to the programmes implemented under the Plan, helped by favourable seasonal conditions. There was no significant rise however, in the production of non-cereal crops and commercial crops.

3.5 The area under foodgrains went up by 14.14 per cent from 38.94 lakh hectares in 1949–50 to 44.45 lakh hectares in 1955–56. Irrigation facilities were available only to about 8.88 lakh hectares at the beginning of the Plan and this facility was extended to another 0.53 lakh hectares during the Plan period. Sugarcane production remained more or less stagnant at 3.25 lakh tonnes. The production of oilseeds rose only marginally from 8.04 lake tonnes to 8.76 lakh tonnes. There was some improvement in the production of cotton which went up to 3.11 lakh bales by the end of the plan as against 2.26 lakh bales at the commencement of the plan.

3.6 Ass regards power generation, the installed capacity was stepped up by 100 MW from 156 MW in 1950–51 to 256 MW by 1956. The programme

of industrialisation was also initiated with a modest outlay of Rs 1.53 crores on industry and mining. For Transport and Communications Rs. 12.70 crores were spent and this helped to achieve an increase in the road length from 34,115 Kms. in 1950–51 to 38,697 Kms. at the end of the plan period.

3.7 In the sphere of education, there was rapid expansion of primary and secondary education with an outlay of Rs 3.28 crores. The main objectives of health services programme were control of communicable diseases, extension of institutional medical care and increasing the number of medical and para-medical personnel. These objectives were achieved to a considerable extent with an outlay of Rs 6.42 crores.

3.8 The First Plan also initiated a number of structural and institutional changes of a far reaching character. In this respect mention may be made of the nationwide establishment of the National Extension Service and Community Development Project Schemes, land reforms, expansion and strengthening of Co-operative Organisations, and above all, the enlargement of the responsibility of the State in the economic field. During the First Plan period the State income at constant prices increased at 4.2 per cent compound rate per annum as compared with the growth rate of National income of 3.7 per cent.

THE SECOND PLAN (1956–57 TO 1960–61)

3.9 The successful working of the First Plan encouraged the State to formulate a bolder plan for the next quinquennium. The Second Five-Year Plan of Tamil Nadu envisaged an outlay of Rs. 152.27 crores. But the actual expenditure at the end of the plan came to about Rs 187.76 crores. The main emphasis in the Second Plan was on widening and strengthening of the industrial base of the State through power development and increasing the food production to attain self-sufficiency. Power generation and distribution accounted for the bulk of the outlay—as much as Rs 79.15 crores. A considerable amount of Rs 14.08 crores was spent on industry and mining. The expenditure on agricultural programmes was of the order of Rs. 17.13 crores and on Community Development and Co-operation Rs. 37.96 crores. A substantial porttion of the expenditure Rs 27.96 crores was on social services i.e., on Education, Health, Welfare of Backward Classes, etc.

3.10 The Second Plan aimed at increasing food production to 58.36 lakh tonnes by the end of the Plan but could not achieve the target, the output in the final year being only 53.13 lakh tonnes. This short-fall is attributable mainly to the unfavourable seasonal conditions particularly at the end of the Plan period. An additional area of 1.75 lakh hectares was bought under irrigation and the area under food crops increased from 53.33 lakh hectares to 55.23 lakh hectares. During the first decade of planning food grains production increased at 7 per cent per annum.

3.11 The Second Plan witnessed a significant development in power generation and distribution. The installed capacity was more than doubled to 571 MW from 256 MW at the beginning of the Plan. The length of High Tension lines was doubled to 24,200 kms. and the rural electrification scheme was intensified. More than 10,700 villages and hamlets were connected with power and about 85,000 pumpsets were energised during the Plan period. Provision of infrastructural facilities led to industrial expansion. The establishment of industrial estates and the setting up of developed-plots helped the small-scale industries to come up in large numbers.

3.12 There was also considerable expansion in the Social services sector, especially in public health and in education. Two new medical colleges were opened during the Plan period. About, 5,200 beds were added in the hospitals. Primary Health Centres and Family Planning Centres were opened in about 70 blocks which extended medical facilities to the rural areas. Quantitative expansion and qualitative improvement in both general education and technical education contributed to the building up and development of the State's human resources.

3.13 The completion of the Second Plan also marked the end of the first decade of planned development. The two Five-Year Plans contributed greatly to the expansion of the economy and this was reflected in the significant increase in the State income which rose to Rs. 1,129.56 crores in 1960–61.

from Rs. 774.92 crores in 1950–51 (both at 1960–61 prices). During the decade, the State income registered a growth rate of 3.9 per cent compound per annum as against 3.5 per cent annual rate of growth of National Income. The per capita income in the State increased from Rs. 257 to Rs. 335 (at 1960–61 prices), showing a 2.7 per cent compound rate of growth per annum.

3.14 Though the Plan programmes expanded, the employment opportunities did not keep pace with the increase in the labour force. Despite concerted efforts to utilise the manpower fully, there was considerable and widespread unemployment and under-employment among both rural and urban people.

3.15 However, on the whole, the performance of the economy during the first decade was satisfactory in respect of most of the sectors. Basic facilities in irrigation, power and transport which are essential for agricultural and industrial development were greatly expanded. The reorganisation of the agrarian structure, involving the abolition of intermediaries (Zamindary System), protection and improvement of tenancy rights, and the imposition of ceilings on land holding not only helped in increasing agricultural production but contributed also to reducing the chances of exploitation and social injustice in the rural agrarian structure and provided a great measure of security to the tiller of the soil. The introduction of Panchayatraj or democratic decentralisation brought about a welcome change in the structure of administration within the district and in the pattern of rural development. Facilities for education—both general and technical—became much more widespread than before. There was also a significant increase in the number of hospitals and dispensaries and a successful attempt was made to control the spread of communicable diseases. Steps taken to add to the infrastructural facilities like power and roads, the setting up of industrial estates, and arrangements to provide liberal credit facilities though specialised agencies helped in the further expansion of the industrial sector of the economy, particularly during the latter half of the fifties. The State economy also benefited in a large measure by the two Central sector projects, the Integral Coach Factory and the Neyveli Lignite Corporation.

THE THIRD PLAN (1961–62 TO 1965–66).

3.16 The investments during the two Plans led to diversiffication and expansion of the economy which in turn called for a larger outlay in the Third Five-Year Plan. The State formulated a plan envisaging an outlay of Rs. 291 crores. But actually the Plan was substantially over-fulfilled in financial terms and the total expenditure of the Plan aggregated to Rs. 348 crores. More than a third of the outlay was on power. A sum of Rs. 51.92 crores was spent on Agricultural Programmes and the outlay on Cooperation and Community Development Programmes was Rs. 29.03 crores. The Third Plan laid emphasis on the development of village and small industries for which Rs. 22.13 crores were spent. A major portion of the expenditure (Rs. 80.25 crores) was allotted to the Social Service sector. And out of this a substantial portion was spent on General Education (Rs. 34.05 crores) and on Health (Rs. 26.15 crores).

3.17 The Plan sought to achieve a target of 70 lakh tonnes of foodgrains production by the end of the Plan as against 53 lakh tonnes in the base year. But the actual production in the terminal year of the Plan was a little less than that in the base year. Production after reaching 58 lakh tonnes in 1964–65 declined, the next year to 50.60 lakh tonnes. One of the main reasons for the shortfall was the unprecedented drought conditions in the State in 1965–66. Three new irrigation schemes, Gomukhinadhi, Sathanur-III Stage and Chittar-Pattanamkal Schemes were taken up for execution and the first two schemes were completed. These two schemes created an additional irrigation potential of 5,374 hectares. The spill-over schemes completed during the Plan created an additional irrigation potential of 23,188 hectares.

3.18 As regards power development, generation of thermall power was accorded priority, as the excessive dependence on hydel power resulted in frequent power shortage. The Madras Plant Fourth Stage Extension Scheme with installed capacity of 30 MW and the Ennore Thermal station with installled capacity of 340 MW were taken up for execution. Four hydel power schemes with a total installled capacity of 510 MW were also commissioned. The total installed capacity of the Tamil

Nadu grid increased from 571 MW at the end of the Second Plan to 1,070 MW by 1965–66. The first step to correct the imbalance between hydel power and thermal power was taken in this Plan period. Rural electrification programme was also intensified and about 11,150 villages and hamlets were connected with power. Also, there was some appreciable improvement in the Transport and Communication system. The surfaced road length increased from 33,010 kms. in 1961 to 44,100 kms. by 1966 and that of total road length from 44,000 kms. to 65,600 kms. The process of nationalisation of passenger bus transport was hastened during this period and the fleet strength of Tamil Nadu State Transport Department increased from 695 at the commencement of the Plan to 1,256 by 1965–66. The Tuticorin Harbour Project was also taken up in the Central sector.

3.19 The expansion in elementary education in the first two Plans led to an increase in the demand for education at higher levels. In the Third Plan, attention was paid to expand secondary and university education. There was an appreciable increase in the additional enrolment in the age-group 6–11 (11.78 lakhs) and 11–14 (3.75 lakhs). The percentage of enrolment in the 11–14 age group increased to 47.31 per cent in 1965–66 from 32.59 per cent in 1960–61 and in the age group 14–17 it increased to 29.65 per cent from 15.31 per cent during the same period. 36 Arts and Science Colleges, two Medical Colleges and three Engineering Colleges were opened during the Plan period. Considerable progress was achieved in the field of health. The doctor-population ratio which was 1 : 6,700 at the end of the Second Plan improved to 1 : 5,900 by 1965–66. The Primary Health Centres were equipped with adequate medical and paramedical personnel and the family planning programme was intensified.

3.20 The stagnation in the agricultural sector, due to drought conditions in the latter half of the Plan brought down the overall rate of growth of the economy in this five-year period. The State income registered an increase of 2.7 per cent per annum (compound rate) as against the growth of national income of 2.5 per cent per annum during the same period. The Indian economy passed through a period of stress and strains, characterised by droughts, recession and military aggression on the border leading to diversion of resources for defence expenditure. The per capita income witmessed the lowest growth rate of 0.3 per cent (all India) during this period.

The Three Annual Plans (1966–69)

3.21 There was a short pause in the planning process in the country when the Third Plan came to an end. Though the nation as well as the State formulated the Fourth Five-Year Plan (1966–71), the same could not become operational due to several reasons. As for the State, planning continued with limited objectives and moderate outlays on the basis of Annual Plans for three years 1966–67, 1967–68 and 1968–69. A total of Rs. 266.18 crores was spent during the Annual Plan period, 1966–69, in the State. By and large, the programmes under Agriculture were implemented as envisaged with an outlay of Rs. 57.20 crores. In all the three Annual Plans, emphasis was laid on stepping up agricultural production through quick yielding schemes and completion of spill-over schemes in sectors like Irrigation and Power. Minor Irrigation works and rural electrification, particularly energisation of pumpsets, were intensified. There was a significant increase in the area under high yielding varieties and a considerable area was brought under double cropping. Consumption of fertilisers also registered some increase. These programmes led to a substantial increase in agricultural production in the first two Annual Plans, but in 1968–69 production declined by about 3.90 lakh tonnes due to unfavourable seasonal conditions. The constraints on financial resources also slowed down the expansion of social services during the Annual Plans. However the tempo of progress was maintained to some extent in sectors like Education and Welfare of Backward Classes. There was additional enrolment of 4.07 lakhs of pupils in the age-group 6–11, 1.62 lakhs in 11–14 age group and 0.86 lakh pupils in the age group 14–17 during the period covered by the three Annual Plans. The number of colleges in the State increased from 93 in 1965–66 to 126 in 1968–69. A new University was established in Madurai and three Medical Colleges were started in Chingleput, Tirunelveli and Coimbatore. Increasing

attention was paid to family planning programmes. In contrast to this, the sectors which suffered most during the Annual Plan period were Housing, Water Supply, Community Development and Social Welfare.

3.22 Though the economy started recovering in the first two Annual Plans, there was some set back in 1968–69. The State income at 1960–61 prices increased from Rs. 1,288·38 crores in 1965–66 to Rs. 1,434·23 crores in 1968–69, representing a growth rate of 3.6 per cent compound per annum as against the National Income growth of 4.3 per cent per annum during the same period.

THE FOURTH PLAN (1969–70 TO 1973–74).

3.23 The Fourth Five-Year Plan (1969–74) of Tamil Nadu envisaged an outlay of Rs. 623 crores in the State sector. But the Union Planning Commission has approved an outlay of Rs. 502 crores only. The latest indication shows that the total expenditure during the Fourth Plan would amount to about Rs. 557 crores. Besides, a sum of Rs. 866 crores is spent on various projects (mainly under Agriculture and Health) under Centrally-sponsored Schemes. Emphasis is laid on power development and as much as 35 per cent of the total expenditure of the plan would be on power development. An outlay of Rs. 93.48 crores is on agricultural programmes which account for 16.8 per cent of the Plan expenditure. The outlay on general education is likely to reach Rs. 42.57 crores while Rs. 15.53 crores is spent on health and family planning. The Plan has attached considerable importance to water supply and sanitation for which Rs. 32.29 crores would be spent. The anticipated outlay on housing is of the order of Rs. 25.64 crores.

Agricultural Production

3.24 Tamil Nadu has achieved a breakthrough in Agricultural production during the Fourth Plan period. The Plan aims at attaining 79 lakh tonnes of food production in the terminal year 1973–74 as against 63 lakh tonnes at the commencement of the Plan. An outlay of Rs. 100.47 crores was proposed for agricultural programmes. The Plan has laid emphasis on improvement of agricultural productivity through adoption of improved agricultural techniques such as growing high yielding varieties, increasing the dosage of fertilisers, multiple cropping, timely plant protection measures and effective water management. The physical targets like area to be covered under High Yielding Varieties Programme, distribution of primary and secondary seeds, consumption of fertiliser, plant protection measures have been achieved in full. However, due to unfavourable seasonal conditions, food production in the State during 1971–72 was only 73 lakh tonnes, but in the succeeding year the estimate of production is put at 75 lakh tonnes. The anticipated production for 1973–74 is only 74 lakh tonnes—5 lakh tonnes short of the target. An Intensive Development Programme for pulses, oilseeds, cotton and sugarcane has been implemented to step up their production so as to meet adequately the internal demand.

3.25 Pulses production during the Plan period is expected to be doubled and the anticipated production for 1973–74 is 2.01 lakh tonnes as against the target of 2.39 lakh tonnes. Oil-seeds production has also increased considerably and is expected to reach 11.00 lakh tonnes in 1973–74. There has been some improvement in sugarcane (in terms of gur) production also which has risen from 8.85 lakh tonnes in 1969–70 to 10.41 lakh tonnes in 1972–73 and the target of 11.00 lakh tonnes is expected to be achieved in 1973–74. Cotton production also registered appreciable progress. A target of 5.35 lakh bales has been envisaged. The production in 1972–73 has been estimated at 4.00 lakh bales and is expected to rise to 5.35 lakh bales in 1973–74.

Irrigation

3.26 Among the major irrigation schemes the Chittar-Pattanamkal Scheme, the Manimukthanadhi Scheme and also the Parambikulam-Aliyar Project have been completed and brought into beneficial use. The Ramanadhi and Gatanadhi Schemes have also been completed. The work of modernising Vaigai channel has been taken up and is in progress. Of the 9 schemes taken up in the Fourth Plan costing Rs. 15.11 crores, Parappalar and Ponnani Reservoir Schemes are expected to be completed before the end of 1973–74 and the other schemes only in the Fifth Plan period, with

regard to Special Minor Irrigation Programme, the target fixed for the Fourth Plan has been achieved in respect of tube wells, filter point tube wells and energisation of pumpsets.

Animal Husbandry

3.27 The programmes under Animal Husbandry during the Fourth Plan mainly aimed at improving the cattle wealth—the milch animal, poultry and piggery—so as to increase the production of milk, egg and pork. Though a sum of Rs. 8.14 crores has been proposed for various schemes under this head, the expenditure at the end of the Plan is expected to be around Rs. 3.29 crores only. Expansion of livestock farms and fodder development has received special attention. The Intensive Cattle Development Project and the key village centres were revived in 1973–74 ;—Poultry Breeding Programmes and establishment of large chick hatcheries have helped to a great extent increasing egg production. There has been some significant progress in piggery development also.

3.28 Dairying and Milk Supply Schemes emphasised the completion of spill-over schemes of the Third Plan with a view to improve the already existing producing units into viable ones. The expansion work of Madras Dairy designed to handle a quantity of 10,000 litres per day is in progress. A second dairy at South Madras at a cost of Rs. 55 lakhs has been sanctioned and action has been initiated for selection of a suitable site. The Tamil Nadu Dairy Development Corporation was formed in 1972 with a view to step up milk production expeditiously. Yet another important scheme implemented to increase milk production is, provision of loans to individuals and members of milk co-operatives for purchase of milch animals. A total of Rs. 1·25 crores has been disbursed during the Plan. A total of Rs. 2·28 crores was spent on various schemes under dairying during the Plan as against the proposed outlay of Rs. 5·34 crores.

Forestry

3.29 The Plan for the development of forestry visualised an outlay of Rs. 4·73 crores under the State sector and emphasis was laid on developing economic plantations and increasing the area under quick growing species. An additional area of 11,500 hectares is proposed to be brought under plantation—teak, wattle, sandal regeneration, etc., during the Plan. The likely achievement is expected to be of the order of 12,088 hectares and the over-fulfilment is due to the impressive progress recorded in expanding the area under wattle plantation. The scheme under plantations of quick growing species, such as eucalyptus, bamboo, etc., envisaged planting of these species over an area of 12,000 hectares. Significant progress has been made in this respect and an estimated area of 13,727 hectares has been planted with these quick growing species. Rubber plantations would be raised in an area of 740 hectares during 1969–74. The total expenditure on forestry during the Plan would be around Rs. 3·99 crores. The Cinchona Development Programmes comprise of developing high quinine and quindiline yielding strain of cinchona by vegetative propagation of cultivation of medicinal and aromatic plants.

Fisheries

3.30 The Fisheries Programmes under the Fourth Plan, were formulated with a view to increase marine fish production to 3·00 lakh tonnes and inland fish production to 2·00 lakh tonnes. A provision of Rs. 10·09 crores has been made for various schemes. Important among them are supply of mechanised fishing boats and nylon nets to promote deep-sea fishing. Under Mechanisation Scheme, a target of constructing 1,000 boats departmentally and 275 boats by co-operatives has been proposed. Construction of 725 boats has been completed in the first four years of the Plan and the target is expected to be fulfilled by 1973–74. About 41·36 tonnes of nylon twine have also been supplied to the fishermen during 1969–72 on loan-*cum*-subsidy basis. Exploratory survey work in deep-sea fishing and coastal fishing has been taken up and is in progress. Though four trawlers were allotted to Tamil Nadu by the Government of India, there was some delay in getting them from the manufacturers and only two trawlers were put in operation in 1972. Two more trawlers were expected to be delivered by the middle of 1974. The survey of in-shore fishing in the Kanyakumari region commenced in 1971–72 with the help of 30 boats.

Industries

3.31 The Fourth Plan took note of the lopsided industrial development in the State, both spatial and in respect of the types of manufactured goods, and

attempted to bring about a balanced development through dispersal of industries with emphasis on location of industries in backward areas and diversification of industries particularly in the field of electronics, plastics, chemicals, fertilisers, the development of which in the State has not been significant. Private enterprise has contributed greatly to the industrial development of the State and the State Government extended necessary help to the private sector by providing infrastructure facilities, cheap power, credit facilities, etc. Apart from continuing its incentives to private enterprises, the State has embarked on its own for the first time in the development and promotion of large sized industrial units, through the Tamil Nadu Industrial Development Corporation. The two fully State-owned enterprises under the TIDCO, viz., the Continuous Steel Casting Plant at Arkonam which was set up at a cost of Rs. 8 crores and the Alangulam Cement Plant set up at a cost of Rs. 4 crores came into operation. The State has also given a lead in fostering the concept of a joint sector and the State Government through Tamil Nadu Industrial Development Corporation has participated in the preference and equity capital of the Southern Petro Chemical Industrial Corporation, Tuticorin, one of the biggest fertiliser plants in the country located in an industrially backward region of the State. The estimated cost of this project is Rs. 71 crores. This is expected to give a fillip to the industrialisation of the southern districts. Besides, a large petro-chemical complex is proposed to be developed in this region. The Tamil Nadu Industrial Development Corporation has also received Letters of Intent from 13 industrial ventures. These industrial projects will be implemented either as joint sector projects or as wholly State-owned ventures. The Tamil Nadu Industrial Development Corporation has in addition applied to the Government of India for Letter of Intent for 11 other industrial projects.

3.32 Another important move in the direction of Government participation in industrial development was the modernisation of sick textile mills taken over by the Tamil Nadu Textile Corporation but the provision of Rs. 2 crores only for this purpose was found to be inadequate. The allocation of Rs. 10 crores for the Salem Steel Project was not utilised as the project has been taken over by the Central Government to be implemented as a central sector project. Though the speed with which the project is being implemented is rather slow, considerable progress has been made and the State Government has been extending all necessary help particularly in the matter of acquisition of land for the project. The allocation of Rs. 5 crores by the Tamil Nadu Industrial Investment Corporation has been utilised only to the extent of Rs. 3 crores because expansion schemes alone were implemented by the existing industrial units in the private sector and there were not many new industrial projects calling for sizable assistance in the form of direct subscription to equity and perference share and loans. The State Industries Promotion Corporation was set up in 1971 with a view to help promotion of industries in backward areas, by giving financial assistance, providing locational guidance service for setting up of industrial units as also for implementing the incentive schemes of the State Government. Besides, the State Government has actively helped private enterprise to set up industries in the State (particularly in the backward districts of Ramanathapuram and Dharmapuri and also in the neighbourhood of Madras City). Mention may be made of the establishment of a Carbon Black Unit of Kamanis, Nagpal Ambadi Unit, to manufacture transformer oil and speciality oil, and the Nylon Tyre Cord Unit of DCM. The State Government have been directly responsible for attracting these major investment units to Tamil Nadu through offering land and other facilities and by providing other incentives. However, industrial production in the State was affected to a large extent by frequent labour unrest, although the State Government has taken all necessary steps to bring about industrial peace. Also, power shortage in the latter period of the Plan, greatly affected industrial production, leading to lay off in many factories. In fact, the two major problems facing the industries in Tamil Nadu at present are power shortage and labour unrest. The State Government is doing its best to augment the power supply and also to bring about a healthy relationship between employees and employers.

3.33 In the small-scale sector also, some notable achievements have been made. The Tamil Nadu Small Industries Corporation which is a departmental undertaking reached the break-even point in 1971 and has made considerable progress towards diversification of production. This Corporation was established in 1970 to assist the small-scale sector by means of a wide range of services from financial

assistance, distribution of raw materials and consulting services to export promotion. Since the Second Five-Year Plan period, the State has devoted special attention to providing infrastructure facilities, particularly through the establishment of industrial estates. The Fourth Plan proposed to establish 10 conventional industrial estates besides functional industrial estates with a view to develop certain sophisticated and special types of industries like electronic instruments, etc. The small-scale sector has taken advantage of the assistance provided by the State and other institutional agencies and of the liberal credit facilities offered by nationalised banks. There has been significant development in the small-scale industries sector in the State during the Fourth Plan period.

Power

3.34 With regard to power development, the Fourth Plan accorded priority to the completion of spill-over schemes. The Plan aimed at increasing the installed generation capacity to 2,710 MW by 1973–74 from the base level of 1,570 MW. A provision of Rs. 169·78 crores has been made for power sector in the Plan but the actual expenditure during the Fourth Plan period is expected to be of the order of Rs. 173·88 crores. Besides, Rs. 40·47 crores was spent on rural electrification, outside the Plan expenditure. The Fourth Plan added a total of 725 MW to the installed generation capacity of the State as against the targetted 1,140 MW. The shortfall was mainly due to non-completion of three hydro-electric schemes in time. Also three small thermal units with a total installed capacity of 41 MW were closed down during 1972–74. The installed capacity of the Tamil Nadu grid by the end of the Plan is expected to be around 2,254 MW. There was substantial shortfall in power generation in the State during the latter half of the Plan due to failure of monsoon and water shortage. Efforts are now being taken to avoid recurrence of a similar difficult situation. A total of 4,321 towns and villages have been connected with power and about 25,277 hamlets electrified. A significant achievement is the energisation of a record number of 2·75 lakhs of pumpsets making a total of 6·85 lakhs of pumpsets energised in the State.

Transport

3.35 The Fourth Plan period registered significant achievements in the development of the transport sector, both in road development and in road transport. The Plan laid greater emphasis on the development of roads in agricultural areas and drought-affected and backward areas. The Plan proposed to increase the road mileage to 77,947 Kms. by 1973–74 as against 65,016 Kms. at the beginning of the Fourth Plan. The road mileage has already reached 76,840 Kms in 1972–73 and it is expected that by the end of March 1974, the target will be fulfilled. The Plan has also laid emphasis on widening of roads, construction and widening of bridges and connecting of missing links. Substantial progress has been made in all these aspects. Special attention is being paid to the development of the network of roads in the metropolitan area. The construction of a flyover in the city, the second of its kind in India, is an important achievement in the direction of improving and modernising metropolitan transport facilities. The foundation for the Pamban bridge has also been laid and the work has already started. A beginning was made in the development of link roads in the Cauvery command area. Considerable progress has been made in the improvement of panchayat union and district roads.

3.36 In the road transport sector, a notable event was the nationalisation of the four big private fleet operating companies in the State and the formation of four State owned Transport Corporations in 1971–72. Two more Transport Corporations were formed in 1973. The State has made rapid strides in expanding the scope of Government enterprise in this sector and in enlarging its responsibility in providing one of the essential services to the people. The nationalised transport industry now runs more than 3,000 buses out of a total of 9,000 buses plying in the State and carry nearly 18 lakh passengers a day.

Education

3.37 Educational programmes under the Fourth Five-Year Plan marked a significant advance over the previous Plans. In size, it exceeded the outlays of the first three Plans put together and as regards approach, it made a concerted effort to improve the content of education at all levels. While the previous Plans concentrated on the expansion of educational facilities at the primary, middle, and high School levels, the Fourth Plan laid emphasis on the expansion of educational facilities at the Collegiate

level. The more important schemes implemented during the Plan period are opening of Model High School, Establishment of Evaluation Unit, Curriculum Development Wing and Establishment of the State Institute of Education. A total outlay of Rs. 53·17 crores for general education and Rs. 6·59 crores for technical education was proposed and the likely spendings under these heads are expected to be Rs. 42·57 crores and Rs. 5·86 crores respectively. The Plan envisaged cent per cent enrolment in the 6–11 age-group by the end of the Plan, but could achieve only 90·5 per cent enrolment. In the age-group 11–14, 80 per cent enrolment has been aimed at but the achievement is much below the target. It is estimated that only 52·2 per cent of children in this age group are attending the schools. About 33·2 per cent of children in the age-group 14–17 are attending the school in 1972–73. There has been considerable expansion in the collegiate education and 56 new Arts and Science Colleges have so far been opened since the commencement of the Fourth Plan. Additional sections and new degree courses have also been started in a number of colleges. Starting of correspondence courses in Madurai University and evening courses in about 34 colleges of the Madras University provide opportunities of continuing education for employed persons. The Tamil Nadu Text-Book Society was set up in 1970 to implement the policy of nationalisation of text-books and it had made substantial progress. With regard to technical education, the Plan emphasised the importance of improving the quality of technical education rather than opening of any new institution. The schemes implemented during the Fourth Plan mainly aim at stabilising and strengthening the institutions already started by providing additional instructional facilities like buildings, equipments, staff, etc. There has been some singificant improvement in the quality of education made possible by revision of syllabi, curricula, training of teachers in industry, etc.

Medical and Health Services

3.38 There has been considerable expansion in the medical and health services during the Fourth Plan period. The progress in the health sector during the annual Plan period was greatly affected because of paucity of resources and hence larger provisions had to be made for health services in the Fourth Plan. Improvement of facilities in medical colleges and teaching hospitals, strengthening of primary health centres and opening of new primary health centres in 65 blocks which were not served by the Public Health Centre were given priority in the Plan. An outlay of Rs. 17·32 crores was proposed for health and family planning programmes under the State Sector and Rs. 41·76 crores under Centrally-sponsored schemes. The likely expenditure of these programmes under the State Sector is expected to be of the order of Rs. 15·33 crores. A total of 4,322 beds was proposed to be added in the Government hospitals and dispensaries, but actually 1,223 beds were added. Construction of hospital buildings and hostels was undertaken in the campuses of the new medical colleges at Chingleput, Tirunelveli and Coimbatore. The teaching hospitals were provided with additional facilities such as starting of new departments, additional accommodation, expansion of out-patient block, etc. The district headquarters hospitals and taluk headquarters hospitals were equipped with E.C.G. apparatus and X-ray plants. Construction of buildings for primary health centres was also undertaken in about 22 blocks. The annual intake in the medical colleges for M.B.B.S. Course was reduced from 1,185 to 1,075 in 1971–72 to provide better training facilities. But the Plan laid emphasis on training para-medical personnel like nurses, pharmacists, etc. The Fourth Plan also aims at improving the doctor population ratio to 1 : 4,600 by 1973–74 compared with 1 : 5,900 at the end of the Third Plan. The present position is estimated to be 1 : 5,000.

3.39 The Family Planning Programme has been implemented effectively through the Rural Family Planning Welfare Centres and sub-centres attached to Primary Health Centres. 9·00 lakh sterilisation operations and 5·85 lakh I.U.C.D. insertions were contemplated for the Plan period. A total of 6·5 lakh sterilisations and 1.5 lakh I.U.C.D. insertions had been done by the end of 1972 and it is expected that the target will be fulfilled by the end of 1973–74.

3.40 Increasing importance is attached to the development of the indigenous medicine system and control of communicable diseases during the Plan.

Water-Supply and Drainage

3.41 The successive Five-Year Plans laid emphasis on the provision of protected water-supply to rural and urban areas. The Fourth Plan attached even greater importance to this need of the masses. A Water Supply and Drainage Board (TWAD) was set up in 1971 to implement the schemes expeditiously. About 82 schemes—79 water supply (new and improvement) schemes and three drainage schemes were undertaken during the first four years of the Plan mostly with financial assistance from the Life Insurance Corporation of India. The Veeranam Project, a major scheme aimed at augmenting the city water supply, has also been undertaken, and has made substantial progress. About Rs. 6.34 crores were spent during 1969–71 for rural water supply schemes. In 1972–73 and 1973–74 an Accelerated Programme of Rural Water-Supply with cent per cent assistance from Government of India was implemented at a cost of Rs. 3.00 crores to provide water-supply to permanently disadvantaged areas.

Housing

3.42 The State has evinced keen interest in relieving housing problem in urban areas and through expanding the activities of the Housing Board, it has made considerable progress towards achieving that aim. A total of 1,600 flats under L.I.G. Housing Scheme, 1,560 flats under M.I.G. Scheme and 2,931 flats under Government Servant's Rental Housing Scheme would be constructed by the Housing Board during the Plan period. 414 acres of land were acquired and developed for construction of houses in the first two years of the Plan. During 1971–73, 220 acres were acquired and the areas are being developed. The Slum Clearance Board was set up in 1970 to tackle the problem of slums and to provide the slum-dwellers with modern hygienic accommodation. This would involve an outlay of Rs. 8.00 crores in the Fourth Plan period. The Board has done a good job in its three years of existence and has completed construction of 4,590 tenements. Construction of another 11,296 tenements is in progress. For rural areas, loan facilities are extended to individuals for construction of houses up to a maximum of Rs. 4,000. House-sites are allotted free of cost to rural landless people.

Town Planning

3.43 The Town Planning and Urban Development Programmes stress the importance of orderly development of urban areas. Regional Plans have been formulated and Master Plans were prepared for 19 towns during 1969–73 and the work in respect of another eight towns is in progress. The Tamil Nadu Tourism Development Corporation which was set up in 1972 has implemented a number of schemes to improve the facilities in tourist spots to attract more number of tourists. Construction of rest houses in hill stations, introduction of package tours are some of the important schemes.

Welfare of Backward Classes

3.44 The weaker sections of the society, viz., the people belonging to Scheduled Castes, Tribes, Backward Classes and the women and children, particularly the poor among them have greatly benefitted by the schemes implemented to promote the welfare of Backward Classes and Social Welfare. Mention may also be made of the important schemes such as pre and post-matric scholarships, supply of bulls, subsidies for sinking irrigation wells, supply of improved tools and implements, formation of milk co-operatives, allotment of house-sites to Harijans in rural areas, nutrition programme for pre-school children and pregnant mothers, etc. These programmes have helped the poorer people by giving them easy accessibility to education and by providing the means to acquire some amount of economic independence.

State of the Economy

3.45 The State's Fourth Plan envisaged a minimum growth rate of 5 to 6 per cent in the State Domestic Product during 1969–74. The State income (at 1960–61 prices) in the year 1968–69 has been estimated at Rs. 1,410.43 crores and the per capita income at Rs. 362. There has been considerable improvement in the economic development of the State during the first three years of the Plan when the State income registered a growth rate of 5.5 per cent compound per annum, with 1968–69 as base. But the State's economy passed through a period of difficulties during the latter half of the Plan particularly in the industrial sector owing to unprecedented power shortage. Agricultural production was also affected although to a lesser extent

during 1972–73. There were also sporadic instances of a labour unrest, which was partly responsible for the decline in industrial production. The quick estimates of the Department of Statistics put the State income figures at Rs. 1,677.74 crores (at 1960–61 prices) for the year 1972–73. This shows a growth rate of 4.4 per cent compound per annum, in the State income during 1969–73. However, the prospects of the agricultural sector for the current year 1973–74 appear bright. Thanks to the favourable monsoon, substantial increase in foodgrains production is expected. The power position has also improved, and the industrial sector has recovered from the setback, notwithstanding the marginal power cut.

3.46 In the employment front, despite the State's earnest efforts to solve the problem of unemployment, there has not been any significant improvement. Unemployment and underemployment continue to be widespread in rural areas as well as among the educated. The number of persons seeking jobs, in the live registers of the Employment Exchanges shows a steep increase from 354,924 in March 1969 to 464,040 in November 1972. The expansion of employment opportunities in the organised sector has not kept pace with the entrants to the employment market. Though the Government has implemented a number of crash programmes and numerous other schemes to increase the opportunities for self-employment, they have helped in easing the problem only to a very limited extent.

A PREVIEW OF THE PROBLEMS AND OPPORTUNITIES AHEAD

3.47 This brief review of planned economic progress in Tamil Nadu in the past twenty-three years brings out the achievements in certain areas of development as well as some gaps and shortfalls. It is to the latter that special attention is to be devoted in the next ten years. The most serious of these and the one that calls for immediate action is the problem of power supply. The details regarding the possible gap that may emerge between the demand for power and the supply of it in the Perspective Plan period are furnished in the chapter concerned. It is sufficient here to emphasise the need for giving top priority to power development. Closely related to this is the need for furnishing the required infrastructure and other facilities in addition to power development to the major industries in the State likely to come up in the next few years. This would comprise transport and marketing facilities, adequate supply of resources like water, coal and raw materials, the development of urban areas, town planning and the like. Due attention is to be given to these requirements, if the State is to take full advantage of the new phase of industrial advancement. As regards the agricultural sector which accounts for nearly one-third of the State's output, future progress depends mostly on a shift in favour of commercial crops, dry farming and better land utilisation methods. One constraint in the matter of agricultural production which has already manifested itself and which is likely to assume disconcerting proportion in the Perspective Plan years is inadequacy of water supplies. This calls for special efforts to assess the potentialities of ground water resources in the State and find out satisfactory methods of exploiting the available resources.

3.48 The socio-economic problems of poverty and unemployment continue to be grave. These are a matter of concern for the State as well as for the nation as a whole. If economic development is to be meaningful and if the vast majority of the poor in the State are to benefit by economic planning, it is of the greatest importance to formulate and implement specific measures to relieve distress among the lowest income groups and bring down the level of unemployment to a tolerable minimum limit. The fact that this problem has engaged the serious attention of the Union Government strengthens the hope that measures taken in this regard by the State would have the full support and encouragement of the Union Government.

TABLE 3.1

Investment during the Five-Year Plans (State Sector)

(Rupees in crores)

Heads of Development	*First Plan* 1951–56	*Second Plan* 1956–61	*Third Plan* 1961–66	*Annual Plans* 1966–69	*Fourth Plan* 1969–74 *(Anticipated)*
(0)	(1)	(2)	(3)	(4)	(5)
1 Agricultural Programmes	9·57	17·13	51·02	57·20	93·48
2 Community Development and Co-operation	0·11	15·37	29·03	12·22	18·18
3 Irrigation and Power	50·43	96·71	150·66	116·80	226·87
4 Industry and Mining	1·53	14·08	23·73	16·56	37·12
5 Transport and Communication ..	2·70	5·52	11·74	10·44	31·36
6 Social Services	16·05	37·96	80·25	52·50	148·04
7 Miscellaneous	..	0·99	0·72	0·46	2·54
Total	**80·39**	**187·76**	**347·15**	**266·18**	**557 59**

Source : (1) Economic Appraisal.
(2) Note circulated by the State Planniingg Commission (for Col. 6).

TABLE 3.2

Expansion of the Economy, 1950–1971

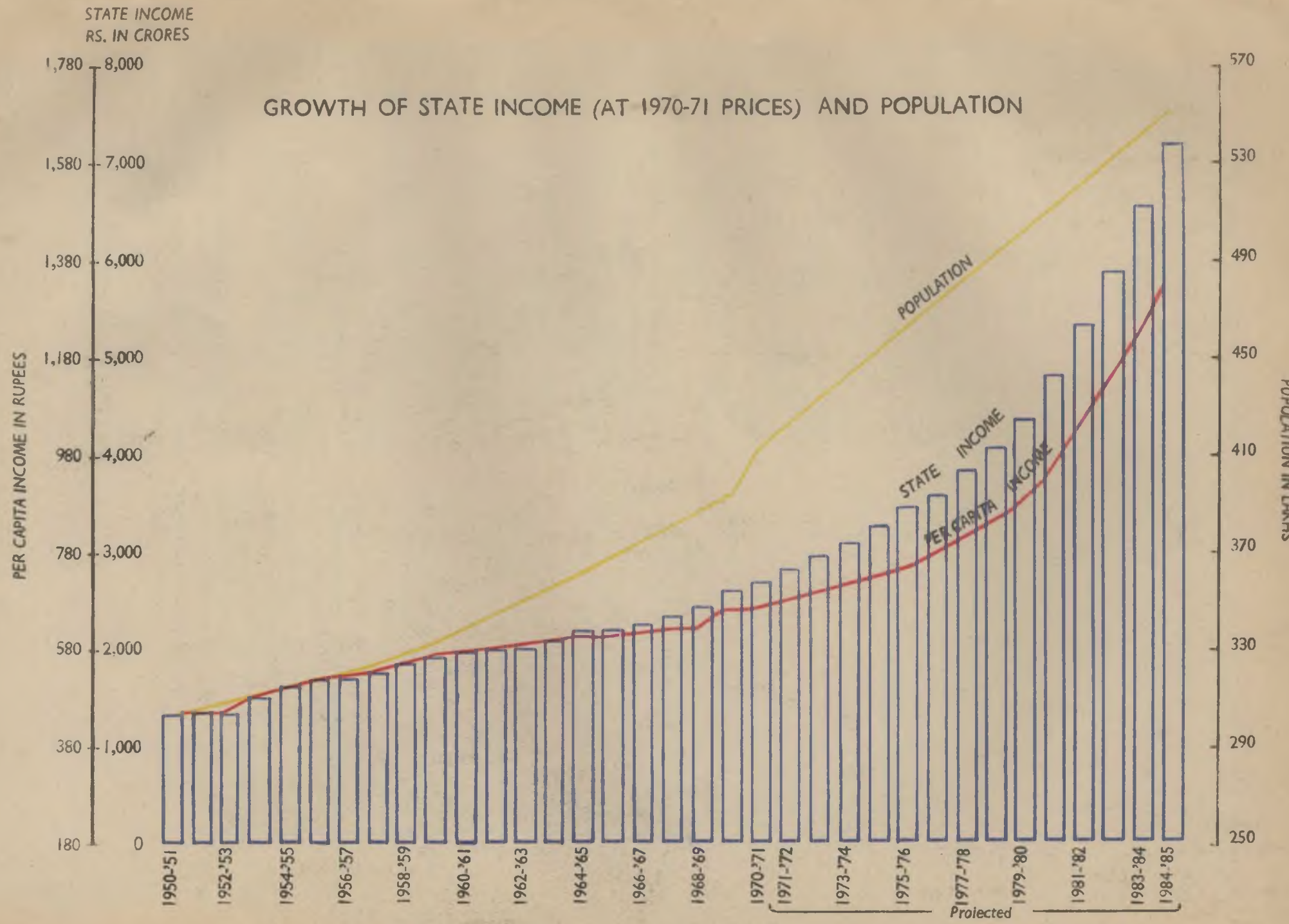
Serial number and name of item	*Unit*	1950–51	1960–61	1970–71
(0)	(1)	(2)	(3)	(4)
1 State income (at 1960–61 prices) net State Domestic Product	Rss. in crores.	774·92	1129·56	1598·81
2 Per capita income (at 1960–61 prices) ..	In Rs.	257	335	389
3 Population	In '000	30,119	33,687	41,199
AGRICULTURAL PRODUCTION				
Food grains				
1 Rice	In '000 tonnes.	1,931	3,559	5,303
2 Other Cereals	Do.	1,212	1,727	1,603
3 Pulses	Do.	70	114	124

(0)	(1)	(2)	(3)	(4)
Commercial Crops				
1 Sugar cane (gur)	In '0000 tonnes.	330	686	1,144
2 Cotton	'0000 bales.	226	374	397
3 Ground nut	'0000 tonnes.	782	1,057	917
4 Tobacco	Do.	23	29	24
INDUSTRIAL PRODUCTION				
1 Sugar	'0000 tonnes.	92	130	299
2 Hydrogenated oil (Vanaspathy)	Tonnes.	NA	12,790	21,852
3 Coffee	'0000 tonnes	NA	6,738	7,524
4 Cotton yarn	Do.	NA	128	160
5 Staple Fibre Yarn	Tonnes.	NA	6,459	25,944
6 Tyres (giant and cycles)	'0000 Nos.	NA	2,003	9,051
7 Super Phosphate	Tonnes.	NA	1,02,004	1,43,940
8 Caustic Soda	Do.	NA	53,886	1,11,948
9 Safety Matches	'0000 Gross Boxes.	NA	21,690	41,022
10 Cement	'0000 tonnes.	NA	1,187	2,799
11 Typewriters	Nos.	NA	4,363	10,272
12 Power Transformers	'0000 kva.	NA	331	1,303
13 Motor Cycles	Nos.	3,029	4,682	10,428
14 Bicycles	'0000 Nos.	NA	276	345
EDUCATION				
1 Number of Elementary (Lower and Higher) Schools	No.	NA	23,103	27,421
2 Number of Secondary Schools	No.	NA	1,325	2,609
3 Number of pupils in Lower/Higher Elementary Schools	No.	NA	28,87,538	46,13,655
4 Percentage of enrolment in age groups—				
6—11	Per cent to total population in that age group.	NA	70·25	94·13
11–14	Do.	NA	32·59	55·10
5 Number of Arts and Science Colleges ..	No.	NA	57	161
6 Enrolment in Arts and Science Colleges ..	No. of students.	NA	44,793	1,65,856
7 Number of Medical Colleges	No.	3	6	9
8 Number of Scholars in Medical Colleges ..	No.	2,337	4,131	9,671
9 Number of Engineering Colleges	No.	7	10	12
10 Number of Scholars in Engineering Colleges.	No.	1,905	4,818	10,751
11 Number of Agricultural Colleges	No.	1	2	2
12 Number of scholars in Agricultural Colleges.	No.	455	608	1,008

(0)	(1)	(2)	(3)	(4)
HEALTH (GOVERNMENT INSTITUTIONS ONLY)				
1 Number of Primary Health Centres/Hospitals.	No.	784	931	7,369
2 Number of Doctors	No.	NA	NA	870
3 Number of Nurses	No.	NA	2,721	4,601
4 Number of Hospital beds	No.	NA	24,063	36,954
TRANSPORT				
1 Length of roads (Total)	Kms.	34,115	44,019	73,905
Surfaced	Kms.	22,634	33,061	52,375
Unsurfaced	Kms.	11,481	10,958	21,530
2 Number of motor vehicles on road (all categories)	No.	33,505	55,356	1,25,274
3 Length of railway lines route Kilometres (total)	Kms.	3,565	3,599	3,758
Broad-gauge	Kms.	845	862	869
Metre-gauge	Kms.	2,720	2,737	2,889
POWER				
1 Installed capacity (total)	MW	156	571	1,965
Hydro	MW	104	459	1,114
Thermal (including Neyveli).	MW	52	112	851
2 Output (including Neyveli)	Million Units.	630	2,167	5,121

PART II

Objectives


GROWTH OF STATE INCOME (AT 1970-71 PRICES) AND POPULATION
STATE INCOME RS. IN CRORES
PER CAPITA INCOME IN RUPEES
POPULATION IN LAKHS
1,780
1,580
1,380
1,180
980
780
580
380
180
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
570
530
490
450
410
370
330
290
250
POPULATION
STATE INCOME
PER CAPITA INCOME
1950-'51
1952-'53
1954-'55
1956-'57
1958-'59
1960-'61
1962-'63
1964-'65
1966-'67
1968-'69
1970-'71
1971-'72
1973-'74
1975-'76
1977-'78
1979-'80
1981-'82
1983-'84
1984-'85
Projected

CHAPTER 4

Doubling of the Per Capita Income and the Model

ESTIMATE OF INVESTMENT

4.1 If the target of doubling the per capita income* is to be attained at the end of the Perspective Plan period, i.e. 1983-84, it is necessary to step up appreciably the rate of investments—sectoral and overall—in the course of the ten years 1974–75 to 1983-84. The per capita income of 1970–71 was estimated at Rs. 654† and the doubling of it would mean Rs. 1,308 per head in 1983-84 at 1970-71 prices The population of Tamil Nadu in 1970–71 was 412 lakhs.‡ Taking into account the present birth rate which is lower than the rate for India as a whole (35 per 1,000 against 42 per 1,000), the impact of the family planning programme which would result in a decline in the general fertility rate, and the mortality and migration trends, the future population of the State is estimated at 440 lakhs in 1973–74, 489 lakhs in 1978–79 and 537 lakhs in 1983–84.

4.2 The population of the State in 1983-84 multiplied by the desired per capita income of that year would give the total income required in the target year (i.e. 537 lakhs × Rs. 1,308 = Rs. 7,024 crores). This is to be compared with the State income figures in 1973–74 in order to estimate the absolute income increase needed in the Perspective Plan period. Estimates of income made by the Directorate of Statistics for the three years 1970–71 to 1972–73 show an annual income increase of a little less than 5 per cent. Assuming that the average increase will be 5 per cent a year in the two years 1972–73 and 1973–74, the income in the latter year works out to something more than Rs. 3,000 crores. The difference between this amount and the desired income in the target year, namely Rs. 7,000 crores is roughly Rs. 4,000 crores and this increase in absolute terms has to be achieved over the ten year period.

4.3 It would be possible to estimate the investment required in order to realise the income targets. On the basis of the observed relationship between investment and income generated in the different sectors of the economy the Incremental Capital Output Ratios for the Tamil Nadu economy have been calculated and are presented in the Table below :—

TABLE 4.1

Incremental Capital Output Ratios in Tamil Nadu Economy

Sector	*ICOR*	
	Fifth Plan	*Sixth Plan*
(0)	(1)	(2)
1. Agricultural Production ..	1·87	1·20
2. Animal Husbandry, Fisheries and Forestry.	1·46	1·00
3. Mining and manufacturing ..	5·45	4·00
4. Electricity	14·66	14·00
5. Small Enterprises	0·80	0·60
6. Transport and Communications.	3·44	3·40
7. Other Services	2·63	2·00
Aggregate Ratio ..	2·90	2·25

4.4 These ratios, including the overall one, are not likely to remain constant over the period. They would change according to the pattern of investment adopted, technological changes and improvements in the quality, efficiency and productivity of the factors as well as the structural and organisational changes in the economy. In fact, in a low income economy where development is planned, it would be desirable to bring about a gradual fall in the ratios which implies, in general, a better utilisation of the scarce resources of the country. It is expected that in the course of the next six or seven years, heavy investments in economic overheads and in some major industrial complexes will be made by the Central

* Per capita income $= \frac{\text{Net State Domestic Product}}{\text{Population.}}$

† Source : Directorate of Statistics, Government of Tamil Nadu.

‡ Source : Director of Census Operations, Madras.

Government—Kalpakkam, Manali, Tuticorin and Salem. The gestation period for these projects is bound to be long. But against this has to be set the fact that an effort will be made by the State to devote special attention to quick yielding investments in agriculture and rural industries and also to reduce as far as possible the margin of existing idle capacity in major industries in the State. Hence all in all, it is reasonable to presume that the overall ratio of 2·9 : 1 will hold good for the Fifth Plan period.

4.5 However, it is likely that with the completion of the heavy investment projects mentioned earlier, and with the commencement of returns from such investments which may be expected to take place in the Sixth Plan period, the returns per unit of capital for the economy as a whole will rise. In fact, the strategy of the Plan in respect of investment by the State Government (as against direct Central investment) would be to assign an important role to those projects and schemes whose gestation period is likely to be short and whose employment potentialities and capacity to yield higher returns in the short run are great. There will also be further intensive utilization of capital, labour and land resources and the capital output ratio may be expected to fall. The ratio 2·25 : 1 is therefore assumed for the latter part of the Perspective Plan period.

4.6 Thus, given the capital output ratios and the required income increase, the investment requirements in the Fifth and Sixth Five-Year Plan periods can be worked out tentatively. Usually a time lag of one year is allowed between investment and income growth. Thus investment made in the five years of the Fifth Five-Year Plan has to be related to the income increase in the five-year period beginning from the second year of the Fifth Plan and ending with the first year of the Sixth Plan. A similar interpretation is to be made of the investment income relationship in the Sixth Five-Year Plan also. By applying the capital output ratio to the investment made in a particular year, the income increase in the next year as well as the total income level reached at the end of that year can be calculated. Investment made in the second year is assumed to be a slightly higher proportion of income than in the preceding year and thus extending the calculation over the entire period covered by the Perspective Plan, the overall possible growth of income can be estimated.

4.7 Income in 1973-74, the last year of the Fourth Plan is expected to reach about Rs. 3,100 crores and aggregate investment (including State investment, direct Central investment and investment by the private sector) is assumed to be 13 per cent of the income, i.e. Rs. 403 crores. With a capital output ratio of 2·9 : 1, this investment yields an income increase of Rs. 140 crores in the first year of the Fifth Five-Year Plan. Hence income of that year is Rs. 3,100+Rs. 140 =Rs. 3,240 crores. Using the same principle, income growth in the succeeding years is worked out.

4.8. Clearly, it is necessary to ensure that the growth of income over the ten-year period is steady and gradual. But apart from this, the fact that income growth involves an increasing savings and investment rate, has also to be kept in view. The resources available for investment can be augmented by increased voluntary savings which will be canalised into investment, and also by increased taxation. This obviously involves a burden on the economy. While this cost has at any rate to be borne, it would be possible to distribute the burden equitably over a series of years by proper phasing of the investment programme. The really significant factor in this regard is the marginal rate of savings and the marginal rate of investment which reflect the extent to which additional income generated is mopped up by taxation or other means for investment purposes. These marginal rates should not exceed a bearable upper limit, and if the marginal rates are kept within limits, the average rate of savings and investment (and therefore the burden of compulsory savings) will also move up gradually at a reasonable rate.

4.9 Thus it follows that in distributing the investment over a series of years the figures indicating the rate of investment as well as the rate of income growth have to be fixed in a rather arbitrary manner. But this is necessary if the programme of development is to be realistic and feasible. The model worked out in this manner is shown in Table 4.2.

TABLE 4.2.

Projected Income Growth and Investment in the Perspective Plan Period

(Rupees in Crores.)

	IV	*Fifth Plan*					*Sixth Plan*					*VII*
	1973–74	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80	1980–81	1981–82	1982–83	1983–84	1984–85
	5	1	2	3	4	5	1	2	3	4	5	1
1 Income at the beginning of the year		3200	3240	3400	3588	3807	4065	4362	4799	5303	5875	6523
2 Income increase in the year		140	160	188	219	258	297	437	504	572	648	733
3 Income at the end of the year..	3100	3240	3400	3588	3807	4065	4362	4799	5303	5875	6523	7256
4 Investment	403	463	543	636	746	862	982	1134	1285	1457	1652	
5 Marginal rate of investment as per cent* ..		45	50	50	50	45	40	35	30	30	30	
6 Investment as percentage of income [(4) as percentage of (3)]	13.00	14·30	15·97	17·75	19·62	21·20	22·50	23.65	24·25	24·82	25.30	
7 Population (Crores)	4·40	4·50	4·60	4·69	4·79	4·89	4·98	5·08	5·17	5·27	5·37	5.47
8 Per capita income (rupees)	704	720	739	769	795	831	876	945	1,026	1,115	1,215	1,327
9 Rate of growth of per capita income (per cent)		2·22	2·66	3·47	3·89	4·59	5·39	7·83	8·58	8·68	8·96	
10 Rate of growth of aggregate income (per cent)		4·55	4·94	5·50	6·10	6·78	7·33	10·00	10·50	10·79	11·03	11·25
		C.O. Ratio 2.9 : 1					C.O. Ratio 2.25 : 1					

* Marginal rate of investment is $\frac{\text{Increase in investment over previous year.}}{\text{Increase in income over previous year.}}$

4.10 The figures given in the table are tentative ; they are intended to show the overall investment requirements in the two five-year periods comprising the Perspective Plan. It should be repeated that there is an arbitrary element in the allocation of investment and the estimation of income growth in each year of thc ten year period. The sharp rise in aggregate income, per capita income and rate of growth of income in the second year of the Sixth Five-Year Plan is the combined effect of a fall in the capital output ratio and the need for maintaining a steady rise in aggregate investment. But what is really important is not the annual figures but the totals for the five-year periods; the actual annual phasing of the investment programme will obviously depend on administrative exigencies, financial constraints and other circumstances of the relevant period.

4.11 It would be seen from the table that —

(i) per capita income doubles to Rs. 1,327 in 1984–85 (i.e., from Rs. 654 in 1970–71 to Rs. 1,327 in 1984–85) ;

(ii) the annual rate of growth of aggregate income moves up from 4.5 per cent in 1974–75 to 6.8 per cent at the end of the Fifth Plan and to 11.0 per cent at the end of Sixth Plan. Correspondingly per capita income growth rises from 2.2 per cent to 4.6 per cent and 9 per cent respectively ;

(iii) the marginal rate of investment, i.e., the ratio of increase in investment to increase in income expressed as a percentage, ranges between 45 per cent and 50 per cent in the Fifth Plan period but decreases in the next five years and tends to stabilise at 30 per cent in the last three years of the Perspective Plan period; and

(iv) the average rate of investment, i.e., investment as a proportion of the State income increases fast from 14.3 per cent in 1974–75 to 21.2 per cent in 1978–79 and continues to rise but at a relatively slower pace in the Sixth Plan years reaching 25.3 per cent at the end.

4.12 Thus the rates of increase of both marginal and average investment bring out the important fact that the strain on the economy will be greater in the first half of the Perspective Plan period than in the latter half.

SECTOR ALLOCATION OF TOTAL INVESTMENT

4.13 As shown in Table 4.2 the aggregate investment in the first five years will be Rs. 3,250 crorees and in the latter five years Rs. 6,510 crores. Thiis aggregate investment is to be apportioned amonng the following seven sectors into which the economny is divided for the present purpose :

(i) Agricultural production which includeles minor irrigation, soil conservation. ayacut develloppment and part of (50 per cent) irrigation and floood control.

(ii) Animal Husbandiy, Forestry and Fisheriees.

(iii) Mining and Manufacturing—the lattter covers only large-scale manufacturing.

(iv) Electricity—Power development.

(v) Small enterprises—includes Village annd Small Industries.

(vi) Transport and Communications—Roaads Railways, Airways, Ports and Harbours, Inlaand Waterways and Tourism.

(vii) Other services—includes Governmeent administration, Education, Public Health and Family Planning, Water-Supply, Housing, Co-operatiion, Community Development, Social Welfare Measuires and part of Irrigation and Flood Control (50 per cent).

4.14 In making the allocation of aggregate investment among the sectors, the sectoral capital output ratios as well as the structural charges envisaged in the economy are to lbe taken into account. Capital output ratios for thie seven sectors in the Fifth and the Sixth Plan years are given in Table 4.1. Sectoral changes envisaged are reflected in the relative contribution of the different sectois to total income. Normally as development takesplace, income generation in the primary sector tends to dedine as a proportion while that of the secondary and tertiary sectors increases. In a planned economy, this structural change is attempted to be brought about in a deliberate manner by neans of appropriate investment allocations as well as by fixing different targets for expansion. Sectoral incomes, investments and the growth rates of thie different secors in the Perspective Plan period estimated on tle basis of desired income increase and tie sectoral capital output ratios are given in Tibles 4.3. and 4.4.

SECTORAL COMPOSITION OF STATE INCOME IN TAMIL NADU

1970-71 – 1984-85

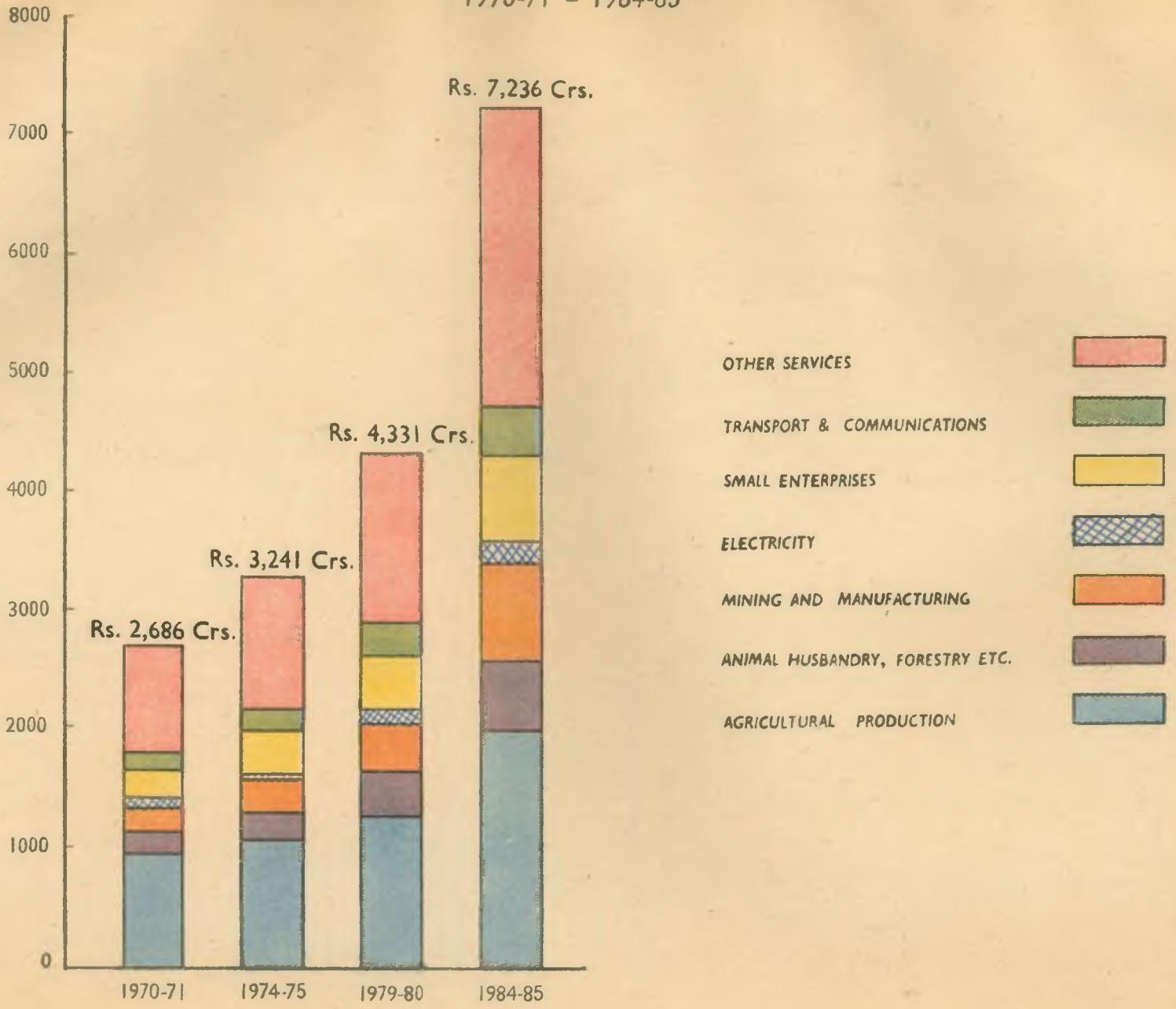


TABLE 4.3

Sectoral Incomes, estimated and intentional

(Rupees in Crores.)

Sector.	1970–71		1974–75		1979–80		1984–85	
	Amount	*As per cent*	*Amount*	*As per cent*	*Amount*	*As per cent*	*Amount*	*As per cent*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Aggricultural production	921	34	1037	32	1275	29	1983	28
2. Animal Husbandry, Forestry, etc.	193	7	227	7	326	7	592	8
3. Mining and Manufacturing	225	8	292	9	417	10	799	11
4. Electricity	45	2	65	2	107	3	186	3
5. Small Enterprises ..	239	9	324	10	468	11	743	10
6. Transport and Communications	161	6	194	6	275	6	423	6
7. Other Services	902	34	1102	34	1463	34	2510	34
Total ..	**2686**	**100**	**3241**	**100**	**4331**	**100**	**7236**	**100**

TABLE 4.4

Investment requirements and rate of Income growth

(Rupees in Crores.)

Sector	*Investment required*		*Annual growth rate of income (compound)*		
	Fifth Plan	*Sixth Plan*	1970–71 *to* 1973–74	*Fifth Plan*	*Sixth Plan*
(0)	(1)	(2)	(3)	(4)	(5)
1. Agricultural production	446	849	3·0	4·2	9·2
2. Animal Husbandry, Forestry and Fisheries	145	266	4·1	7·5	12·7
3. Mining and Manufacturing	682	1530	6·8	7·9	13·9
4. Electricity	612	1105	8·6	10·4	11·7
5. Small Enterprises	115	165	7·0	7·6	9·7
6. Transport and Communications ..	280	500	4·7	7·3	8·9
7. Other Services	970	2095	5·2	5·8	11·4
Total ..	**3250**	**6510**	**4.0**	**6.1**	**10.9**

4.15 It may be noted from Table 4.3 that the income generated in the agricultural sector as a proportion of total income is expected to fall from 34 per cent in 1970–71 to 32 per cent in the first year of the Fifth Plan and to 29 per cent and 28 per cent at the beginning of the Sixth and Seventh Plans respectively ; on the other hand, the share of the Manufacturing sector moves up from 8 per cent to 9, 10 and 11 per cent. Small Enterprises show an appreciable increase in the Fifth Plan period but recede a little in the next five years. The contribution of Transport and Communications and Other Services as a proportion of aggregate income remains constant.

4.16 As a proportion of the total, the investment in Agriculture, Animal Husbandry, Forestry, Fisheries, Electricity and Small Enterprises decreases in the Sixth Plan compared with the Fifth Plan ; investment in Other Services as well as Manufacturing shows an increase while that in Transport and Communications declines. As regards growth rate, although there is a uniform rise which is particularly marked in the Sixth Plan period, the increase under Agricultural Production, Animal Husbandry, Forestry and Fisheries, Mining and Manufacturing and Other Services is greater than the rest. The rise in investment as well as the high growth rate in respect of Other Services is not only justifiable but desirable in view of the accepted principle that in the interests of stability, the growth rate in the tertiary sector has to move in step with the rise in the primary and secondary sectors. This balanced development is attained only when the Services sector grows at the rate assumed here. The distribution of investment among the seven sectors and the growth rates are presented in Table 4.4.

A Review of the Projections

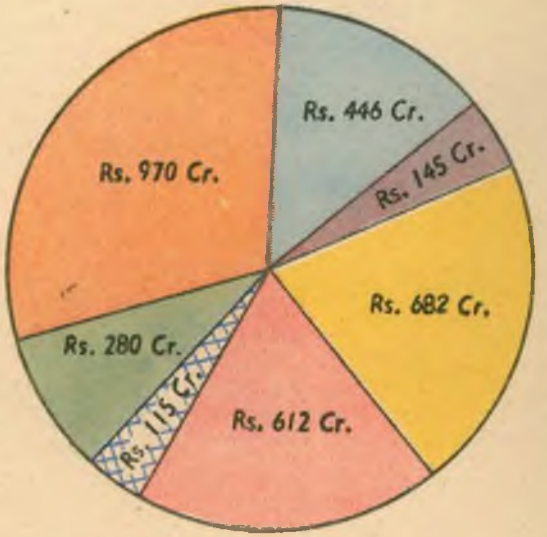
4.17 A reference to Table 4.2 would show that the income of the State rises from Rs. 3,241 crores in the first year of the Fifth Plan to about Rs. 7,250 crores in the first year of the Seventh Plan—an increase of about Rs.4,000 crores or by 123 per cent. Roughly about 28 per cent of the increase takes place in the Fifth Plan period and 72 per cent in the Sixth Plan years. On the other hand, of the aggregate investment of Rs. 9,760 crores, one-third is taken up by the Fifth Plan and two-thirds by the Sixth Plan. This would mean that although in absolute terms there is a doubling of the investment in the Sixth Plan, the increase in income in relation to increase in investment is greater than in the five years covered by the preceding plan. In other words, the strain on the economy will be greater in the earlier years of the Perspective Plan period. It is in this period that the basis for rapid growth has to be laid in the form of social and economic overhead facilities, and also structural and organizational changes are to be brought about particularly in the primary sector, that would contribute to the awakening of the masses to the need for material improvement and create in them an urge for putting forth greater effort to attain higher standards of life. This difference in the approach and content of the two Five-Year Plans is implied in the change in the capital output ratios.

4.18 The annual rate of growth of income rises from 4·55 per cent in 1974–75 to 6·78 per cent at the end of the Fifth Plan and to 11·03 per cent in 1983–84. The average rate of growth in the Sixth Plan is quite high, being about 10 per cent, but this is a reasonable target in view of the size of the investment involved and the stress on social, institutional and structural changes envisaged in the first five years of the Perspective Plan Period. Over the years 1970–71 to 1983–84 there is a doubling of the per capita income (Rs. 654 in 1970-71 and about Rs. 1,300 in 1984-85—the first year of the Seventh Plan). This obviously is the combined effect of the more or less constant rate of growth of population (2 per cent) and the higher rate of growth of aggregate income, particularly in the latter years of the Plan. Population increases by 11 per cent in the Fifth Plan and by 9·8 per cent in the Sixth Plan while income increases by 31 per cent and 60 per cent respectively in the two five-year periods.

4.19. As regards the pattern of growth of the different sectors, both investment and income increases are high in all the sectors, but particularly so in the case of Agriculture, Manufacturing, Transport and Communications and Electricity and Other Services in the Sixth Plan period. However, considering the entire period of 10 years there is not much variation among the different sectors. As between the primary and secondary sectors there is a structural change implied in a fall in the proportionate contribution of the first to total income and a corresponding rise in that of the latter.

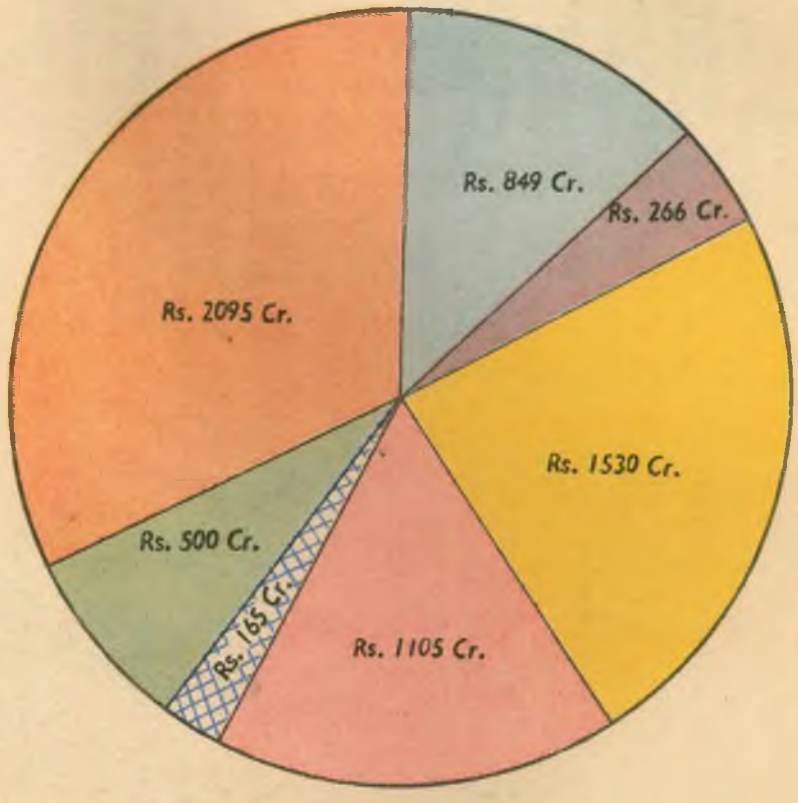
INVESTMENT IN TAMIL NADU IN THE V AND VI PLAN PERIODS

V PLAN



Rs. 3,250 CRORES

VI PLAN



Rs. 6,510 CRORES

AGRICULTURAL PRODUCTION

ANIMAL HUSBANDRY, FORESTRY & FISHERIES

MINING & MANUFACTURING

ELECTRICITY

SMALL ENTERPRISES

TRANSPORT & COMMUNICATIONS

OTHER SERVICES

4.20 The cost involved in bringing about this economic transformation is indicated by the investment requirements. The figures in row 6 of Table 4.2 show the rise in investment expressed as a percentage of the income of each year. It rises from 13 per cent at the end of the Fourth Plan to 21 per cent at the end of the Fifth Plan and to 25 per cent at the end of the Sixth Plan. Of greater significance is the marginal rate of investment which is the ratio between the addition to income made in each year and the corresponding increase in investment. The figures in row 5 of the same Table show that in the Fifth Plan years investment is about half the additions to income, but this proportion falls to 40 per cent at the beginning of the Sixth Plan and to 30 per cent in the latter years of that plan period. This again points to the great effort required in the initial stages for bringing about rapid economic development. It underlines the need for increased effort in mobilising resources for financing development. Greater reliance will have to be placed on taxation or Central assistance or both. Also, the scope for mobilising savings through internal borrowings has to be fully assessed and utilised.

Apportionment of the investment among the investing agencies

4.21 According to the calculations made above, the total investment required in the five years, 1974–75 to 1978–79 is Rs. 3,250 crores and in the next five years Rs. 6,510 crores. These represent the total investment expenditure by three agencies —the State Government, direct investment by the Union Government and investment in the private sector. The first two comprise the public sector. Although from the point of view of mobilisation of resources, the State's concern is only with that part of the outlay which is its responsibility, yet in so far as the overall development of the economy is the result of aggregate investment, it is necessary to have an idea of the relative contribution of the three agencies.

4.22 Figures in Table 4.5 show the investment made by the State, the Central Government and the private sector in the years 1961–62 to 1970–71. Of these, the figures relating to State investments are actuals, but direct Central investment is estimated and may be considered as only an approximation of the true position. No calculation has been made of investment in the private sector in any of the the States or for the country as a whole. However, the Union Planning Commission makes an assumption in the Five-Year Plans about the percentage share of the private sector in total investment. This proportion is assumed to be generally true of Tamil Nadu also.

TABLE 4.5

Distribution of investment—State, Central and Private Sector, 1961-62 to 1970-71

(Rupees in Lakhs.)

Year	State *	Central †	Private† Sector	Total ‡
(0)	(1)	(2)	(3)	(4)
1961-62	5168	3841	4476	13485
1962-63	6097	3776	5285	15158
1963-64	7506	3732	7200	18438
1964-65	8302	3753	5868	17923
1965-66	9998	3732	6488	20218
1966-67	8274	4960	8678	21912
1967-68	9581	5614	8767	23962
1968-69	10210	5385	10114	25709
1969-70	9245	5824	11296	26365
1970-71	10701	6434	11302	28437

* Source : State Accounts.

† Estimated.

‡ Does not include inventories.

The averages of the figures in Table 4.5 work out as follows :—

(*a*) State sector investment—40.21 per cent.

(*b*) Private sector investment—37.56 per cent.

(*c*) Direct Central investment—22.23 per cent.

4.23 In view of the objectives, targets, strategies and structural changes envisaged in the Perspective Plan, these figures require some modification. In the first place, some of the big capital intensive projects such as Salem Steel Plant, Atomic Power Plant, development of the major ports and harbours as well as railways would involve heavy investments by the Central Government. Apart from this, many of the schemes which are proposed for building up the economic overheads of the State cannot be carried through successfully unless the Union Government gives its assistance in the form of not only contribution of financial resources but also by direct participation. Direct Central investment is therefore fixed at 24 per cent. Secondly, the State Government has to make special efforts to reorganise and build up the primary sector of the economy as well as its social infrastructure by devoting special attention to public health and educational facilities besides social welfare measures on a comprehensive scale. All these would require massive investments by the State and for this reason the State's share will go up to 42 per cent. This would mean that private sector investment will be 34 per cent of the total, but although there is a decline in proportionate terms, yet in so far as there will be a rapid expansion of the economy and strong base will be laid in the Perspective Plan period for building up the industrial structure, the scope of the private sector will widen considerably.

4.24 Thus in absolute terms the investment in the three sectors in the Perspective Plan period will be :

(Rupees in Crores.)

Sector.	*Fifth Plan* 1974–79	*Sixth Plan* 1979–84
(0)	(1)	(2)
(*a*) State sector ..	1365	2734
(*b*) Direct Central Investment	780	1562
(*c*) Private sector ..	1105	2214
	3250	6510

4.25 Next, the total investment in each sector has to be apportioned among the three—State, Centre and private sector. In some of the sectors such as Agriculture, Animal Husbandry, Forestry and Fisheries and Small Enterprises, direct Central investment is small or negligible. On the other hand in a sector like Electricity or Power Development there is not likely to be any private sector investment. There is no norm or standard or any past data by which this division can be determined. However, the Union Planning Commission has indicated the share of private investment in some of the sectors.* These figures may be taken as only a rough guideline and need to be modified in view of the differences in the structure and organisation of some of the important sectors of the State's economy and also because of the special problems that have to be faced in the context of development planning in Tamil Nadu. Outlays estimated and allocated on this basis are presented in Table 4.6.

4.26 An idea of the increase in output in some of the major sectors of the economy resulting from the investment envisaged during the Perspective Plan period can be had from the details presented in Table 4.7.

* (Approach to the Fifth Five-Year Plan of India, 1974–79 January, 1970, New Delh, Page 46.)

TABLE 4.6

Allocation of Investment among the three Investing Agencies

(Rupees in Crores.)

Sector.	*Fifth Plan*					*Sixth Plan*				
	State Investment	*Direct Central Investment*	*Total Public Sector*	*Private Sector Investment*	*Total Investment*	*State Investment*	*Direct Central Investment*	*Total Public Sector*	*Private Sector Investment*	*Total Investment*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1 Agricultural Production	200	10	210	236	446	425	14	439	410	849
	(44·8)	(2·3)	(47·1)	(52·9)		(50·0)	(1·7)	(51·7)	(48·3)	
2 Animal Husbandry, Forestry and Fisheries	50	5	55	90	145	110	9	119	147	266
	(34·5)	(3·4)	(37·9)	(62·1)		(41·4)	(3·3)	(44·7)	(55·3)	
3 Mining and Manufacturing	62	375	437	245	682	190	630	820	710	1530
	(9·1)	(55·0)	(64·1)	(35·9)		(12·4)	(41·2)	(53·6)	(46·4)	
4 Electricity	412	200	612	..	612	635	470	1105	..	1105
	(67·3)	(32.7)	(100·0)	..		(57·5)	(42·5)	(100·0)	..	
5 Small Enterprises	43	..	43	72	115	100	..	1 00	65	165
	(37·4)	..	(37·4)	(62·6)		(60·6)	..	(60·6)	(39·4)	
6 Transport and Communications ..	98	135	233	47	280	210	250	4 60	40	500
	(35·0)	(48·2)	(83·2)	(16·8)	..	(42·0)	(50·0)	(92·0)	(8·0)	
7 Other Services	500	55	555	415	970	1064	189	12 53	842	2095
	(51·5)	(5·72)	(57·2)	(42·8)		(50·8)	(9·0)	(59·8)	(40·2)	
8 Total	1365	780	2145	1105	3250	2734	1562	42 96	2214	6510
	(42·0)	(24·0)	(66·0)	(34·0)		(42·0)	(24·0)	(66·0)	(34·0)	

((Figures in brackets represent percentage of total in each row)

TABLE 4·7.

Details of Sectoral Allocations in the Perspective Plan—State Sector only

(Rupees in crores)

Sector/item	*Total Fifth and Sixth Plans*	*Fifth Plan*	*Sixth Plan*
(0)	(1)	(2)	(3)
I. AGRICULTURE	625·00	200·00	425·00
1. Agricultural Production (including Warehousing and marketing).	178·00	53·00	125·00
2. Minor Irrigation	178·00	60·00	118·00
3. Soil Conservation	30·00	10·00	20·00
4. Ayacut Development	19·00	7·00	12·00
5. Irrigation and Flood Control	220·00	70·00	150·00
II. ANIMAL HUSBANDRY, FORESTRY AND FISHERIES	160·00	50·00	110·00
1. Animal Husbandry	53·00	17·00	36·00
2. Dairying and Milk Supply	16·00	4·00	12·00
3. Forests	23·00	8·00	15·00
4. Cinchona	3·00	1·00	2·00
5. Fisheries	65·00	20·00	45·00
III. MINING AND MANUFACTURING	252·00	62·00	190·00
1. Large and Medium Industries	246·00	60·00	186·00
2. Mineral Development	6·00	2·00	4·00
IV. ELECTRICITY	1,047·00	412·00	635·00
1. Power Development	1,047·00	412·00	635·00
V. SMALL ENTERPRISES	143·00	43·00	100·00
VI. TRANSPORT AND COMMUNICATIONS	308·00	98·00	210·00
1. Roads	236·00	76·00	160·00
2. Road Transport	37·00	12·00	25·00
3. Inland Waterways	9·50	2·50	7·00
4. Ports and Harbours	11·50	3·50	8·00
5. Tourism	14·00	4·00	10·00
VII. OTHER SERVICES	1,564·00	500·00	1,064·00
1. General Education	267·45	97·45	170·00
2. Technical Education	42·00	12·00	30·00
3. Health and Family Planning	170·00	50·00	120·00
4. Nutrition	203·00	58·00	145·00
5. Water Supply and Sanitation	320·00	100·00	220·00
6. Housing (Urban)	202·00	62·00	140·00
7. Town Planning and Urban Development	38·00	12·00	26·00
8. Social Welfare	38·05	11·75	26·30
9. Welfare of Backward Classes	77·00	25·00	52·00
10. Hill Areas Development	10·00	4·00	6·00
11. Labour Welfare	5·00	1·80	3·20
12. Co-operation	61·00	21·00	40·00
13. Community Development	95·00	32·00	63·00
14. Cultural Programme (Humanizing Development)	5·00	2·00	3·00
15. Craftsmen Training and Employment Services	14·50	5·00	9·50
16. Statistics	8·00	3·00	5·00
17. Evaluation Machinery	2·50	1·00	1·50
18. Weights and Measures	3·00	1·00	2·00
19. Information and Publicity (Public Co-operation)	2·50	1·00	1·50
Grand Total	**4,099·00**	**1,365·00**	**2,734·00**

TABLE 4·8

PERSPECTIVE PLAN, 1974–84

ESTIMATED PRODUCTION OF SELECTED ITEMS

Serial number	Commodity/item	Unit	Estimated Production in		
			1973-74	1978-79	1983-84
(0)	(1)	(2)	(3)	(4)	(5)
I. AGRICULTURAL PRODUCTION					
1.	Rice	Lakh tonnes	57·00	69·00	76·50
2.	Millets total	Do.	16·85	22·55	28·30
3.	Pulses total	Do.	2·43	4·72	7·68
4.	*Oil Seeds* :				
	(*a*) Groundnut	Do.	9·17	15·60	20·97
	(*b*) Gingelly	Do.	0·39	0·44	0·48
	(*c*) Sunflower	Do.	..	1·50	3·00
	(*d*) Castor	Do.	0·04	0·06	0·08
5.	Cotton	Lakh bales	6·76	9·22	11·88
II. ANIMAL HUSBANDRY, FISHERIES AND FORESTRY					
1.	Milk	Million Kilograms	1008	2260	6016
2.	Eggs	Million numbers.	365	..	3285
3.	Meat	Million kilograms.	63	..	157
4.	*Fish Production*—				
	(*a*) Inland	Lakh tonnes	2	2·3	3·00
	(*b*) Marine	Do.	3	5·00	9·4
5.	Pulpwood†	Thousand tonnes	171	..	350
6.	Timber	Do.	69	..	80
7.	Matchwood	Tonnes	175	..	200
8.	Tanning materials*	Do.	2400	..	6000
9.	Sandalwood	Do.	1500	..	1,500
III. MINING AND MANUFACTURING					
(*a*)	*Mining* :				
1.	Lignite	Million tonnes	4·5 ← (1971-72).	..	**12**
(*b*)	*Manufacturing* :				
2.	Textile				
	(i) Cotton yarn	Thousand tonnes.	175	200	**300**
	(ii) Staple Fibre Yarn	Tonnes	40,000	120,000	**240,000**
	(iii) Cloth-mill sector	Million Metres	167	192	**216**
	(iv) Cloth-Decentralised sector	,,	576	659	**743**
	(v) Nylon Textile filament yarn	Tonnes	..	2100	**4200**

† Includes bamboo, wood, ota reed, rayon and staple fibre.

* Include wattle bark and myrabolm.

Serial number	Commodity/item	Unit	Estimated Production in		
			1973-74	1978-79	1983-84
((0)	(1)	(2)	(3)	(4)	(5)
	3. Automobiles and Ancillaries				
	(i) Motor cycles and scooters	Nos.	15,000	30,000	90,000
	(ii) Cars	Nos.	3,500	6,000	22,500
	(iii) Bi-cycles	Thousand Nos.	500	800	1,000
	(iv) Commercial vehicles	Nos.	7,000	12,000	25,000
	(v) Auto-ancillaries	Value in crores of rupees.	40	70	125
	(vi) Auto-tyres and tubes	Lakh Nos.	13	16	20
	4. Metals and Machinery				
	(i) Aluminium	Thousand Tonnes.	25	40	100
	(ii) Sponge iron	Do.	..	50	100
	(iii) Copper products	Do.	..	..	20
	(iv) Non-ferrous metals	Value in crores of rupees.	..	..	8·5
	(v) Tractors	Nos.	5500	7500	30,000
	(vi) Machinery products	Value in crores of rupees.	..	..	45
	(vii) Machine tool products	Do.	..	..	10
	(viii) Steel products	Thousand tonnes.	200	..	990
	5. Chemicals and Fertilisers				
	(i) Caustic Soda	Thousand tonnes	120	240	500
	(ii) Soda Ash	Do.	..	66	132
	(iii) Potassium Chlorate	Do.	0·7	3·2	6·4
	(iv) Alcohol	Million Gallons	9	12	15
	(v) Sodium Hydro Sulphate	Thousand tonnes	..	3·3	6·6
	(vi) Crude Throughput	Million Tonnes	2·8	4	10
	(vii) Fertilisers (mixed and complex)	Thousand Tonnes.	200	450	700
	6. Other Manufactured Consumption Good				
	(i) Cement	Thousand tonnes.	3,000	4,500	6,000
	(ii) Sugar	Do.	350	800	1,100
	(iii) Paper	Do.	50	90	165
	(iv) Cigarettes	Million tonnes	..	4,500	9,000
	(v) Vanaspathi	Tonnes.	29,000	..	40,000
IV.	ELECTRICITY:				
1	Electricity	Million Units.	7,581	14,451	27,128
V.	TRANSPORT				
1	Length of roads	Kms.	77,900	81,000	87,200
2	Length of railways*	Kms.	3,800	4,300	4,600

* Development plan for railways mostly consists of conversion of metre gauge in to broad gauge and electrification of certain lines

Serial number	Commodity/item	Unit	Estimated production in		
			1973-74	1978-79	1983-84
(0)	(1)	(2)	(3)	(4)	(5)
VI.	HEALTH AND WATER-SUPPLY				
1	Number of Mini-Health Centres	Nos.	2,700	..	3,700
2	Doctor-Population ratio	Nos.	1 : 5,000	..	1 : 3,000
3	Bed-Population ratio	Nos.	1 : 2,000	..	1 : 1,000
4	Nurse-bed ratio	Nos.	1 : 8 (in non-teaching institutions.) 1 : 15 (in teaching institutions).	..	1 ; 5
5	Protected drinking water-supply	Number of hamlets.	48,005	..	52,658
VII.	EDUCATION				
(a)	*School Education*—				
	Percentage of Enrolment—				
	(i) Primary School	Percentage.	97·00	100·00	100·00
	(ii) Middle School	Do.	61·15	92·80	100·00
	(iii) High School	Do.	39·27	60·05	75·00
(b)	*Out-of-School Education*—				
	Percentage of Enrolment—				
	(i) Primary School	Percentage	..	100·00	100·00
	(ii) Secondary School	Do.	..	20·00	40.00
	(iii) High School	Do.	..	10·00	20 ·00
(c)	*College Education*—				
1	Number of Students	Nos.	216,658	258,318	299,978
2	Number of teachers	Nos.	11,031	13,146	15,261
(d)	*Out-of-College Education*—				
1	Number of Students	Nos.	..	180,000	300,000
(e)	*Adult Education*—				
	Percentage of Adult literate	%	40	100	100

CHAPTER 5

Towards Full Employment

Magnitude of Unemployment

5.1 No reliable estimate has so far been made about the magnitude of unemployment in the State. The major difficulty in this connection is the absence of any commonly accepted definition of the term ' unemployment ' applicable to an under-developed country which is over-populated and in which the agricultural sector predominates. The number of people unemployed is the difference between the total labour force available and the number of people actually employed. According to the Census of 1971 the population of Tamil Nadu was 412 lakhs. The labour force is made up of most of the males between the ages of 15 and 59 and a smaller proportion of the females of the same age-group. It is reasonable to assume that 90 per cent of the males in the age-group 15–29 and 97 per cent of the number in the age-group 30–59 would be in the labour force. As regards females 45 per cent in the age-group 15–29 and 50 per cent in the age-group 30–59 may be assumed to be in the category of employable labour force. On this assumption, the labour force in Tamil Nadu in 1970-71 works out to 163 lakhs or 39 per cent of the population as against 40 to 45 per cent in developed countries. It is expected that this proportion will increase to 40 per cent at the end of the Perspective Plan period.

5.2 The census of 1971 shows that the number of workers in Tamil Nadu in that year was 147 lakhs or 36 per cent of the population. Deducting the number of workers from the labour force, the number unemployed is found to be 16 lakhs. But it should be remembered that this last-mentioned number (viz., 16 lakhs) relates only to overt-unemployment, for in the Census calculations of 1971 all labourers in the agricultural sector including those who reported themselves to have found work for only a few days in the year were reckoned as employed persons. The question therefore arises as to whether or not under-employment is also to be evaluated and quantified in order to assess correctly the magnitude of the problem. It is reasonable to hold the view that if a labourer is handicapped from earning the normal annual wage income because of the non-availability of opportunities to employ himself fully, he should be considered as only partly employed or under-employed. Looked at in this way, total unemployment in Tamil Nadu in 1971 must have been much higher than 16 lakhs. Of the total employed persons, 91 lakhs are in the agricultural sector. It is estimated that on an average an agricultural labourer gets employment for much less than 200 days in a year. If normally 300 days work in a year is to be considered as full employment, the number of labourers in the agricultural sector who are fully employed will be only two-thirds of 91 lakhs or 61 lakhs. Adding this to the non-agricultural workers numbering 56 lakhs, total employment works out to 117 lakhs. And since the labour force is 163 lakhs, unemployment is 163—117=46 lakhs. This is 28 per cent of the labour force and 11 per cent of the total population.

5.3 Viewed in this manner the problem of unemployment in Tamil Nadu appears serious. However, as compared with industrialised countries, the significance of unemployment and its social and economic effects on the family and community has to be interpreted differently in the context of an under-developed country. So far as rural India is concerned, it is more relevant to think of the average earnings of the family rather than of the individual as the factor determining economic welfare. Poverty in Tamil Nadu as in the rest of India should be thought of as directly linked with unemployment and under-employment. It is estimated that about 46 per cent of the rural people of Tamil Nadu and 37 per cent of the urban inhabitants are below the nutritional poverty line (i.e., those who spend Rs. 27·9 per month in rural areas and Rs. 34·8 per month in urban areas at 1969–70 prices). On this basis the number of people below the nutritional poverty line will be 169·50 lakhs or say 170 lakhs. The immediate objective of employment generation should therefore be to raise this 170 lakhs people above the poverty line. In other words, the value and significance of measures to reduce unemployment should be

judged more with reference to the effect of such measures on nutritional poverty rather than with reference to the actual number of job opportunities created.

AN ESTIMATE OF JOB OPPORTUNITIES TO BE CREATED IN THE PERSPECTIVE PLAN PERIOD

5.4 Population of Tamil Nadu is expected to reach 440 lakhs in 1973–74 and 489 lakhs in 1978–79 and 537 lakhs in 1983–84. Assuming that 39 per cent of this number would constitute the employable labour force, the number of jobs required in 1973–74 on the eve of the Fifth Five-Year Plan will be 171 lakhs. But employment that would be available in this year is estimated at 119 lakhs. This figure is arrived at on the basis of a forecast of the employment position in various sectors of the economy, broadly classified into the organised and unorganised sectors. Employment in the organised sector is expected to be 18·97 lakhs and that in the unorganised sector 100·15 lakhs. As regards the agricultural sector which comes under the unorganised category, suitable deductions have been made on account of under-employment so that the aggregate figure of employment, namely 119 lakhs represents only full employment. However if no deduction is made on account of under-employment in the agricultural sector, the total employment in 1973–74 will be 154 lakhs. Thus unemployment in 1973–74 will be 52 lakhs if under-employment is taken into account and 17 lakhs if this is ignored.

5.5 It is expected that the labour force as a proportion of the total population will go up from 39 per cent to 40 per cent at the end of the Perspective Plan period. Since the population of the State in 1983–84 is estimated at 537 lakhs, the labour force will be 215 lakhs.

5.6 On the basis of detailed projections of employment growth in the different sectors of the economy, an estimate has been made of the additional employment opportunities that will be created in the year 1974-84. These estimates cover both the organised and unorganised sectors of the economy. The rates of growth assumed in respect of the different sectors for forecasting employment potentialities are based on data relating to the various development projects incorporated in the Perspective Plan. According to this calculation the implementation of the various development projects in the ten-year period will lead to a total employment of 212 lakhs by 1983–84. Thus unemployment at the end of the Perspective Plan will be reduced to (215 minus 212) 3 lakhs. Unemployment would then be less than 0·6 per cent of the population of the State or 1·4 per cent of the labour force.

5.7 That this is feasible of attainment is borne out also by the results which we arrive at by approaching the problem from the macro level. Net domestic product can be related to employment on the basis of past data and by fitting an equation of the type $L = aV^b$, a projection of employment in the next ten years can be made where—

L is the number of workers,

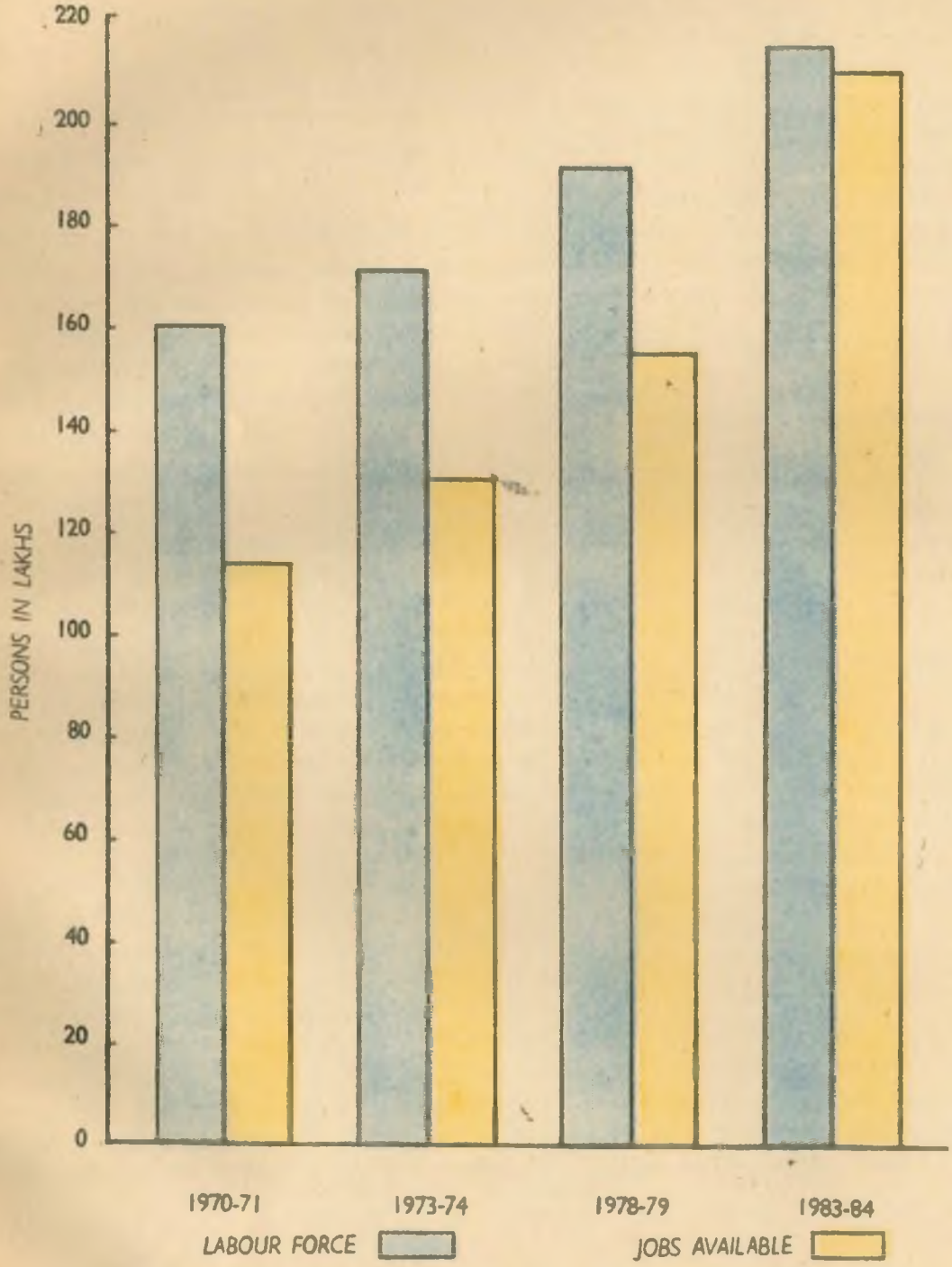
V is net domestic product,

a and b are parameters ; b, being the elasticity of employment with respect to income.

5.8 If the same interpretation* of the term 'worker' used in the 1971 Census is applied to 1961 also, and we assume that the proportion of the number of people employed is the same in both the years, the absolute number will be 120·53 lakhs in 1961. The number of workers in each year of the decade 1961–71 can then be calculated and set against the NDP of these years. The equation which best fits the data is $L = \frac{0{\cdot}6636}{3763\,V}$ By substituting the projected NDP for the years 1973–74, 1978–79 and 1983–84, it is possible to arrive at the corresponding number of workers needed in these years. But in view of the fact that some children below 15 years happen to be engaged in work and there is under-employment among agricultural workers, we consider that only 78 per cent of the required number of workers represent full jobs. Applying this proportion to the number of workers needed, it is possible to find out the actual number of jobs that

* The number of workers in 1961 was 15,351,621. The number in 1971 was 15,074,223. This apparent fall in the number was due to differences in the concept of 'worker' adopted in the 1961 and 1971 Censuses. The concepts varied with regard to (*a*) reference period for counting as a worker, (*b*) intensity of work (minimum quantum of work to be done by a person for him to be classified as a worker) and (*c*) classification of marginal workers, i.e., housewives and students who work part-time. For the purpose of fitting the equation, the 1961 figure has been modified assuming that the percentage of workers in the population stood the same (36·7 per cent) in 1961 and 1971.

UNEMPLOYMENT IN TAMIL NADU



vill bae generated by the growth h of income. And ; thiss number is deducted fromm the labour force of eacch year, we get the number ui umemployed.

(In Lakhs.)

Year	Number of jobs required (i.e., labour force)	N Niumber o ojf jobs avavailable	Unemployment
(0)	(1)	(2)	(3)
1970—71	160·29	1114·99	45·30
1973—74	171·60	129·35	42·25
1978—79	190·71	1154·77	35·94
1983—84	214·80	211·85	2·95

5.9) This shows that almost fulfulll employment can be reeached by the end of Sixth Plaplain.

PROGRAMMES SUGGESTED TO TACKKILE UNEMPLOYMENT

5.110 The various projects inclucluded in the development programmes of the diffeferent sectors of the economy will generate additional el employment during the Perspective Plan period. Thehe following specific projects for tackling unemploymeneint in the short-run are also suggested:—

(1) *Project to relieve unemploymcnemt among Secondary Grade Teachers*

5.111 Under this scheme emmployment will be provided for about 13,000 unemployed Secondary Grade teachers in Tamil Nadulu during the Fifth Plam period. By the end of the e Sixth Plan all the teachers who come out of thehe training schools duriing the decade will be absororlbed. This can be donee by employing them in the ie functional literacy programme and out-of-school ı education centres. This scheme will be implementeded by the Education sector.

(2) *Setting-up of Agro-Service CeCemtres*

5..12 The main objective of t tlhis scheme is to prowide employment opportunitiities and utilise the surplus man-power for providining agricultural and allied services and supplies accoiordding to the needs of tthe areas. Finance for this s could be arranged through the nationalised banks s and the Industrial Co-operative Bank and also by s securing assistance including staff support from tthe Government of Indiia. During the Fifth Plan,n, 400 Agro-Service Centres will be set up and this will provide employment to about 2,000 technical persons and to about another 2,000 skilled and semi-skilled persons immediately. During the Sixth Plan 800 such Agro-Service Centres will be set up and this will provide employment to 8,000 persons—4,000 technical and 4,000 skilled and semi-skilled.

(3) *A special cell to identify entrepreneurs*

5.13 The facilities of self-employment might be extended in Tamil Nadu with the active co-operation of Banks and the All-India financial institutions like the I.D.B.I., I.C.I.C.I., I.F.C., etc. For this purpose it is considered worthwhile to create a special cell in the Directorate of Employment and Training to take up the cases of potential entrepreneurs seeking self-employment to identify them, help them in preparing viable projects, assist in getting clearance for licences, loans, etc., and also in marketing their produce. The scheme is expected to create about 15,000 job opportunities during the Perspective Plan period.

(4) *Advance action in respect of road construction projects*

5.14 This scheme envisages taking advance action by way of investigation in respect of road construction projects to be taken up in the State. This scheme is expected to provide employment for about 1,500 engineers, 900 diploma holders, 1,800 craftsmen and about 45,000 semi-skilled and unskilled persons.

(5) *Special employment projects for the educated unemployed*

5.15 These projects mainly aim at relieving unemployment of educated and professional manpower. The number of projects are many though their employment content is relatively small. Some of the projects suggested are :

Children's Libraries to popularise Library use among children ;

Theatres/opera houses in the districts ;

Anna Centre for study of the lives of great people of Tamil Nadu ;

Expansion of Zoos and Aquaria ;

Improving Tourism through establishment of coastal tourist centres along the coastal line of Tami Nadu and connecting them by ferry service;

A scheme for preparing and publishing local histories in respect of important tourist centres of Tamil Nadu ;

Development of health resorts ;

Tamil Literature Promotion Trust to undertake translation with a view to bringing latest world knowledge in Tamil and Publication of books ;

Self-employment in minor building maintenance and upkeep ;

Consumer Advisory Committee ;

Shopping centres in new residential areas on Co-operative basis ;

Motels on highways ;

College of Maritime courses ;

Defence Service Bureau ;

Establishment of Film Libraries in the districts ;

Hire purchase organisation for salaried employees.

(6) *Modernisation of occupations of washermen, carpenters, etc.*

5.16 This scheme aims not only at creating self-employment opportunities but also, at bringing about social change. It is proposed to set up co-operative societies of persons in traditional occupations like barbers, washermen and other village artisans so as to enable them to set up modern shops. The assistance will be in the form of deferred payment of about Rs. 5,000 head. For this purpose a separate revolving fund will be provided and adequate institutional finance will be raised for the purpose.

(7) *An integrated scheme for the rural unemployed*

5.17. With a view to enabling the rural unemployed to earn incomes which will raise them well above the poverty line, the Integrated Scheme for the Rural Unemployed is being suggested here. Under this scheme it is proposed to cover about 5 lakhs of the rural landless unemployed persons during the Fifth Plan by providing them with milch-cows at the rate of 2 per household or help them to set up poultry farms or buy implements needed for village industries not exceeding the value of Rs. 3,000 per household. The scheme will be continued in the Sixth Plan. It is suggested that bank loans and Government of India assistance may be secured for this programme.

(8) *Rural Industrial Estates for Housing*

5.18 Rural housing needs fresh thinking to find out economical methods of construction by using materials easily available in rural areas. Doors, windows, etc., have to be economically and scientifically fabricated. Experience in research and innovations in Tamil Nadu has proved that inexpensive materials could be used for the purpose. Each unit that will be set up in this connection can serve an area within a radius of 60 to 75 kilometres. During the Fifth Plan four such units could be started and the entire State covered by the end of the Perspective Plan period.

5.19 The above-mentioned schemes relating to sectors like Agriculture, Industries, Public Works, Education, Housing, etc., may be taken up by the departments concerned.

CHAPTER 6.

Attack Against Poverty

Extent of Poverty

6.1 During the Perspective Plan period, an earnest attempt is to be made to reduce in a selective manner the worst forms of poverty in the State. This will call for two programmes : (i) the minimum needs programme with regard to the poor and (ii) the subsidised distribution of essential goods to those living in the poverty sector. Form the nutritional point of view, the cost of a sufficient diet computed on the basis of the State sample of the NSS is found to be Rs. 27.90 per capita per month in rural areas and Rs. 34·87 per capita in urban areas at 1969–70 prices. Forty-six per cent of rural people forming 12.67 millions and 37.30 per cent of urban people forming 4.28 millions could not afford the diet and this group of 16.95 millions is living below the nutritional poverty line. From the minimum needs point of view which includs not only a sufficient diet but other phyiscal needs like clothing and housing according to the same State sample, the per capita monthly cost in rural areas was Rs. 38.75 and in urban areas Rs. 54.49 at 1969-70 prices. Under these minimum conditions, 20.35 million rural people, being 73.80 per cent of rural population and 8.36 million urban people, being 72.9 per cent of urban population, or a total of 28.71 million people in the State did not have the minimum needs.

Minimum Needs

6.2 The production sectors with their employment-generating programmes and the plans for education, health, rural water-supply, housing, sites for the landless and slum clearance are specifically aimed at helping the 28.71 million people who are denied the minimum needs. This programme in education will invole the extension of the basic minimum primary education, work-centred functional eduction (in-school and out-of-school), to all persons. Special attention will be given to the 51 per cent droup-outs in the age group 6—11 who are from the poverty sector, and the 60 per cent illiterate adult men and women. The estimated cost of this programme is Rs. 46 crores during the Perspective Plan period. The provision of basic health services through polyclinic centres, sub-centres and indigenous medical services, nutrition to pre-school children and lactating and pregnant mothers and family planning services to this group of 28.71 million persons will involve an outlay of Rs. 212 crores. The rural housing programme, the Kudiyiruppu schemes and the provision of house-sites to landless labourers will involve an outlay of Rs. 199 crores. The slum clearance programme during the Plan period will call for an expenditure of Rs. 122 crores to help resettle the urban poor. The provision of controlled water supply to 4,916 villages which do not have water sources to 2,230 villages which are in endemic areas and to 11,814 villages with inadequate water supply will cost Rs. 72 crores during the Perspective Plan period. This total investment of Rs. 651 crores on meeting the minimum non-food needs of the 28.71 million people living in conditions of poverty is provided under the various sectoral programmes. These programmes will directly result in lifting them to levels of living, where their minimum needs wil be met by the end of the Perspective Plan period.

Subsidised Food Distribution

6.3 During the first phase of the Perspective Plan this minimum needs programme must be supplemented by a system of subsidised supply of essentiai goods, rice, pulses, sugar, edible oil, kerosene, and coarse cloth for the weakest section among thl poverty sector in the rural area. This group living at the level of destitution consists of those spending below Rs. 18 per person per month in rural areas (who are 12 per cent of the rural population) and Rs. 24 in the urban areas (who are 14.6 per cent of urban population). On the assumption that this rural group of 3 million people spend all their income on essential goods, the cost of the Government of helping them to live above the line of destitution would be Rs. 11 crores per annum. To enable the destitutes in the rural areas to cross the line of destitution, the price subsidy to the class spending Rs. 0-8 per capita per month will be 56 per cent of the total expenditure of that class, 39 per cent of its

total expenditure for the Rs. 8—11 class, 28 per cent for that of Rs. 11—13 class, 17 per cent for that of Rs. 13—15 class and 12 per cent for that of Rs. 15—18 class. The cost, on the other hand, of subsidising the prices of essential goods for all the 16·9 million persons will be very much higher per year. Such a high cost cannot be borne by the Government as it will not have the resources for this purpose during the Perspective Plan period. Nor it is necessary, as it is only those who have been identified as destitutes will need the subsidised essential goods till such time as they can stand on their own as a result of the programmes proposed for the Plan period. Thus, those who are marginally below the line of poverty will be helped out both by adjustment and the operation of the employment and minimum needs programmes. This is in terms of implementation as distinct from the task of identifying the poor and the destitutes. The NSS rounds indicate the magnitude of the problem to be dealt with. For any budgeting of the programme, information at the district level would be essential. It is the latter that provides a check or a source of corroboration for the former. The provision made here without realistic district programme is a token provision—"token" also because of the magnitude of the job.

OPERATIONAL IMPLICATIONS OF THE SUBSIDISED DISTRIBUTION PROGRAMME

6.4 There is the problem that the large expenditure on the programme may not reach the target groups even under a system of an organised physical distribution. This is a problem in planning in relation to the means of implementation. A workhouse or a communal kitchen could perhaps demonstrate the gaps between estimates and actuals. It would also take care of the problem of allocated expenditure reaching target groups. Every beneficiary has to establish that he is without work and without means. And the welfare authority has to ensure that this programme does not sap the incentive to work.

6.5 The cost of the programme would then simply be the daily expenditure on minimum needs multiplied by the number of people in need of such help, less of course of what people are able to spend for themselves on their own account. On the revenue side, subsidies should be available from employers, local authorities, charitable institutions and the State Government's separate programmes for children in schools and mothers in work places.

6.6 This programme will call for four sets of action.

6.7 The first is for the Government to build large buffer stocks of these essential goods. This will involve the Government take-over of the wholesale trade of these goods. In the meanwhile, the Government should strengthen its procurement machinery so that it can collect 80 per cent of available stocks rather than 20 per cent.

6.8 The second requisite is a well-spread distribution system for which the frame work exists in the 10,000 fair-price shops all over the State. A further spread and rationalisation must be effected in the location of these shops, and an increase in the amount of trade that they handle must be ensured. In order to avoid disruption of the trade, the staff should handle essential goods, leaving the distribution of superior varieties of these goods and non-essential goods to the private trade.

6.9 The third condition is restraint in the consumption of the urban and rural well-to-do in the State. This is the most difficult part of the prerequisites, as there are to be no restraints in the earnings of income, while expending such incomes is to be limited. To attain this difficult objective of restraining the consumption expenditure of the well-to-do, an expenditure tax on such consumption will have to be devised, earmarked to meet the subsidy of essential commodities to the destitutes estimated at Rs. 11 crores per annum.

6.10 The fourth action needed is for the Government to endow the Department of Civil Supplies with appropriate powers or set up a separate department to administer this programme of subsidised distribution of essential goods to the destitutes with the following responsibilities :—

—the identification of the destitutes on an individual and/or family basis ;

—the preparation of a list of essential goods to serve this group ;

—the estimation of demand in terms of physical resources ;

—the issuance of certificates of identity or other means of distributing the essential goods ; and

—strict penalisation in case of fraud or misuse of identity cards.

This system will also have a fall-out effect in assuring fair prices of essential goods for the rest of those living in the poverty sector.

CHAPTER 7

Economic and Social Justice

7.1 A Perspective Plan for the socio-economic development of the State would involve measures to bring about in a deliberate manner social and economic changes conducive to stable economic progress. The four important objectives of the State Perspective Plan are :

(*a*) Reducing economic and social inequality and refashioning institutional structures with particular reference to the agrarian sector ;

(*b*) Bringing about desirable social changes that would evoke the enthusiasm of the masses in the State's economic effort ;

(*c*) Humanising development to ensure that national progress does not result in the exploitation of the weaker sections of the community and that increase in aggregate and per capita income goes hand-in-hand with increased social welfare ; and

(*d*) Decentralising economic planning and implementation and thereby securing greater people's participation in the planning process.

Reducing Economic and Social inequality and Refashioning Institutional Structure

7.2. Over the last two decades, planning for development in Tamil Nadu has aimed not only at increasing the State's income in money terms, but also at improving the welfare of the people by raising their standard of living and reducing disparities in the distribution of income and wealth. But the economic progress so far achieved has not been uniform in all sectors of the economy, in all areas of the State and in respect of all sections of the population. Thus, while the agricultural sector has made significant progress in recent years and promoted accelerated economic activity in the State, per capita income in this sector continues to be lower than that in the secondary and tertiary sectors. Economic equality requires a higher rate of growth of per capita income in the primary sector. This may also involve a continuous flow of a part of the population from agriculture to the other two sectors of the economy.

7.3 Apart from sectoral income differences there is also disparity as among regions. For instance, Dharmapuri, Ramanathapuram and South Arcot Districts continue to be backward. Even in other districts, there are backward pockets. Hence, equal development of all areas of the State would involve and necessitate the designing and implementation of special measures for the benefit of backward areas.

7.4. It is observed that the backward classes (including scheduled castes and scheduled tribes) have neither the resources nor the opportunities to make big ventures in the industrial and other fields. This obviously is a big handicap in their economic and social advancement. Existing measures to help Harijans and Backward Classes to catch up with other classes in the matter of education and employment cannot be said to have yielded the desirable results. Therefore, these measures should be intensified and pursued vigorously. Encouragement has to be given to backward classes through preferential treatment in the matter of granting licences, etc., for starting new industries. Entrepreneurs may be encouraged to co-opt members of the backward classes also on their ventures ; employers in the private sector may be made to use the Employment Exchanges increasingly for their recruitments and suitable reservations may be made for backward classes in respect of such vacancies.

7.5. The social inequalities now existing between different communities can, however, be minimised and eliminated ultimately, only if a new order of society in which class and caste distinctions do not exist is established and equal opportunity is provided for each and every able-bodied and intelligent citizen to realize his aspirations. The criterion for special assistance from the State should be only economic backwardness and merit should be encouraged wherever it exists. The prevailing order of society based on the notion that certain avocations are the destined ones for particular sections of the community should change. Scavengers and others working in drainage systems and those engaged in the cons

truction of roads and in manual agricultural operations involving considerable physical strain should come under schemes which will remove the social indignity attributed to such tasks. Again, the standard of living of village artisans has to be improved by providing them with more facilities of credit for carrying on their trade or craft.

7.6 In the final analysis, the elimination of social and economic inequalities can be successfully brought about only with rapid economic progress. But in a planned set-up, this improvement can be hastened by means of a well thought-out investment policy involving sectoral and regional allocation of resources in such a manner as would ensure balanced growth. A welfare State cannot tolerate the existence of economic and social inequalities or the exploitation of the weaker sections of the community by the more fortunate and stronger ones. But with economic progress, inequalities would appear in different and new forms and constant vigilance is required to prevent their emergence.

Refashioning the structure of the Agrarian Sector

7.7 From the commencement of the Planning Era, considerable stress has been laid on the elimination of all forms of exploitation and social injustice within the agrarian system so as to ensure equality in tenural status and parity of opportunities to all sections of rural population. For the attainment of these objectives, steps have been taken to abolish intermediary interests between the tiller of the soil and the State. Statutes have been introduced to regulate rent and guarantee the tiller a fair share of the income generated by his efforts, to register and confer rights of tenants through legislation and to enable them to eventually gain ownership rights. Side by side, strategies and programmes have been evolved to increase output and enhance incomes through intensification of agricultural practices. Small farmers' financing agencies have been activised and marketing arrangement strengthened. Land ceiling statutes have paved the way for limits to be imposed on the size of individual agricultural holdings. The surplus land has been distributed on an equitable and rational basis among the landless agricultural labourers and small holders. It is significant to point out that in so far as Tamil Nadu is concerned, as many as 390,736* tenants have been recognised and registered under the Record of Tenancy Rights Act, 1969. Apart from this, title deeds and pattas have been issued to 297,854 landless persons throughout the State during the course of the last seven years. This number compares favourably with the achievements during the previous 20 years when 111,443 landless persons were conferred ownership rights. Apart from giving title deeds to those who have occupied Government land, the Government has also under the Land Ceiling Act taken over 68,879 acres of land and distributed 41,723 acres to 19,737 landless persons. Besides conferring ownership rights and security of tenure, the State Government have also prescribed minimum wages for agricultural labourers and have conferred rights of ownership of homesteads or Kudiyiruppus to landless agricultural labourers. As many as 166,409 agricultural labourers now own their homesteads. The Perspective Plan will naturally continue to accord priority for schemes and programmes which bring about a measure of equality in the agrarian sector. Priority has naturally to be given to the removal of noticeable gaps between policy and legislation and legislation and implementation and to plug out loopholes in the statutes. For successful implementation of any land reform policy, the people's involvement is a *sine qua non.* Well-knit tenant and landless labour organizations would have helped better implementation of land reforms. But in the absence of such movements, it is essential that, at every level, the peoples', representatives are involved so as to exercise vigilance and secure for the tenant and for the agricultural labourers their legitimate rights which the land reform measures seek to confer on them. The vested interests which stand in the way of institutional changes designed to translate the idea of social justice into actual practice will have to be ruthlessly exterminated.

Bringing about desirable social changes

7.8 An important characteristic of Perspective Planning in Tamil Nadu is the stress laid on bringing about social change not only as a means to sustain and support planned economic development but also to treat it as a plan input in itself and to resort to direct measures to ease or solve social problems. Social change is considered an end in itself, and not a mere means to an end. Social change in the

* As on 28th February 1974.

context of Perspective Planning, aims at the creation of a casteless and classless society and hence it has to be approached from different angles like ideological, legal, educational, economic, etc.

7.9 For tackling the problem of caste and religious taboos, it is felt that catching the people young and educating them will be more effective than dealing with grown-up and middle-aged people. A programme of intensive social education specially designed for the benefit of the younger people is needed for this purpose. One important suggestion made in this connection is that children should be oriented towards healthy social attitude at the pre-school level itself.

7.10 Social change should be so designed as to help in accelerating economic development. It should transform tradition-ridden people who are inhibited by irrational prejudices, biases, and preferences into a rational people endowed with a broad and scientific outlook. In addition to this, social change would bring into play such virtues as efficiency, self-reliance, discipline, frugality, foresight, the will to work hard, to earn more, to save more, to invest more and to produce more.

7.11 Growth-retarding forces should be identified and action taken to remove the same. Disease, squalor and dirt are objective factors while irrational attachment to traditional values and customs, superstitious beliefs and ignorance are subjective factors which retard social progress and economic growth. To meet the problem arising from the former set of factors, social services expenditure including public health expenditure may be increased adequately to improve the urban and rural environmental conditions. With regard to the latter, all efforts to transform the pre-industrial society into a modern society including a strong programme of education, will have to be undertaken.

As for means for bringing about social change the following measures are recommended :

Setting up village clubs

7.12 The first step in bringing about social change is to see that social distinction, disparities, and hierarchy disappear. The success of any strategy would, however, depend to a great extent upon active Government support and finance. For achieving the above purpose, a Statewide organization of a variety of village-level, functional and general clubs, with membership ranging from 20 to 50 should be formed. Thus, there would be Farmers Clubs (like 4-H Clubs of U.S.A.), Artisan Clubs Teachers Clubs, Bank Employees and Constituents Clubs, Government Servants Clubs, Cattle Breeders and Poultry Farmers Clubs, Sports Clubs, Fine Arts Clubs, Women's Clubs, etc. In most of the urban centres, social clubs are becoming popular. With proper initiative and appropriate approach, several useful functional clubs could be set up in our villages. There are about 17,000 villages in Tamil Nadu and the Plan should be to cover the entire rural areas and semi-urban areas by the end of the Perspective Plan Period. Its implementation calls for a deep faith in the programme, a missionary zeal and a large corps of dedicated social change workers for maintaining constant vigil over the working of these clubs in the true spirit of its conception. The programme should be time-bound and organised in all the villages and semi-urban areas in Tamil Nadu.

Removal of caste names and appellations

7.13 In the matter of avoidance of discrimination on the basis of caste, Tamil Nadu has a long record of equity and justice. Tamil Nadu is now poised for the next stage of development, in which the spread of casteism, and caste groupings, should be curbed by policies and practices of the State and voluntary associations. Caste names and appellations tend to serve as constant reminders of caste distinctions. Deliberate discouragement of the use of caste names and appellations is desirable. It is suggested that as a first step by the Government in this direction, Government grants and Government support in general may be denied to institutions and other agencies named after particular communities and castes. The Department of Education and Department of Social Affairs in particular, may discourage the use of communal names and caste appellations.

Reduction of socially wasteful consumption

7.14 Traditional (pre-industrial) society is noted for wasteful spending on social functions like marriages and funerals, etc. Conspicuous consumption, in the form of construction of costly and luxurious houses is another characteristic of such a society. Such spending tends to erode the savings

and reduce the rate of capital formation. Therefore, it is necessary to limit by law, if persuation fails, the expenditure on weddings, house construction, extravagant illumination and other wasteful and ostentatious consumption. Reduction in wasteful consumption is to be brought about through : (*a*) suitable legislation, (*b*) controlling the manufacture of non-essential luxuries, except for export purposes, and (*c*) reducing the wide varieties in consumption goods to a limited number actually needed, conforming to standard patterns. Wasteful expenditure has increased of late, with the emergence of the " *nouveau riche* ". Concentration of wealth in the hands of a few demoralises society. It is necessary to implement fully the Constitutional Directive Principle of prevention of concentration of wealth and economic power, to the detriment of society.

Prevention of corruption

7.15 Regarding prevention of corruption, so far as the administration side is concerned, modification of discretionary powers of the Officers of the lower rung and increasing the remuneration of low-paid officers are suggested. The posts of low-paid officers should be rationalised in number and each post should carry a reasonable living wage. In this connection, the role and function of the Vigilance Agencies need reappraisal. An earnest attempt is to be made to inculcate the right attitudes, rectitude, integrity and honesty on the part of public servants. This is necessary because corruption is not merely a result of want and is noticed as a problem even in affluent countries.

Removal of the revolting practice of carrying night-soil as head-loads

7.16. It is observed that in many municipal towns and panchayats in Tamil Nadu, sweepers and scavengers still continue the revolting practice of carrying night-soil as head-loads or in buckets. Those who are engaged in such activities are subject to very great health hazards, not to mention the obnoxious nature of that practice. Attempts made so far to mitigate this social evil, however, are found not to work in practice. A strong drive to provide underground drainage in all towns is immediately required. Simultaneously, houseowners in these towns should be persuaded to construct flushout latrines and connect them to the underground drainage system.

7.17 It is likely that as a result of this drive, about 27,000 persons who are engaged at present in this occupation in Tamil Nadu will be thrown out of employment. Hence, absorbing them in alternative employment in the municipalities themselves will have to be thought of, as these persons may find it difficult to get employment elsewhere. Hence, it is recommended that the provision of alternative employment should be tied up with the main scheme of providing flushout latrines in all municipal towns. The earlier this is done, the better it would be, from the point of view of social change.

HUMANSING DEVELOPMENT

7.18. The Perspective Plan also aims at humanising the entire development process so that the end purpose of the Plan, viz., a creatively happy and materially enriched community of people—may be attained. The Plan must then not only meet the economic, employment and social needs and demands of the people, but it must also provide the means for their mental growth and moral development.

CULTURAL DEVELOPMENT

7.19 The goal of humanising development calls for a cultural policy and a comprehensive cultural programme as the instrument of that policy.

The cultural policy for the Perspective Plan Period would involve :—

(*a*) the establishment of cultural development institutions ;

(*b*) legislation to promote culture ;

(*c*) the optimum use of artistic resources and mass media ; and

(*d*) financial resources to help the growth, development and further enrichment of the State's multi-faceted culture.

7.20 The cultural development institutions will be established at the Village, the Block, District and State-levels. At the State level, there should be a State Cultural Council with a Minister of Culture as its Chairman, the Secretary to Government in-charge of Cultural Affairs as the Member-Secretary, and representatives from village panchayats, panchayat-union-councils, District Planning Organisations, the library and museum associations, the music, theatre, dance and fine-arts academies in the State. Creation of this development-oriented

cultural organisation in the State will be the subject of a legislation by the State Assembly, somewhat along the lines of the State Library Legislation.

7.21. The cultural activities at the various levels in the State are discussed in the following paragraphs.

Music

7.22 Music creation and peformance, classical, folklore and popular, will be developed in training institutions, meetings, assemblies and by means of competitions in the Village and Block as well as State-level programmes.

Drama

7.23 To start with, theatre construction in the Block headquarters and the equipping of the village school with some of the theatre equipment will be undertaken. Drama writing and production will be encouraged at the village-level and training in popular and social theatre acting will be promoted.

Books, Newspapers and Libraries

7.24 The writing of books by creative rural authors will be encouraged and subsidised. Each village will have a library and reading room and this facility will also be used for cultural discussions and meetings.

Mass Media

7.25 The State Cultural Council will act as the advisory body to the Radio and Television stations in the State in the boradcasting of music, drama and plays to rural and urban audiences in the State. It will also produce cultural films. These films will be shown in rural and urban theatres and cultural halls and will also be broadcast by television stations.

Painting and Fine Arts

7.26 Exhibitions will be organised to promote artistic talent in rural areas. Provision is made for the development of painting and sculpture talents particularly in the rural areas.

DEVELOPMENT OF HUMAN RESOURCES BY TRAINING, EDUCATION, ETC.

7.27 The following projects are also recommended for implementation in the Perspective Plan period.

(1) *Project for Developing Excellence in Sports*

7.28 This project is suggested to make the State responsible for developing the athletic and other physical talents of about 20 boys and girls in each area of sports and games to levels of national and international excellence. The maintenance of a Tamil Nadu Register of Sports Talents is recommended A post of Director of Sports may be created The Director will be the officer-in-charge for disbursing grants and will be the ex-officio Secretary of the Council of Sports. A broad-based exposure of young people to all the aspects of education including physical education will have to be attempted.

(2) *Creation of Madras University Library Complex*

7.29 It is necessary to promote intensive studies of humanities and social sciences with reference to Indian experience and South-East Asian experience. To facilitate such studies, it is necessary to develop a comprehensive and up-to-date library complex in the University of Madras. The vast resources in books and journals so far collected during the last 116 years need to be preserved, documented and well put to use along with massive additions of new literature. This library will have buildings of its own, suitable furniture, facilities for documentation and all modern facilities for research work. It will develop into a centre for South-East Asian Studies.

(3) *Project to improve libraries and maintenance of rare and ancient manuscripts*

7.30 The Connemara Public Library will be developed into a major centre for collection of publications of the State of Tamil Nadu, India and other countries. The Tamil Nadu Archives will be developed for the better maintenance of the rare and ancient manuscripts. Its work will be co-ordinated with the different oriental manuscript libraries in Tamil Nadu like the Saraswathi Mahal Library, Thanjavur and the U. V. Swaminatha Iyer Library in Adyar, Madras. The net work of libraries under the Local Library Authority serving rural areas of Tamil Nadu will be developed to offer better service by a liberal supply of books and journals.

(4) *Academy of Tamil Culture*

7.31 Tamil culture is ancient ; but it is a living culture which is not averse to modernity and change. A discerning reader of the wise couplets of the great

poet Thiruvalluvar cannot miss the message of social equality and egalitarianism that are advocated in them. In essence, Tamil culture is anti-caste and anti-class and the arts and literature which have been handed down from generation to generation may be used as the means to propagate the type of social change that would fit in with a modern industrial set-up. An Academy of Indigenous Arts and Research may be set up for this purpose administered by the Department of Social Change/ Social Affairs. This scheme will, in fact, complement the efforts made for social change through the establishment of village-level clubs. A centre within the Academy may be organised for study and research on the subject of international migration of Tamils both in the past and in the present and their contributions to the enrichment of Tamil culture. Also, the study of the lives of great Tamils—reformers, poets, political and social leaders, outstanding scientists, pioneers of industry, great thinkers, martyrs, etc., may be taken up. In fine, this will be an attempt at taking full advantage of the renaissance of Tamil culture that is in evidence now and this scheme will help in accelerating the process already in evidence towards the establishment of a better order of society.

(5) *The school of Humanities and Social Sciences*

7.32 The main objective of setting up this School is to encourage independent and original thinking on subjects relating to different branches of Humanities and Social Sciences. The School would be an autonomous body recognised by Universities and will sponsor fundamental studies and also encourage empirical research on human resources for development and social change in Tamil Nadu.

(6) *Public-Co-operation—Planning Forums*

7.33 There will be a new orientation to the activities of the College Planning Forums. Emphasis would be on investigation and research work like the following :—

(*a*) Studies on Social Change for Economic Development ;

(*b*) Economic Surveys ;

(*c*) Evaluation of Plan projects and preparation of papers on the application of science and technology to development programmes ; and

(*d*) Study visits to villages, towns, industrial centres, etc., in Tamil Nadu and other States.

To enable these Planning Forums to function purposefully adequate finance should be made available to them.

(7) *Department of Social Affairs and Cultural Development*

7.34 A new Department of Social Affairs and Cultural Development will be created to implement all the social change and other allied programmes mentioned above. This Department will also co-ordinate the social change and welfare programmes of both Government and voluntary agencies. The Department will have Taluk and District-Level Offices besides a Headquarters Office to discharge its functions effectively.

DECENTRALISATION

7.35 The Perspective Plan frame sets out as one of its objectives " Decentralised Planning, Development and Resources Mobilisation". At first sight, it may appear somewhat and to have this as an objective of the Plan, when to most it should seem to be a methodology rather than an objective. But decentralised planning and development makes for direct people's participation in the formulation of the Plan and direct accountability to the people for its implementation. No plan can succeed unless the people are committed to it. Public commitment, in other words, is an essential pre-requisite, particularly in relation to measures for bringing about major structural changes. By decentralising planning and development, public participation is ensured not only at the formulation stage, but also at the implementation stage ; not only are human resources mobilised towards the fulfilment of the objectives of the Plan, but also financial and material resources. The mechanics of decentralisation of plan formulation and plan implementation with particular reference to District Plans has been spelt out elsewhere in the Perspective Plan document. Suffice it to say, for the present, that decentralisation of planning and development is one of the most potent instruments which the planning machine possesses to confer the benefits of planning to the people whom it is expected to uplift by raising the standard of living and offering them a better life.

PART III

District Plans

CHAPTER 8

District Planning

THE RATIONALE

8.1 The objectives of the Perspective Plan hav been established at the macro aggregative leve for the State. The strategy to be pursued for tlheir realisation and the policies that flow from such strategy are also established at the overall State-level Also some of the programmes that translate the objectives and the strategy have rightly to be planned at the State-level. These comprise of subjects like University education and higher professional education, major and medium irrigation and large and medium industries, water and power programmes, tourism and a large part of transport development. In programmes relating to these subjects no local unit can be self-sufficient. Their programming and operations cut across district boundaries and their planning must be based on the resources and needs of the State as a whole. But essentially the realisation of the Perspective Plan objectives and strategies call for locally planned and locally implemented programmes.

8.2 The overall objective of doubling per capita real income is to be realised through the implementation of the comprehensive programme of development but this State programme should take into account and, in fact, be based on the needs and the unique physical and human resources of each locality. The objective of eradicating unemployment involves an identification of the unemployed and under-employed in each village and panchayat union block, their age composition, the occupation they are engaged in, their skill, and qualifications with reference to which the employment generating strategy in each region is to be determined.

8.3. Similarly, the formulation of measures to reduce mass poverty would involve micro-planning and area-programming in order to determine who the poor are, how many of them are in the labour force, how many dependants they have, where they are located, what their food and minimum non-food needs are in each locality and what the local resources are that need to be mobilised and which in combination with State subsidy can be used to finance the poverty eradication programme. In fact, such local planning is the only means of identifying the backward areas—the villages which are both agriculturally and industrially backward those which are agriculturally developed but industrially backward, and those which are backward in both and also do not have the minimum infrastructural facilities. Even the end projections of the Perspective Plan—the secular trends over the time period in resources endowment, in population and related human resources—have to take into account the position at the local level where they are both causative and consequential. Finally, in so far as Perspective Planning implies evolving and changing the structures and systems rather than making immediate decisions as in medium-term planning, local and regional planning will help greatly in getting the local people, who are the subject and object of all planning involved in the effort. In fact, one of the seven objectives of the Tamil Nadu Perspective Plan is to secure the co-operation and involvement of the local people in this enterprise of planned developemnt.

METHODOLOGY

8.4 In fixing the size and the unit of planning, a number of factors such as, availability of reliable statistical data, compactness of the area, administrative feasibility, etc., have to be considered. On this basis, the revenue district may be thought of as the unit of planning. However, the revenue district is a product of history and the administrative delimitation of a district does not conform to the requirements of development planning ; also in many cases the districts are too large and unwieldy. Hence, the development district which roughly constitutes half the size of the revenue district has been adopted as the lower planning unit. Out of the 13 revenue districts, 10 composite districts have been divided into two development districts each, and three small districts have been retained as single development districts. Thus, excluding Madras City, there are 23 development districts, each with its plan based on its human and socio-economic features.

8.5 Planning for the development of districts would involve :

—assessing the availability of human and material resources ;

—identifying the constraints to district development ;

—identifying the main economic activities and activity centres to be developed ;

—listing the subsidiary and the supplemental activities to be promoted in their order of importance ;

—determining the infrastructural facilities, inputs and services for the main economic activities ;

—indicating the basic requirements of backward areas and backward classes ;

—correlating the requirements of various areas, determining the location of the projects and organising them spatially in an integrated manner with a view to secure optimum coverage ;

—assessing the physical and financial resource potential ; and

—projecting the trends in development of the district and the State of resources and institutions.

8.6 Each District Plan has been developed further by dividing the development district into a suitable number of homogeneous sub-regions with identifiable features regarding the natural resources, soil conditions, land-use, agricultural produce, manufactures, communications, markets, cultural activities, etc. A detailed initial assessment of the existing level of economic activity was then made and on the basis of this material, the major options of development, which will contribute to the attainment of the objectives as envisaged in the Plan and the possible constraints to development, were established. This, in turn, led to the elaboration of specific and viable projects in different sectors with an order of priorities. In formulating such projects, care has been taken to assess the past performance in the field of agriculture, industry, education, health, communications, etc., and the projects have been so designed as to overcome the existing deficiencies and yield the desired optimum results in time. While framing the projects, the following considerations have also been kept in view :—

—the recommendations of the various Task Forces set up by the State Planning Commission ;

—the cost-benefit study of some selected projects ; and

—the recommendations of the district level specialist officers.

THE CONSTRAINTS

8.7. The formulation of District Plans is faced with a series of difficulties which are broadly procedural and substantive. On the procedural side, there is no tradition of forward programming and long-term projections of development at the local level. With the centralised aggregative planning machinery and techniques built up over the past four Plan periods, the first task in local and area planning has been to create the minimum machinery for such an effort. This first attempt at local programming needs to be extended in subsequent periods to ensure local popular participation in such planning. A further organisational constraint is the absence of a local system of moniotring of project execution and procedures to wind up and terminate projects which are unsuited or inappropriate to local conditions and at the same time to strengthen and expand those which have an appropriate pay off. And in addition, there is the chronic problem of lack of reliable statistics. Some essential statistics are available at the block and taluk level but the aggregation of these data into the base for each sub-regions of the development districts has not always been satisfactory. In the case of some crucial economic determinants like employment and local income distribution, data is not available and some inspired guess work has had to be undertaken. Besides there are the substantive constraints which the development districts and their sub-regions face. These can be listed briefly:

Lack of proper organisation and inadequate provision of funds and credit facilities for subsidiary occupations ; lack of marketing organisations such as regulated markets for commercial crops ; non-availability of bank subsidies ; absence of Small Farmers' Development Agency ; lack of processing and storage facilities; inadequacy of fodder production and lack of adequate number of feed mixing plants ; non-availability of adequate fishing equipments for deep-sea fishing ; poor standard of rural roads ; under-utilisation of industrial estates ; want of industrial training and technical schools ; lack of school buildings, laboratory facilities and teachers'

quarters; alarming increase in school drop-outs and repeaters; and inadequate medical and sanitation facilities, etc. The recognition of these constraints forms the starting point of many of the District Perspective Plan Projects.

THE HIGHLIGHTS

8·8 Agriculture and allied schemes have been accorded top priority in all the District Plans. This is not surprising as somewhere around 70 per cent of the people in the State, and in some sub-regions 90 per cent of the people, are agriculturists. Within agriculture, in view of the non-availability of adequate water in many sub-regions and districts and because of its low ICOR and high employment potential, dryfarming techniques have been pointed as the agricultural project base. The districts of Dharmapuri and Ramanathapuram are instances of this kind. Second, multiple-cropping pattern, diversified farming techniques and switching over from food crops to commercial crops are some of the characteristics of the desired changes in the case of delta districts of Thanjavur, Tiruchirappalli, Tirunelveli and South Arcot. Third, a systematic industrialisation programme has been visualised in the districts of Coimbatore, Salem, Chingleput and North Arcot with their good raw material and entrepreneurial base. Fourth, processing and agro-industries have been planned for Madurai, Thanjavur, South Arcot, North Arcot and Dharmapuri districts.

8·9 Madurai which is predominantly an agricultural district is a case in point of transition to a balanced local economy. Three factors favouring the growth of mdustrialisation are to be exploited. The existence of experienced entrepreneurs, availability of cheap and skilled labour, expected abundance of raw material from large-scale commercial crops such as sugar-cane, cotton, tobbacco, oilseeds, plantains, etc., constitute a satisfactory base for setting up of a number of processing industries. On the other hand, Dharmapuri with little water supply has prepared an ambitious Rs. 144 crores agricultural plan for the Perspective Plan period with emphasis on commercial crops based on dry-farming techniques. Fifth, the District Plans have identified the potential industrial growth centres and satellite towns in and around the Neyveli complex, and also Cuddalore, Vadalore, Viruddhachalam, Panruti and Nellikuppam. Similar programmes have been indicated in the Chingleput, Tiruchirappalli and Salem district Plans.

8·10 The District Plans also reflect the concern for social justice in respect of the weaker sections of the society. In the social services sector specific welfare schemes for Scheduled Castes, Scheduled Tribes and the poverty sector have been provided with a view to bring them into the main stream of the society. Slum clearance, provision of house-sites to the rural landless labour, urban and rural housing, women's welfare, old-age pension, etc., are some of the schemes which have been included in the District Plans as welfare schemes. Further the District Plans have concretised the "Minimum Needs Programme" which has been designed to raise the levels of living of the poverty sector. To these should be added the programme for subsidised distribution of essential goods for the rural destitutes, which is built into the District Plans. The structural changes in land ownership involving secure tenancies, measures to provide land to the landless and raising the level of wages of the landless labour class are the other elements that will make the District Plan the centre piece in the programme to remove poverty.

ORGANISATION

Setting up of District Rural Development Corporations

8.11. During the Perspective Plan period, the organisation and machinery for effective planning and efficient implementation of plans at the district level will be put into place on the basis of the commitment of the Government and the people to a decentralised decision-making system which will define clearly and meet effectively the needs of the people in their local area. An agency called the District Rural Development Corporation will be set up in each Revenue District. It will be headed by the District Collector. The functions of the Corporation may be to—

(*a*) draft the annual operational District Plan and the Five-Year Plan ;

(*b*) supervise its execution, and undertake the appropriate monitoring and evaluation function ;

(*c*) make project changes and tranfers within certain limits ;

(*d*) raise taxes and other financial resources for which responsibility is devolved on it ; and

(*e*) act as banker to Panchayat Union Council and disburse such financial and capital resources as may be made available to it.

SUMMARY OF DISTRICT PERSPECTIVE PLANS

8·12 The needs of the District as indicated in the District Perspective Plan have been taken into account in formulating the sectoral programmes of the State Plan. A brief summary of the District Perspective Plans* is given below :

1. CHINGLEPUT DISTRICT

8.13 A total of Rs. 601·82 crores is proposed for the development of Chingleput District during the Perspective Plan. Chingleput South Development District accounts for Rs. 178·40 crores while in the North Development District, the proposed outlay is Rs. 423·42 crores. The bulk of the outlay in the North Development District (Rs. 269 crores), constituting over 50 per cent of Plan outlay, is to be on industrial projects. Important among the proposed industries are a sugar factory at Ramakrishnarajupet, a polyster fibre factory, manufacture of gas cylinders and television sets as well as a naphtha cracker plant. Under the Central sector, a desalination plant and a chemical fertiliser plant at Ennore are proposed. The Kalpakkam Thermal Power Station and Manali Petro-Chemical Complex hold prospects for further industrialisation of the North Development District. A number of down-stream chemical industries are planned in and around Madras.

8.14 In the South Development District emphasis has been laid on the development of handloom and textile industries and it is proposed to have a zari factory at Kancheepuram. In the small industries sector, a number of industries under engineering and chemical specialities will be established in the private sector with adequate incentives provided by the Government. Under agriculture, the intensive agricultural development programme including fruit development schemes is proposed. Minor irrigation works have been proposed involving deepening and desilting of tanks.

8.15. The District Plan has proposed schemes costing Rs. 21 crores for the development of Transport and Communications in the District. About thirty per cent of the total outlay has been set apart for providing social services and for the minimum needs programme.

2. COIMBATORE DISTRICT

8.16 The various programmes proposed during the Perspective Plan period in Coimbatire District will call for an outlay of Rs. 277·07 crores comprising of Rs. 137·65 crores for Coimbatore East Development District and Rs. 139·42 crores for Coimbatore West Development District. Of this, industry, minimum needs programmes and development of backward areas account for the major share. The entrepreneurs of this District have laid a strong base for sound industrial development. Since the hinterland grows cotton extensively it would be advantageous to encourage industries like cotton ginning, yarn manufacture and textile mills by modernising the machinery and expanding their capacity.

8.17 The East Development District Plan also proposes package plans for cotton development, sugarcane development, oil seeds development, coconut and other orchard development. The development of animal husbandry and dairying has been given due importance, as fine varieties of livestock are available in this district. As this development district has considerable forest wealth, industries based on forest resources have been emphasised. Other important industries included in this development district Plan are development of sericulture, leather industry and cigarette manufacture.

8.18 In the West Development District, the important industries which have been proposed by the District Plan include setting up of a scooter manufacturing plant, a textile spare parts producing centre by SIDCO, a cylinders and regulators manufacturing plant, setting up of a co-operative sugar mill and a hosiery machinery manufacturing unit. In addition to these major industries, a number of medium and small scale industrial units have also been proposed.

3. DHARMAPURI DISTRICT

8.19. The Dharmapuri district is comparatively a small one with a compact area. It is a backward district as it has neither stable agriculture nor industry. It is yet another dry district in the State

* The figures indicated under each District Plan are not in the nature of final allocations. They represent the likely cost of schemes and projects that have been so far thought up by the District Planning Cells. Nor do they include all investments in the districts. The allocation of investments as between various districts in relation to population, resources, need, backwardness etc. will have to be reviewed and worked out keeping the State Plan resources and inter-district disparities in view. No doubt the project summaries of the district plans relate mostly to agriculture and industry. Their major content, however, covers the areas of Minimum Needs Programme in which there are inter-district variations.

with scanty rainfall. Hence this district is deprived of adequate water for agriculture either by rain or by any canal system. The major strategy proposed for the development of this district is large-scale dry farming. Diversification of farming with emphasis on large-scale commercial crops such as sugarcane, obacco, oil seeds, sunflower, ragi, maize and orchard and vegetables constitutes the salient feature of the development projects. This would necessitate a heavy dose of investment in the primary sector.

8.20 Of the District Plan outlay of Rs. 330 crores proposed for the Perspective Plan period, the primary sector alone claims Rs. 150 crores, that is, about half of the total outlay. As one-third of the area of this district is under forests, the District Plan has proposed a large number of schemes utilising forest products. Stress is laid mostly on the development of agro-industries, forest-based industries, fruit-canning and processing-industries as detailed below :—

1. Fruit canning-*cum*-can making plant ;
2. Establishment of a cigarette manufacturing factory ;
3. Solvent extraction plant ;
4. Establishment of a distillery as an ancillary to the Palacode Co-operative Sugar Mills ;
5. Establishment of a unit for cutting and polishing of Granite Stone ;
6. Establishment of a fibre glass unit ;
7. Establishment of a unit for sizing and finishing of yarn ;
8. Graphite manufacturing unit ; and
9. Modernisation of silk reeling unit at Hosur.

8.21 A big self-contained industrial complex of about 1,200 acres for small, medium and large industries, will be established at Hosur by SIPCOT, as a deliberate policy of Government to take industries to backward areas. By adopting labour-intensive schemes with judicious application of capital on quick yielding crops and industry, the per capita real income of the District is expected to be raised from the existing Rs. 432 to Rs. 864 by the end of 1983-84.

4. Kanyakumari District

8.22 The Kanyakumari District Plan envisages an outlay of Rs. 179·82 crores for the period 1974-84. Among the different sectors, agriculture and social services have been assigned top priority. These two sectors alone claim an outlay of Rs. 54·14 crores and Rs. 56·26 crores, respectively. It may be seen that by according top priority to agricultural development, the District Plan aims at strengthening the existing agricultural base of the District by adopting several crash programmes such as, introduction of intensive area development programme for paddy, tapioca, pulses, coconut, cocoa, banana, rubber, etc. The Plan also contemplates the establishment of a rice research station at Theroor Other schemes such as, Goshala development, calf subsidy schemes, key village schemes, establishment of veterinary aid centres, assistance to milk supply co-operatives, etc., hav also been included. Adequate provision is als made for the development of fodder, sheep, piggery and poultry.

8.23 As this District has large scope in inland and deep-sea fishing, several measures such as, supply of nylon yarn and nets at concessional rates, and mechanised boats to the fishermen have been proposed in addition to the establishment of ice plants, cold storages and fish curing yards.

8.24. With regard to industrial development, the following are the important industries suggested :—

A hydrochloric acid plant at Aramboly ;

P.V.C. processing plant (by TIDCO) a Nagercoil ;

Lemon grass oil unit at Thadikarankonam;

Cocoa plant at Pechiparai ; and

Titanium Dioxide Plant.

These industrial programmes envisaged for the Perspective Plan clearly demonstrate that while strengthening the agricultural base, care has also been taken to develop the District industrially. The Plan also bestows due attention to the development of infrastructural facilities as well as anti-poverty measures and social services.

5. Madurai District

8.25. Madurai District Plan envisages a total outlay of Rs. 448·39 crores comprising of Rs. 236·12 crores for Madurai East Development district and Rs. 212·27 crores for Madurai West Development District. In Madurai East Development District there is a clear shift from agriculture to industry. In this region Rs. 27.51 crores have been allotted for agricultural production, representing a little over 12 per cent of the outlay compared to 23 per

cent in the West Development District. Inclusive of Fisheries and Forestry sectors, the entire primary sector accounts for 18 per cent of the total outlay as against 30 per cent in the West Development District.

8.26 Industrial development is the major component in the Plan for Madurai East Development District. An amount of Rs. 54·40 crores has been set apart for the development of large, medium small as well as village and cottage Industries. The important large-scale industries suggested in this region are :

(i) Nylon filament yarn project at Kappalur ;

(ii) Unit for manufacturing electronic equipments at Kappalur : and

(iii) Caustic Soda manufacturing plant.

8·27 In Madurai West Development District, the important projects suggested under Agricultural production sector include Intensive Cotton Development Programme both in dry and irrigated areas, development of horticultural crops in the hill areas of Palani, Kodaikanal and Sirumalai Hills, production of bananas of exportable varieties and intensive dry land farming projects. Under manufacturing sector, a unit for extraction of aluminium from bauxite has been proposed. Provisions have also been made for establishment of large number of processing and agro industries units, such as fruit canning, tannery, etc. The important feature of Madurai District Plan is that about half of the total outlay, Rs 242 65 crores, has been set apart for the provision of social services and poverty eradication programme.

6. Nilgiris District

8.28. The Nilgiris district is a single development district. In view of the hilly nature of the district, the Plan emphasises the development of plantation crops such as tea, coffee and cardamom. Development of mulberry cultivation, sericulture, potato-seed multification and paddy cultivation as well as industries based on forest products have been proposed in the plains. Substantial efforts for poverty eradication have also been made out in the Plan. The total Plan outlay is put at Rs. 122·49 erores comprising of Rs. 21·10 crores for the development of agricultue, Rs. 12·19 crores for the Deveenopm of animal husbandry, forestry and fishters,ie Rs. 14·61 crores for industrial development, Rs.69·09 crores for minimum needs programme and Rs. 5·50 crores for promoting infrastructural facilities. Under manufacturing sector, establishment of a tea processing factory and a unit for manufacturing precision instruments have been suggested. It is also proposed to set up a mica-mining, extraction and grinding plant under SIPCOT. It is programmed to set up industrial units as ancillaries to the Hindustan Photo Films Factory in the Ootacamund sub-region. As Ootacamund is a famous centre of tourist attraction and a hill resort, facilities for the development of Tourism have also been proposed.

7. North Arcot District

8.29 The development Plan for North and South Development districts of North Arcot is of the order of Rs. 246·44 crores comprising of Rs. 83·52 crores for South Development district and Rs.162.92 crores for North Development district. In general, large-scale occurrence of mineral deposits has been reported in and around Tiruvannamalai area. For utilising these resources, it has been proposed to have in this region units for manufacturing Manganese alloy billets and castings, sulphuric acid and ferrous sulphate from pyrites and magnesium products from magnesite. Under the small-scale sector, mat-weaving units around Vandavasi and manufacture of particle board/coir board from the agricultural/industrial wastes have also been proposed. In the North Development district, agriculture, weaving and tanning are important occupations of the majority of the population. Other notable occupations are tanning, metal works, traditional crafts and silk manufature. The District Pian also envisages the development of light engineering and electrical industries, and a host of processing industries as well as the starting of an Industrial Alcohol unit at Ambur. The Continuous Steel Casting Plant at Arkonam and the model foundry at Katpadi offer further scope for expansion.

8·30 A big self-contained Industrial complex at Ranipet under the aegis of SIPCOT has already been inaugurated as paid of the backward area development programme. The District Plan proposes about 40 per cent of its outlay for the provision of social services and for the minimum needs programme.

8. RAMANATHAPURAM DISTRICT

8.31 Ramanathapuram District is backward with a per capita income less than the State average, low productivity in agriculture, a poor industrial base, large-scale unemployment and under-employment. The development Plan drawn up for both East and West Ramanathapuram for the Perspective Plan period is of the order of Rs. 309·60 crores comprising of Rs. 197·21 crores for Ramanathapuram East Development District and Rs.112·39 crores forRamanathapuram West Development district. Agriculture is to continue as the principal occupation of the eastern region and hence as much as 50 per cent of the outlay has been earmarked for the development of agriculture and allied sectors. Non-availability of adequate and regular supply of water is the main constraint of this region and as such the District will have to rely on dry farming for its development. Oil seeds, chillies, maize and to a lesser extent, paddy are the chief crops of this region. An intensive programme for developing deep-sea fishing in and around Mandapam, is suggested. If the Sethusamudram Project is executed by the Union Government, this would greatly accelerate the pace of development of this area. The three important industries suggested for this region are a sodium hydro-sulphite plant at Karaikudi ; an automobile tyre and tube project, and a motor cycle manufacturing plant. The major thrust of this area Plan is the development of several agro and processing as well as small industries as a means of employing its large idle manpower and attacking its poverty sector in an effective manner. As the East Ramanathapuram Development district has a 160 mile long coast, the schemes to develop marine-based industries which have a large potential market abroad would be appropriate. As regards the West Ramanathapuram Development district, agriculture and allied sectors claim about 50 per cent of the total outlay. This district being famous for its matches and fire-works industry, further development of match industry on a co-operative basis and also the establishment of a blue match paper industry at Sivakasi have been proposed. The important industries suggested for the area are—

—expansion of Alangulam Cement Plant ;

—establishment of an automobile tyre and tube plant ; and

—a calcium carbide plant.

The Plan proposed concentrated attention to the development of infrastructure facilities as well as implementation of the minimum needs programme and improvement of social services.

9. SALEM DISTRICT

8.32 The Salem District is planned as another important industrial centre. It proposes a total outlay of Rs. 425·73 crores. The outlays for South and North Development districts are Rs. 112·48 crores and Rs. 313·25 crores respectively. The marked differences in outlay between the two development districts is due to the fact that the south will continue to be heavily agrarian, using dry farming techniques while, the North Development district is marked for rapid industrial development including the setting up of ancillary and other processing industries following the establishment of the Salem Steel Plant. Among the industries suggested for the Salem North Development district are:—

—seamless steel tubes plant ;

—a sugar factory ;

—an aluminium fluoride plant ;

—a ball bearing plant ; and

—a refractory unit.

The disparity in outlay between North and South Development districts is also due to the existance of large hill areas such as Yercaud, Periakalrayan and Pachamalai and Kolli hills in the South Development district. Mohanur and Attur are the centres of sugarcane and paddy cultivation and offer little scope for large-scale industrialisation. Thalaivasal is yet another backward pocket which needs special attention.

8.33 The District Plan also provides adequately for the minimum needs and anti-poverty programmes involving an outlay of Rs. 116.79 crores for the North Development district and Rs. 73.46 crores for the South Development district.

10. SOUTH ARCOT DISTRICT

8.34 The development Plan for both the South and North Development districts of South Arcot calls for an outlay of Rs. 383.14 crores, of which, North Development district claims Rs. 213.61 crores, and South Development district, Rs. 169.53 crores. The analysis of the sectoral outlays indicates that agriculture has a dominant place. The primary sector in the North Development district accounts

for a little over 25 per cent of the total outlay. With regard to industries, excepting a new Fertilizer Plant envisaged during the Sixth Plan period at Ulundurpet, the rest of the schemes are labour-intensive small-scale units. The medium, small and village industries together would involve a capital outlay of Rs. 12 crores. This region has vast potential for ground water and this is proposed to be tapped for cultivation of sugarcane and groundnut.

8.35 In the South Development district which forms part of the Cauvery delta, the pride of place is given to the development of agriculture. In the secondary sector, industries claim about 27 per cent of the total outlay. The District Plan has very clearly marked out the sub-region of this development district comprising of the Cuddalore-Neyveli region, which is predominantly an industrial belt. The area around Neyveli Complex is a potential growth centre consisting of Panruti, Vadalur, Vridhachalam, Cuddalore and Nellikuppam. These towns have been ear-marked for industrial concentration calling for a fair amount of investment for the development of this region. Medium industries alone claim 15·5 per cent of the total outlay. Among the major industries envisaged are the setting up of a large paper mill at Kallakurichi, a backward taluk, a medium-size paper mill at Pennadam, a caustic soda by-products plant at Chinnasalem, a calcium carbide plant at Vridhachalam and a fertilizer unit of SPIC at Cuddalore. It is also proposed to allocate a reasonable amount for investment in small and village industries.

11. Thanjavur District

8.36 The Perspective Plan for Thanjavur district envisaged an outlay of Rs. 407 crores. The Plan outlay of Thanjavur East Development district is Rs. 213·50 crores, while that of West Thanjavur is Rs. 193·33 crores. About 30 per cent of the outlay is proposed to be spent on agricultural programmes. The extension of Intensive Agricultural Development Programmes, provision of adequate credit facilities through co-operatives, multiple-cropping and expansion of the area under high-yielding varieties are some of the important programmes that would be implemented in the district. A Rice Research Institue at Aduthurai, a Soil and Water Management sub-centre and a Regional Soil Research Centre are also proposed to be set up in the district. The scheme for modernising the old Cauvery Delta System at an estimated cost of Rs. 43·00 crores will help in improving the efficiency of the existing irrigation facilities of the district. The Plan has also laid emphasis on the development of animal husbandry mainly through provision of credit facilities to small farmers. Thanjavur, being a coastal district has prospects for fisheries development. Construction of a fishing harbour at Mallipattinam is proposed and this will help in developing the fishing industry. The Perspective Plan has also proposed a number of agro-based industries in the industrially backward taluks. As regards large industry, a fertilizer factory and a sugar factory are proposed. The Plan has also set apart about one-third of its total outlay for the anti-poverty and minimum needs programmes.

12. Tiruchirappalli District

8.37. The Tiruchirappalli district consists of **two** Development districts, North and South. The various developmental projects suggested in this District Plan call for an outlay of Rs. 491·81 crores made up of Rs. 254·02 crores for North Development district and Rs. 237·79 crores for South Development district.

8.38 The Plan for South Development district concentrates mostly on consolidating the existing agricultural base. Since a considerable number of persons are engaged in handloom weaving in and around Karur area, a Powerloom Industrial Estate at Karur has been proposed in the small-scale sector to stabilise the handloom industry. Care has also been taken to improve the infrastructural facilities in the rural areas to develop marketing and growth centres. The setting up of a sugar mill in Alangudi taluk and a paper mill at Karur have also been proposed in this Development district.

8.39 The North Development District Plan recommends the setting up of ancillary industrial units such as manufacture of seamless pipes to cater to the needs of the Bharat Heavy Electricals Limited. Formation of developed plots for industrial estates, the granting of subsidies to set up industries in backward pockets and establishment of industrial co-operatives etc., are also contemplated. The Kallakudi-Ariyalur area has been earmarked as a potential industrial area. Perambalur area has been

proposed for the development of rural arts and crafts. Proposals for establishing new sugar and paper mills in this area have also been suggested in the District Plan.

13. TIRUNELVELI DISTRICT

8.40 The Tirunelveli district consists of two Development districts, viz., South and North.

8.41. The estimates of the needs of the various sectors as indicated by the District Planning Cell, come to a total of Rs. 505·44 crores for the Perspective Plan period. Out of this, Rs. 166·85 crores will be required for the South Development district and Rs. 338·59 crores for the North Development district.

8.42 The North Development district has suggested diverse industrial projects as it has a great potential for industrial advancement especially with the coming up of SPIC Complex and Tuticorin Harbour Project in its area.

8.43 The more important industries which have been recommended to be located in this industrial area in and around Tuticorin are :—

(1) SPIC Fertilizer Plant ;

(2) Heavy Water Plant ;

(3) Soda Ash and Aluminium Chloride Plant ;

(4) Oil Refinery ;

(5) Melamine Dehydride Plant ; and

(6) Titanium Dioxide Plant.

8.44 With the establishment of these industries and the development of Tuticorin Port into an all-weather port, this region will at the end of the Perspective Plan period, be one of the industrially more advanced regions of South Tamil Nadu. The distribution of outlays in other sectors, both in South and North Development districts is related to this major strategy to industrialise the North and to activise agriculture in the South.

8.45 The South Development district which will continue to retain the agrarian base has, however, the scope for the development of a few major as well as small and agro-industries. The more important among them are :—

(1) A Paper Plant at Papanasam ;

(2) Automobile Ancillaries Factory at Tirunelveli ;

(3) Sugar Factory at Kadayanallur ;

(4) Cement Factory at Valliyoor ; and

(5) Blue Match Paper Factory at Papanasam.

In the South Development district it has been suggested that cement-based industrial units on small-scale, could be started around Sankar Nagar Cement complex. In the areas adjacent to the Western Ghats suggestions for raising plantation have been made. There is ample scope for starting straw board industry also in this area. In Courtallam area, development of horticulture has been suggested with special emphasis on vineyards.

8.46 Palmyrah occupies a very important place in the economy of this district. Plamyrah regeneration and development programme have been suggested. The intensification of the production of the "Tirunelveli Senna", known all the world over has also been suggested.

8.47 The coastal areas of both the North and South Development districts will be exploited for deep-sea fishing.

PART IV

Economic and Social Infrastructure

CHAPTER 9

Power

9.1 The per capita consumption of electrical energy (based on fossil fuel, hydro power or nuclear power) is generally accepted as a reliable indicator of the level of economic development of a country. In this respect, Tamil Nadu compares favourably with the rest of India. To-day, the average per capita consumption of electrical energy is higher in Tamil Nadu than in many other Indian States and in the matter of rural electrification, it has the pride of place. Nevertheless, when compared with the economically advanced countries like Canada, U.S.A., United Kingdom, Norway and some other European countries in the West and Japan in the East, what has been achieved in our State appears very low. Per capita consumption of electricity in Tamil Nadu which may reach about 176 units in 1974, is expected to go up to 270 units in 1979 and to 450 units by 1983–84. But, in developed countries it is about 5,000 units on the average, while in Canada it exceeds 10,000 units and in Norway 17,000 units. These figures give an idea of the large leeway we have to make if we are to reach anywhere near international standards.

Power Development in Tamil Nadu—General Features and Constraints

9.2 A review of the recent trends in power development in the State brings into relief certain important features which have to be taken into account in drawing up any programme of development for the future. Real progress in power generation dates from 1927 when the then Government of Madras initiated the policy of active development of the power resources of the State and the Electricity Department was formed in the year in pursuance of this policy. The total installed capacity was 156 MW at the commencement of the First Five-Year Plan (1950–51). It rose to 256 MW at the end of the Plan, to 571 MW at the end of the Second Five-Year Plan and to 1370 MW at the end of the Third Plan. By March 1969, installed capacity was 1,570 MW and three years later by March 1972, it was 2,075 MW ; it is likely to reach 2,254 MW by the end of March 1974.

9.3. These figures, impressive as they are, indicate only the improvement in the overall position. To make the analysis more meaningful, we have to go into further details.

9.4 (i) In the first place, the proportion of power generated from different sources has undergone a steady and significant change. Tamil Nadu is not richly endowed with resources of energy. The hydro resources of the State can be termed as only fairly moderate. Neither oil nor gas has been located in the region so far. No reserves of coal are available and the coal-based thermal stations in Tamil Nadu have to depend on imported coal from other States. The only fossil fuel mined in the State is lignite and the lignite based thermal station at Neyveli has not only contributed appreciably to the power resources of the State, but also helped to firm up hydro power which is subject to the vagaries of the monsoon. Hence, the need for shifting gradually to sources of energy other than hydro power has been felt for long and the trend in the relative contribution of the different sources in the past few years indicates what has been achieved in this direction.

TABLE 9-1

Installed Capacity Different sources of Power.

(IN MW)

Year.	*Hydro power.*	*Thermal power.*		*Total.*	*Ratio of hydro power to total per cent.*
		Board.	*Neyveli.*		
(0)	(1)	(2)	(3)	(4)	(5)
1950–51	104	52	—	156	66·0
1955–56	174	82	—	256	68·0
1960–61	459	112	—	571	80·5
1965–66	969	101	300	1,370	70·7
1966–67	969	101	400	1,470	65·9
1967–68	969	101	400	1,470	65·9
1968–69	969	101	500	1,570	61·8
March 1972	1,224	251	600	2,075	59·0

9.5 It may be seen from Table 9-1, that the proportion of hydro power to the total power supply decreased steadily from 80.5 per cent in 1960–61 to 59·0 per cent in 1971–72. However, considering the limited hydro potentialities of the State, the dependence on this source even to the extent of 59·0 per cent does not appear to be justifiable. The total hydro power potential of Tamil Nadu has been estimated at 3,494 MW. Of this, most of the major and more economical resources have already been exploited. Considering the large increase in demand for power which will arise in the Perspective Plan period, it is clear that we have to look beyond the water resources left so far unutilised in the Western hills to other sources of power if the demand is to be met.

9.6 (ii) A second point to be considered in this connection is the fact that even the existing hydro projects cannot be used to their maximum capacity for generating power, in so far as they are seriously handicapped by irrigation demands. Among the more important hydro stations, Periyar, Mettur and Papanasam are linked with irrigation projects and therefore, the bulk of the power generated from these sources is seasonal. During summer the power production has to be limited to a maximum, depending on permitted irrigation discharges. As a result, the full installed capacity cannot be utilised during the summer months and the effective firm capacity of the grid is much less than the installed capacity.

9.7 (iii) Thirdly, the trend in the pattern of demand for power in the past, conveys an idea of the relative significance of the different sources of demand and indicates the extent to which future demand is likely to be influenced by the expansion of these sectors.

9.8 Between 1960–61 and 1968–69, while aggregate consumption of power increased from 1765 million units to 4545 million units or by about 2½ times, the consumption by the Industries and Agricultural sectors nearly trebled. As a percentage of the total, consumption by Industries increased from 49 to 55 per cent while that by agriculture went up from 23 to 25 per cent. These two sectors consume nearly 80 per cent of the energy distributed and utilised in the State. It follows that the expansion envisaged for these two sectors in the immediate future will be the major factor determining total requirements of power in the ten year period 1974–1984.

9.9 (iv) Although the total generation of power increased from 630 million units in 1950–51 to 5671 million units in 1968-69 (an increase of 9 times in less than twenty years) yet, what was generated in the State could not meet fully the requirements in most of the years and hence purchases from the neighbouring States were found necessary to cover the deficits. The annual gross energy generated in the State is the sum of the contribution of the Hydro-thermal plants of the Tamil Nadu Electricity Board and the gross Thermal energy generated at Neyveli Thermal Station. The difference between total energy requirements and the gross energy generated in the State represents purchases from other States, Karnataka and Kerala and to some extent from Andhra Pradesh upto 1962-63. These figures are given below:

TABLE 9-2

Gross energy purchases from other States.

(in million units)

Year.	*Gross energy generated in Board's plants.*	*Gross energy generated at Neyveli*	*Total of* (1) and (2)	*Total energy requirements.*	*Purchases from other States.*
(0)	(1)	(2)	(3)	(4)	(5)
1950–51	632	—	632	632	—
1955–56	1053	—	1053	1053	—
1960–61	2214	—	2214	2238	24
1965–66	2441	1769	4210	4428	218
1966–67	2505	1434	3939	4509	570
1967–68	3104	2071	5175	5344	169
1968–69	3352	2319	5671	5806	135

9.10 The Tamil Nadu grid is at present interconnected with the grids of the neighbouring States of Karnataka, Kerala and Andhra Pradesh by means of 230 K.V. lines at Singarapet, Pasumalai and Thiruvalam. The integrated operation of all State

grids in the southern region is essential for optimum and full utilisation of all the power resources available in the region and such integrated operation would benefit all the States concerned. The diversity of peaks in the different areas can be fully utilised to meet the peak demand in the constituent States by the drawal of power from the neighbouring States at the time of peak load. The spinning reserve capacity to meet the any sudden outage in any one State grid could also be considerably kept low. However, it is inadvisable to place too much reliance on this source for meeting marginal requirements because power generation in the neighbouring States is also dependent on the monsoons and it may well happen that when the need is great in Tamil Nadu, the other States may also be faced with a difficult situation.

9.11 In formulating proposals for the development of power resources in the State over the Perspective Plan period, it is necessary to keep in view the significance of the above-mentioned factors limited scope for further exploitation of hydro resources, the problem created by irrigation demands and the impossibility of utilising the existing hydro-projects to their maximum capacity, the emerging pattern of demand for electric power and the need for self-sufficiency in the matter of generation of Power.

PRESENT POSITION

9.12. Tamil Nadu now has 17 hydro stations of the Electricity Board with a total installed capacity of 1224 MW, two thermal plants of the Board at Basin Bridge and Ennore with installed capacities of 90 MW and 340 MW respectively and the Neyveli thermal station of the Neyveli Lignite Corporation with an installed capacity of 600 MW. All the stations feed into a common grid the power generated by them.

9.13 At the end of the three Annual Plans (March, 1969), the aggregate capacity was 1570 MW of which 969 MW was hydro and 601 MW thermal. During the Fourth Plan period, priority was given to the early completion of the spillover schemes of the Third Plan period. Together with some new schemes intended to be completed before the end of the Plan, the target of 945 MW was set forth for the Fourth Plan. The details of the schemes are mentioned below :

TABLE 9-3

Target set forth for the Fourth Five-Year Plan

(In million units)

Year	*Name of the scheme*	*Additions to capacity*
(0))	(1)	(2)
(*a*) Thermal—		
1969–70 ..	Madras Plant Extension.	30
	Ennore Thermal First Unit.	60
1970–71 ..	Ennore Thermal Second Unit.	60
1972–73 ..	Ennore Thermal Third Unit.	110
1973–74	Ennore Thermal Fourth Unit.	110
(*b*) Hydro power—		
1969–70 ..	Aliyar Power House ..	60
1970–71 ..	Kodayar Power House-I.	60
	Sholayar Power House-II.	25
1971–72 ..	Sholayar Power House-I.	70
	Kodayar Power House-II.	40
	Total (*a*)+(*b*) ..	**625**

9.14. Besides the above-mentioned State Sector Schemes, an addition of 100 MW to the capacity of the Neyveli Thermal Station, a Central sector undertaking, was also contemplated. Thus, the total addition according to the original targets for the Fourth Five-Year Plan was 725 MW. However, in view of the growing power scarcity, it was decided to complete early the Pandiyar-Punnapuzha Scheme (100 MW), the Kundah IV Stage Project (110 MW) and one more unit of 100 MW to the Ennore Thermal Station. But, in view of certain difficulties, these three additional projects are not likely to be completed before the target date. Preliminary works were started on the Pandiyar-Punnapuzha Scheme early in 1969, but works were stopped after some months as it was proposed

to revise this scheme as Pandiyar-Moyar hydro electric project utilising the waters for irrigation purposes under the Lower Bhavani Reservoir in addition to power generation as contemplated in the original project report. The diversion of the waters for irrigation purposes requires the concurrence of the Kerala Government and the modified scheme can be taken up only after receipt of agreement by the Kerala Government.

9.15 The Kundah IV Stage Project envisages the addition of one more unit of 60 MW at the existing Kundah power house-III and one more unit of 50 MW at the existing Kundah power house-IV. Although this project was sanctioned early, negotiations for procurement of generating machinery from Canada have been dragging on for a very long time and an agreement was signed only in July, 1973. Thus, the installed capacity of 110 MW under this project will not materialise even by the end of the Fourth Plan as contemplated in the target set forth for the Fourth Plan period. This project is now expected to be commissioned in 1976–77.

9.16 As regards addition to Ennore Thermal Station, the proposal was to add one more unit of 110 MW thus raising the capacity of the station from 340 MW to 450 MW. Although it was programmed originally to complete this work by 1974, it appears now that the work can be completed only in 1974–75.

9.17 If these three projects are included, the target for the Fourth Plan would rise to 945 MW (i.e., 625+100+110+110). Since these are not likely to be completed before March, 1974, the achievement will be only 625 MW. To this has to be added 100 MW arising from the commissioning of one unit at the Neyveli Thermal Station in the Fourth Plan period making the total as 725 MW. On the other hand, there is a reduction on account of the fact that in 1972-73 two units with aggregate capacity of 14 MW were disposed of, as the thermal generation at Samayanallur Power House was found to be highly uneconomical ; also, in 1973-74 two units with total capacity of 27 MW were retired at Basin Bridge Power House. Thus, by 31st March 1974, the installed capacity of the grid would be 2254 MW (i.e. 1570 MW in March 1969 plus 725 minus 14 minus 27=2254 MW) made up of 1224 MW hydro power and 1,030 MW thermal.

Forecast of Power Requirements in the Perspective Plan Period

9.18 The demand for electric power in Tamil Nadu in 1971-72 was 1326 MW. On the basis of past trends, it is estimated that the demand will go up to 1720 MW by the end of the Fourth Plan, i.e., by March, 1974. To meet this grid peak demand, a generation capacity of 2064 MW is required after allowing 10 per cent for outages and maintenance and 10 per cent for spinning reserve. Although the installed capacity of the grid by then would be 2254 MW the actual capacity of the grid will be only 1569 MW because of seasonal factors and irrigation demands. Thus the deficiency will be 2064 MW minus 1569 MW = 495 MW. Taking this as the base year position, a forceast is to be made of the trend in demand over the ten years 1974–1984 and this projection of demand will indicate the extent to which supply of power would have to be augmented in order to balance with the needs.

9.19 In assessing the demand for power, two aspects have to be taken into account(1)the maximum rate at which energy is expended or the maximum demand of power in KW or MW (2) the energy expended in units. Number one is limited by the capacity of the installed power plants and number two by the storage in the hydel power reservoirs and the fuel stocks in the thermal lants*.

9.20 Accordingly, the estimate that is presented below is in terms of demand forecast as well as energy forecast. For both, alternative methods are used which would serve as a cross check on one another.

9.21 The demand for power is bound to increase rapidly during the years 1974—1984. At present the industrial sector accounts for about 55 per cent and the agricultural sectors 25 per cent of the total requirements. It is visualised that the industrial

* The quantity of electrical power expressed in K.W. multiplied by the number of hours of use gives the quantum of electrical energy units used (i.e. kw. hrs.), For example, if two Units of Electrical energy are required to heat a given quantity of water to 70 C, the same can be achieved by using a water heater of 2 kw. capacity for one hour or by using a water heater of 1 kw capacity for two hours. In either case the number of energy Units consumed is two but the demand is 2 kw. or 1 kw. according to the capacity of the heater used.

base for Tamil Nadu during the Fifth and Sixth Plan periods will be steel and chemical industry oriented. The Salem Steel Plant, which is power intensive, and other chemical industries, which are likely to come up as a result of the formation of the petroleum complex around Manali and also in and around the hinterland of Tuticorin port including the proposed Tuticorin Refinery, will dominate the pattern of industrial development in the next decade. Large- and small-scale industries will also play an important part in the industrial expansion of the State. As regards future demand for power in the agricultural sector, this will be influenced mainly by the needs of lift irrigation and the energisation of pump sets.

A. Demand Forecast

9.22 Demand for electricity in the Perspective Plan period is forecast by using two methods: (1) estimate based on anticipated demand of the different sectors of the economy and (2) projection based on the overall growth rate in the past few years.

9.23 The demand for electricity arises as a direct consequence of the expansion of the various sectors of the economy and also due to factors like increase in population, rise in the level of income and substitution of electrical energy for other forms of energy. Categorywise the demand for electricity falls broadly under the following heads : (*a*) Industrial, (*b*) Agricultural, (*c*) Transportation, (*d*) domestic use including commercial and public lighting and (*e*) Miscellaneous (energy utilised in public offices and sales to other States).

Industrial Demand

9.24 For making this estimation, demand is classified into, loads below 1 MW, above 1 MW and below 20 MW, and above 20 MW. Based on past trends, the connected load in respect of the first is expected to grow at the rate of 15 per cent per annum. The demand of these loads is taken as 60 per cent of the connected load. In respect of the second category, demand up to 1974-75 is arrived at by taking into consideration the applications for such loads already on hand, and for the period beyond 1974-75 by assuming a 20 per cent annual growth rate. As regards industrial loads above 20 MW, the growth rate is assumed to be 15 per cent beyond 1974-75.

9.25 The demand for the transport sector is included under industrial loads above 1 MW and below 20 MW.

Agricultural Demand

9.26 The Electricity Board has a programme for energizing 60,000 pump sets per year during the Fifth and Sixth Plan periods. There are at present 12 lakhs wells in Tamil Nadu out of which, 6 lakhs have already been connected with electrically operated pumpsets. Based on total connected load of existing pumpsets, the average connected load for a single pumpset works out to 3.3 Kilo Watts. For 60,000 pumpsets, the connected load will be 198 MW, and assuming a demand factor of 50 per cent, the demand contribution from additional pumpsets will be above 99 MW per year.

Domestic use

9.27 Although electricity supply is expected to be extended to all the villages of Tamil Nadu the use of electricity in the households in rural areas may not show any appreciable increase until there is adequate improvement in the living standards of the people. The past trends indicate that the connected load in the domestic sector is expected to increase by 6 per cent annually.

9.28 The sectoral demands estimated in this manner are presented in the table below :

TABLE 9-4

Sectoral demands for power

(in MW)

Year	**Industries*	*Agriculture*	*Domestic*
(0)	(1)	(2)	(3)
1971-72	804	966	42
1972-73	920	1065	44
1973-74	1065	1164	47
1978-79	2458	1659	63
1983-84	5445	2154	84

*Includes transport demand.

9.29 Adding the estimated figures on account of miscellaneous demand, the aggregate demand for power in the Perspective Plan period will be :

(in MW.)

Year	Demand for electric power
1971-72	1380
1972-73	1544
1973-74	1720
1978-79	3360
1983-84	5983

(The actual demand registered in 1971-72 was 1326 MW as against the estimated figure of 1380 MW).

Projection based on overall growth rate in the past

9.30 Over the eleven years 1961-62 to 1971-72, annual growth rate of demand for power varied considerably from year to year—from 3.4 per cent, the lowest in 1968-69 to 20·5 per cent in 1961-62. This variation is due to factors both internal and external to the grid. Among the external factors, is the adding of block loads to the grid in any one particular year by the coming into operation of a large number of industrial loads during that year. Among the internal factors which tend to suppress the grid demand, is the shedding of loads due to inadequate grid capacity. In so far as the growth of demand in the past is neither uniform nor follows any definite pattern, the average growth rate in the last decade namely, 11·9 per cent may be taken as the basis for assuming an appropriate growth rate for the period 1974—1984. Since the load growth both in the agricultural and industrial sector is sure to increase at an accelerated pace, it is realistic to assume that demand will grow at the average rate of 12 per cent per annum up to 1973-74, 12.5 per cent from 1974-75 to 1978-79 and 15 per cent in the next five years. On this assumption and taking the demand in 1971-72 as 1,326 MW, the demand of the grid at the end of the Fourth Plan , Fifth and Sixth Five-Year Plans can be worked out. These figures are shown alongside of the figures arrived at by sector-wise analysis in Table 9-5.

TABLE 9-5.

Demand for power—Two estimates

(IN MW.)

Year	Demand according to trend based method	Demand according to sector growth method
(0)	(1)	(2)
1973-74	1,663	1,720
1978-79	2,982	3,360
1983-84	5,996	5,983

9.31 The two sets of figures estimated by two different methods are quite close to one another. It is safe to conclude that total demand for power will be roughly about 3,000 MW in 1978–79 and 6000 MW in 1983–84. The capacity of the existing hydro thermal plants in the grid at the end of 1973–74 will be 1569 MW. The generation capacity required to meet the grid demand is arrived at by adding 20 per cent to allow for outage and spinning reserve. Thus the required generation capacity can be calculated. The difference between the required generation capacity and the capacity of the existing units (1569 MW) will indicate the extent to which generation of power is to go up to meet the increasing demand. This is brought out in Table 9-6.

TABLE 9-6

Generation capacity required and actual

(in MW)

Year	Demand	Generation capacity required	Existing capacity	Additional capacity required
(0)	(1)	(2)	(3)	(4)
1973–74 ..	1720	2064	1569	495
1978–79 ..	3360	4032	1569	2463
1983-84 ..	5983	7180	1569	5611

B. Energy Forecast

9.32 The demand for electrical energy in the aggregate is forecast by using four different methods-the exponential trend method, growth rate based on sectoral needs, regression estimates and assumed overall growth rate.

9.33 (i) The data on per capita consumption of electrical energy in Tamil Nadu during the years 1960–61 to 1969–70 is used for fitting the exponential curve. The curve fitted is of the form $Y_t = ab^t$ where Y_t is per capita consumption of electricity in time t ; a and b are constants. After estimating the values of these parameters, the form of the exponential curve is determined as $Yt = 50.71 (1.092)^t$. Multiplying estimated per capita consumption in the future years by the estimated population of the corresponding years, the total consumption of electrical energy is calculated (column 1 of Table 9-9).

9.34 (ii) As in the case of demand forecast, one method used for estimating energy requirements is to work out the demand for the different sectors separately and then add up the sectoral estimates. For the industrial sector, the growth rate in the ten years 1960—69 is found to be 12 per cent per annum. In view of the large expansions envisaged in the industrial sector, a growth rate of 12.5 per cent i assumed for the years upto 1978–79 and 15 per cent between 1978–79 and 1983–84. In the agricultural sector, demand depends mostly on the requirements for energising pumpsets for irrigation purposes. With reference to the number of pumpsets (about 60,000 per annum) proposed to be energised in the Perspective Plan period, and assuming that on an average 2,800 units of energy will be consumed by each pumpset per annum, the total requirements of energy in the agricultural sector is estimated. In the domestic sector (households, commercial establishments and public lighting) consumption of energy increased at a compound rate of growth of 8.5 per cent per annum between 1960 and 1969. This rate is assumed for the period upto 1973–74 ; in the next five years this is expected to increase to 10 per cent and in 1978–79 to 1983–84 to 12 per cent. As regards the transport sector, consumption of electrical energy is expected to be 2 per cent of the total in each year of the 10 year period 1974—1984. A similar assumption of constant proportion is made for miscellaneous demand. The figures arrived at in this manner for the different sectors together with the gross energy requirements worked out on the assumption that about 16 per cent of the energy would be lost in the transmission and distribution process are presented in Table 9-7.

TABLE 9-7

Estimate of energy requirements based on sectoral needs

(in million units)

Year	*Industrial sector*	*Agri-cultural sector*	*Domestic sector*	*Transport*	*Miscella-neous*	*Total net energy*	*Total gross energy*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1973–74 ..	4,310	1,750	1,050	150	315	7,575	8,790
1978–79 ..	7,760	2,590	1,690	260	640	12,940	15,010
1983–84 ..	15,610	3,430	2,970	480	1,310	23,800	27,610

9.35. (iii) In making use of the regression method, consumption of electrical energy in the three sectors, domestic, agriculture and industry is assumed to depend on certain independent variables relevant to each sector. Using the data on these items for the years 1960—1969, regression lines are fitted and thus the relationship between the variables is established. For assessing the degree of closeness between the observed and estimated values, the co-efficient of determination is worked out in each case. This varies between 92 per cent and 99 per cent. The regression lines fitted are the following :—

(1) Domestic consumption, as $X_{..3} = 215.768 + 1.760$ as $X_1 + 1.419$ as X_2 $(R^2 = 0.975)$

(2) Agricultural sector $X = 53.221 + 0.586\ X$ $(R^2 = 0.915)$

(3) Industrial Sector $X_{..2} = 311.578 + 1.473 X_1 + 2.553\ X_2$ $(R^2 = 0.988)$

X is the dependent variable, X_1 and X are independent variables. In the case of the domestic sector, X_1 is urban population and X_2 net domestic product at 1970-71 prices. For calculating consumption in the Agricultural Sector, only one independent variable is used. Here X_1 is number of pumpsets energised. In the industrial sector, X_1 is industrial production and X_2 is net domestic product excluding industrial production at 1970-71 prices.

9.36 Using these regression lines and the estimated values of the independent variables, consumption of electrical energy in each of the sectors-domestic, agriculture and industry is calculated. Consumption under the other two heads, transport and miscellaneous, form relatively a small proportion of the total. These are calculated separately and added to consumption under the three major heads to find out total consumption. The details are given below in Table 9-8.

TABLE 9-8

Consumption of energy based on regression estimates

(in million units)

Year	*Domestic*	*Agriculture*	*Industry*	*Transport and miscellaneous*	*Total*
(0)	(1)	(2)	(3)	(4)	(5)
1973–74 ..	1,002	1,842	3,553	1,413	7,810
1978–79 ..	1,476	2,589	6,674	2,371	13,110
1983–84 ..	2,472	3,336	14,370	4,462	24,640

9.37 (iv) The fourth method is a rough and ready one which uses an assumed expansion rate based on experience and on the observation of past data. The Ministry of Irrigation and Power of the Government of India has assumed a growth rate of 12·5 per cent per annum for the Southern region. The gross electrical energy required in the different sectors was of the order of 6,812 Million units in 1971-72. By applying the 12·5 per cent expansion rate to the Perspective Plan period, the estimates of consumption of energy in Tamil Nadu would work out to 8,600 Million Units in 1973-74 and 15,490 Million Units and 27,920 Million Units respectively in 1978-79 and 1983-84.

9.38 The gross energy requirements as worked out by the four different methods are shown in Table 9-9.

TABLE 9-9

Estimate of energy requirements by different methods

(in million units)

Year	*Exponential method*	*Trend based method*	*Regression estimate method*	*25 per cent growth rate method*
(0)	(1)	(2)	(3)	(4)
1973–74	8,750	8,790	7,810	8,600
1978–79	15,110	15,010	13,110	15,490
1983–84	25,860	27,610	24,640	27,920

9.39 It may be seen that there is not much variation in the figures arrived at by the four methods. To be on the safe side, the highest set of figures may be used for estimating the difference between the energy requirements that would arise in the Perspective Plan period and the existing energy capability. Taking into account the supplies from the hydro and thermal plants of the grid and the relief from Neyveli, the energy capability is estimated at 7581 million units in 1973–74 and 8181 million units thereafter. The deficit would then work out as follows :-

DEMAND FOR AND SUPPLY OF POWER IN TAMIL NADU

1973-74 TO 1983-84

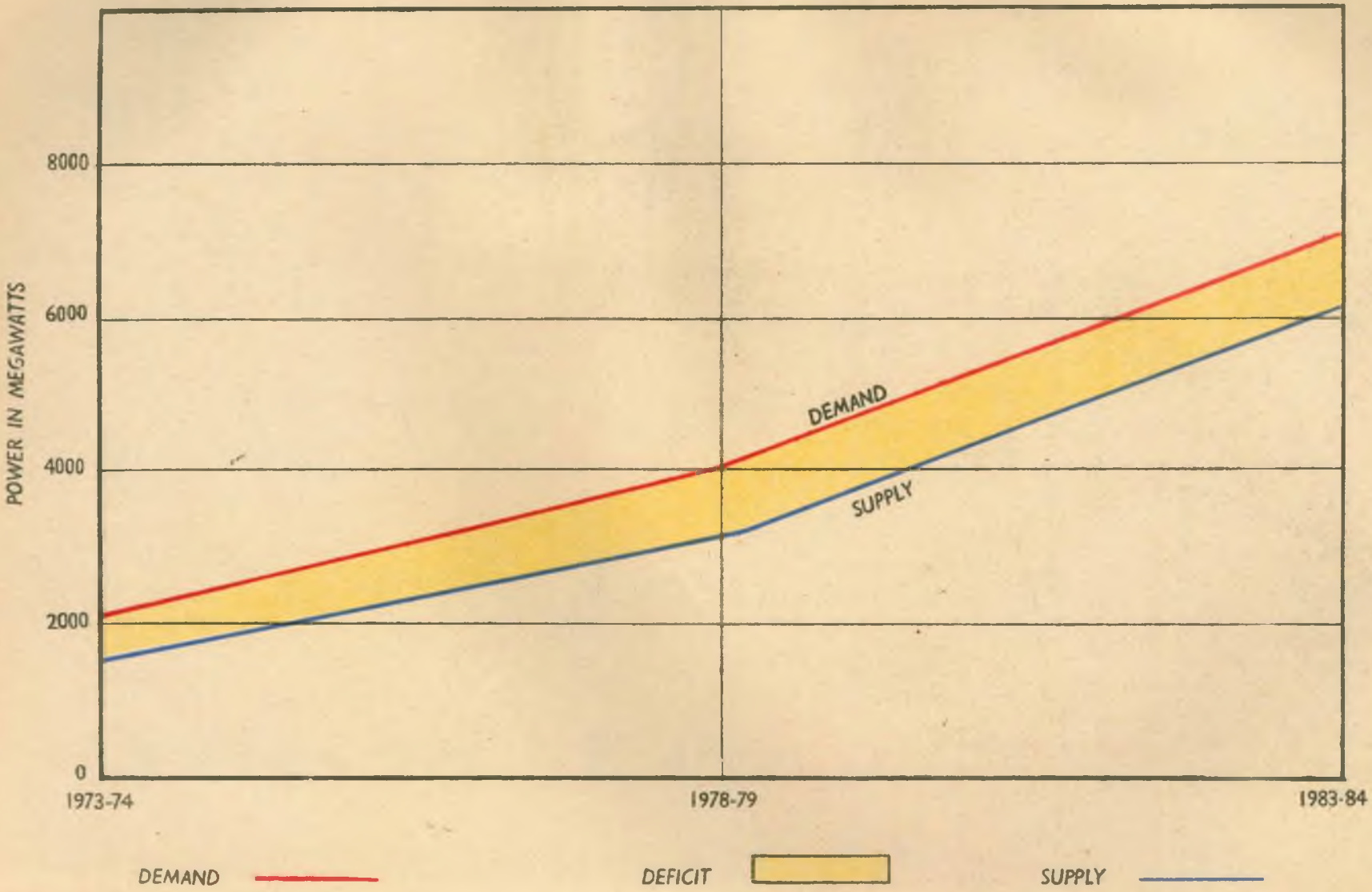


TABLE 9·10.

Difference between energy requirement and energy capability

(in million units)

Year	*Energy requirement*	*Energy capability*	*Difference* (1)—(2)
(0)	(1)	(2)	(3)
1973-74 ..	8,600	7,581	1,019
1978-79 ..	15,490	8,181	7,309
1983-84 ..	27,920	8,181	19,739

9.40 Thus, in order to meet the rapidly growing demand for power in the years 1974–1984, generation capacity has to increase to 4,032 MW in 1978-79 and to 7,180 MW in 1983-84 (Table 9·6). Correspondingly, the energy capability should have to go up to 15,490 MU in 1978-79 and to 27,920 MU in 1983 84, Table 9·10.

9·41 A detailed account of power requirement of different sectors and types of industries in the Perspective Plan period is given in Table 9·11.

TABLE 9.11

Assessment of Grid Peak Demand

(in mw)

	Item	1973–74		1974–75		1978–79		1983–84	
		C.L.	*M.D.*	*C.L.*	*M.D.*	*C.L.*	*M.D.*	*.L.*	*M.D.*
	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Domestic and Commercial ..	782	47	829	50	1,047	63	1,401	84
2	Public Lighting	36	..	40	..	56	..	76	..
3	Water Works	14	9	14	9	15	10	16	11
4	Irrigation	2,328	1,164	2,526	1,263	3,318	1,659	4,308	2,154
5	Industries (below 1 MW) ..	935	561	1,075	645	1,880	1,128	3,780	2,268
6	Industries (1 MW to 20 MW)	..	402	..	513	..	1,063	..	2,642
7	Load in Licensees' area ..	..	161	..	173	..	303	..	610
8	Rolling and other ancillaries of Aluminium industry	..	7	..	7	..	8	..	9
9	**Total of** (1) to (8) ..	..	**2,351**	..	**2,660**	..	**4,234**	..	**7,778**
10	Simultaneous demand assuming diversity factor of 1·8 and losses 17 per cent for the year 1971–72 and 16 per cent for the succeeding years	..	1,550	..	1,760	..	2,800	..	5,150
11	Industries above 20 MW. ..	..	102	..	153	..	267	..	535
12	Simultaneous demand assuming a diversity of 1·25	..	82	..	123	..	214	..	428
13	Aluminium load 90 per cent ..	..	58	..	58	..	72	..	81
14	Salem Steel Plant	..	..	..	..	..	200	..	200
15	**Total** (12) to (14) assuming six per cent loss	..	**144**	..	**188**	..	**517**	..	**755**
16	Grid peak demand within the State [Total (10)+(15)] ..	..	**1,694**	..	**1,948**	..	**3,317**	..	**5,905**
17	Supply to Andhra State and Pondicherry	..	26	..	27	..	43	..	78
18	Grid peak demand assessed [Total (16)+(17)] ..	..	**1,720**	..	**1,975**	..	**3,360**	..	**5,983**

C.L.—Connected load. M.D.—Maximum demand.

(*a*) **Hydro Electric Power**

9.42 The first obvious course to meet the demand and energy requirements of the Perspective Plan period is to investigate the balance of potentialities available for Hydro Electric Power Development including those relating to inter-State rivers. These investigations will include preliminary designs enabling the assessment of annual energy potential, generationcapacity to be installed, the cost of generation and the most economic manner of utilisation of the energy either as base load or for peaking purpose or in a combination of these two types so as to provide maximum economic benefit to the power system. The exploitation of the energy potential of these sites will provide only a partial solution for meeting the deficit.

9.43 Better utilisation of hydro resources would involve measures not only to harness the hitherto unexploited resources but also to change the pattern of use so that more power can be generated out of the resources that have already been drawn into service. Greater attention has, therefore, to be given in future to pumped storage schemes for meeting the peak demand of the grid which arises consequent on the presence of a large block of agricultural load in the grid. Tamil Nadu Electricity Board has taken up the first pumped storage scheme at Kadamparai, Coimbatore district with ultimate capacity of 400 MW.

(*b*) **Thermal Power**

9.44 In the absence of perennial water resources, the baseload of the grid will have to be met, either by conventional thermal stations using coal from other states or by relying on atomic energy with hydro-stations used for peaking purposes. It is unfortunate that Tamil Nadu has no resources of either coal or oil. Difficulties in the establishment of conventional thermal stations arise not only on account of problems arising in connection with the haulage of large amounts of coal over long distance but also because of the lack of an assured supply of coal from existing coal mines in other States. Even the existing thermal stations in Tamil Nadu at Basin Bridge and Ennore are facing difficulties in getting their coal requirements in time from Singareni Collieries. All the coal producing States have their power development programmes based on Coal-fired thermal stations and the development of coal mines in those States will not be fast enough to meet the needs of other non-coal producing States like Tamil Nadu.

9.45 The only fossil fuel mined in Tamil Nadu at present is lignite. A thermal station using lignite has already been established at Neyveli by the Neyveli Lignite Corporation. However, its installed capacity of 600 MW is not being utilised fully because of new problems that have arisen in the matter of mining. Hence, earnest attempts should be made to increase the output of lignite in the first mine cut at Neyveli by installation of additional mining equipment.

9.46 In the conditions obtaining in Tamil Nadu, these lignite-based thermal stations will generate power at a lower cost per unit than coal-based thermal stations. The immediate need for further exploitation and utilisation of lignite in the State, for power generation, is thus obvious. Hence, establishment of a second mine-cut and a second thermal station of 1,000 MW capacity at Neyveli is absolutely necessary in order to reduce the gap between generation and demand for power in the Perspective Plan period.

9.47 Even with all the difficulties confronting Tamil Nadu in the matter of procuring coal from other coal producing States, Tamil Nadu has per force to plan for Coal-based thermal generation to the extent of about 2,000 MW during the Perspective Plan period in order to meet the energy needs of the various sectors. The gestation period of these stations being only four to five years, the following are suggested for execution during the Perspective Plan period :—

(i) Tuticorin Thermal Station—600 MW initially and 1,000 MW ultimately.

(ii) Mettur Thermal Scheme—330 MW.

(iii) Second Thermal Station at Ennore—1,000 MW.

9.48 Coal required for the proposed Tuticorin Thermal Station has to be obtained by sea from West Bengal. Necessary shipping tonnage required for the transport of this coal has to be built up by 1978-79, when the station is expected to come into operation. The coal requirements of the existing

thermal stations in Tamil Nadu, viz., Basin Bridge and Ennore are mostly met from Singareni Collieries. In regard to coal required additionally for the proposed thermal station at Mettur, the question of rapidly developing the Singareni Collieries to meet the demand of the Thermal stations in Andhra Pradesh as well as Tamil Nadu has to be taken up with the Andhra Pradesh and the Union Governments, so that an agreed solution could be found for meeting the demand of new thermal stations in both States.

9.49 The coal requirements of the proposed second thermal station of 1,000 MW capacity at Ennore will have to be met by sea-borne coal from West Bengal. The availability of shipping tonnage for transport of about three million tonnes per year by sea has to be examined in detail. The cost benefit implication of the establishment of a minor port at Ennore to handle the large quantities of coal required for the proposed second thermal plant has to be studied.

(*c*) **Nuclear Power**

9.50 In the absence of fossil fuel resources like coal and gas and in view of the limited scope for setting up any further large capacity hydro plants, the utilisation of atomic fuel for future power plants in Tamil Nadu has become inevitable. Work on one nuclear power plant with installed capacity of 470 MW (2×235 MW) is under progress at Kalpakkam near Madras. Expansion of this power station with installation of two more similar units would help to meet the power needs not only of Tamil Nadu but also of the neighbouring States of Andhra Pradesh, Kerala and Karnataka. With the fast development of reactor technology, atomic power is bound to become cheaper than power generated by conventional methods.

9.51 Tamil Nadu Government have already proposed a second nuclear power station in the southern part of the State around Tuticorin with an installed capacity of 1,000 MW. A large industrial complex is developing around Tutioorin, where a modern sea-port is also being developed. The Power demand of this area would exceed 600 MW by 1978–79 and 1,500 MW by 1983–84. The only reliable power station in the southern part of the State is the Kodayar Power Station with 100 MW capacity. The power stations at Periyar and Papanasam with a total installed capacity of 168 MW are tied up with irrigation and are only seasonal stations. The scope for further hydro power generation in the Tambaraparani and Manimuthar basins is limited and such stations can only serve as peaking plants. Hence, the only way out to meet the power needs of the area is to set up nuclear power stations and operate them in conjunction with the pumped storage schemes.

SPECIFIC MEASURES TO MEET THE DEFICIT IN DEMAND AND ENERGY

9.52 For convenience of analysis, especially as regards the assignment of priorities and the phasing of the programmes with reference to their cost and the time required for completion, the various power development projects may be arranged in two sections —the first covering the first five years of the Perspective Plan and corresponding to the Fifth Five-Year Plan, and the second, the latter five years 1979–84 or the Sixth Five-Year Plan.

A. FIRST FIVE YEARS OF THE PERSPECTIVE PLAN PERIOD (1974–79)

9.53 It is estimated (*see* Table 9·6) that the demand for power at the commencement of the Fifth Five-Year Plan will be 1,720 MW and the deficit in the generation capacity of the grid will be 495 MW. During the five years 1974–79 demand is expected to increase to 3,360 MW. In order to meet this demand, generation capacity is to increase from 1,569 MW to 4,032 MW or by 2,463 MW.

9.54 Proposals for increasing generation capacity in the Fifth Plan period would comprise of :

(i) Completion of existing projects—hydro-electric, thermal and nuclear ; and

(ii) New Schemes.

Of the new hydro-electric projects that are to be started in this period, none is likely to come into operation before the end of the period. Even in respect of thermal and nuclear projects, most of the new projects will add to capacity only in the Sixth Plan period. This would mean that additions to capacity in the first five years of the Perspective Plan will depend mostly on the completion of the projects started earlier.

(i) COMPLETION OF EXISTING PROJECTS

9.55 The completion of the continuing generation schemes of the Fourth Five-Year Plan naturally has to be given first priority in the Fifth and Sixth Plan periods. The schemes which will spill over for implementation in the Fifth Plan period are :

(a) *Hydro-electric Schemes*

(1) Pandiyar-Punnapuzha.
(2) Suruliyar Project.
(3) Kundah Project—IV stage extension.
(4) Servalar Project.
(5) Nellithorai Project.
(6) Kadamparai Pumped Storage Project.

(b) *Thermal Schemes*

Addition to Thermal Station at Ennore.

(c) *Nuclear Schemes*

Kalpakkam Atomic Station.

Hydro-Electric Schemes

1 *Pandyar-Punnapuzha.*

9.56 This is a Fourth Plan Scheme now under revision as Pandiyar-Moyar Scheme. The project envisages diversion of flows from Pandiyar and Punnapuzha rivers towards Moyar valley in Tamil Nadu for Power Generation and Irrigation under Lower Bhavani Reservoir. The Power Station is proposed with two units of 50 MW each at present with space provision for a third unit of 50 MW to be added later. The energy capability is 439 MU per annum. As it involves diversion of hitherto west flowing water into Moyar valley, concurrence of Kerala Government is necessary before the project is taken up for execution. The estimated cost of the I stage is Rs. 2,228 lakhs. Subject to concurrence of Kerala Government, the project is likely to be taken up in 1974–75 and completed in 1980-81.

2 *Suruliyar*

9.57 This scheme envisages the development of power from the flows of the Suruliyar river in Madurai district with a single Power Station. A very high head of 1,030·5 metres (3,381 feet) is available for power generation. The project is capable of generating 114 MU per annum. The estimated cost of the project is Rs. 659 lakhs. Work on this project was started in 1971-72. The project is likely to be commissioned in 1978–79.

3. *Kundah Project IV Stage Extension*

9.58 The project envisages addition of a third unit of 60 MW at the existing Kundah P.H. III and a second unit of 50 MW at the existing Kundah P.H.IV, for which space provision has already been made at these Power Houses, so as to enhance the capacity of the two stations to meet the peaking needs of the grid. This will also enable addition of 76 MU of extra energy to the grid in an average year. The project has been cleared by the Union Planning Commission. Construction work on this has been taken up and the project is expected to be commissioned in 1976–77. The estimated cost of this project is Rs. 1,050 lakhs.

4. *Servalar Project*

9.59 This project is located in Tirunelveli district. The Servalar unit is one of the six proposed for exploitation of the power potential of Tambaraparani and adjoining Gatana Nadhi basins. This will reduce the surpluses which are now occurring in the Papanasam Forebay (without being used for power generation at the existing Papanasam Power House) and will also help irrigation in the Tambaraparani Ayacut by conserving the flows in the proposed Servalar reservoir. The power house proposed with a gross head of 55 metres and installed capacity of 20 MW will add 91 MU in an average year to the grid. The estimated cost of the project is Rs. 681 lakhs. Preliminary work on this project was taken up in 1971–72 but it is yet to be cleared by the Union Planning Commission. The project is expected to come into operation in 1978–79.

5. *Nellithorai Project*

9.60 This project located in the Coimbatore district is for utilisation of the entire flows in Bhavani river downstream of Kundah Power House IV utilising the head of 41.55 metres in a dam power house located at the foot of the dam. The Power House is proposed with an installed capacity of 50 MW and the energy capability is 134 MU. The estimated cost of the project is Rs. 758 lakhs. Preliminary work was started in 1971–72 although the project is yet to be cleared by the Union Planning Commission. It is expected to come into operation in 1978–79.

6. *Kadamparai pumped storage Project*

9.61 Most of the conventional hydro-plants are tied up with irrigation discharge and produce seasonal energy only. Given a base load station,

PROPOSED PROJECTS

HYDRO-ELECTRIC PROJECTS

1. Cholatipuzha (60 M. W.)
2. Suriliyar (35 M. W.)
3. Nellithorai (50 M. W.)
4. Upper Thambaraparani (Mundanthorai Unit) (30 M. W.)
5. Paralayar (35 M. W.)
6. Upper Amaravathy (Kumbar Unit) (20 M. W.)
7. Shanmuganadi (30 M. W.)
8. Lower Moyar (30 M. W.)
9. Coonoor-Kallar (50 M. W.)
10. Upper Cauvery (Hogainakkal) (250 M. W.)
11. Upper Thambaraparani (other Five units) (165 M. W.)
12. Pandiyar-Moyar (100 M. W.)
13. Manimuthar (90 M. W.)
14. Kundah Ultimate Stage (205 M. W.)
15. Lower Cauvery (200 M. W.)
16. Akkamalai (40 M. W.)
17. Lower Moyar (Kukkalthorai Unit) (40 M. W.)
18. Pykara Ultimate Stage (100 M. W.)
19. Nirar (35 M. W.)

PUMPED STORAGE PROJECTS

20. Kadamparai (200 M. W.)
21. Palani Hills (Koniar) (100 M. W.)
22. Javadi Hills (100 M. W.)
23. Thambaraparani Basin (Valar) (100 M. W.)
24. Cauvery (200 M. W.)

THERMAL STATION

25. Mettur 220 M. W. / 330 M. W.
26. Neyveli 800 M. W. / 1000 M. W.
27. Tuticorin 400 M. W / 600 M. W.

NUCLEAR STATION

28. Tuticorin (1000 M. W.)

pumnpped storage schemes will be an economical meaams of meeting the peak demand of the grid whicicth arises due to large block of agricultural load in t thie grid. Tamil Nadu Electricity Board has takeem up the first pumped storage scheme at Kadamparaaii, Coimbatore district, with an ultimate capacity of 44000 MW.

9.652 The project is a revision of the original conmventional project, into a pumped storage projject and is designed for utilisation of flows in Aliyiyaar river and its tributary Kadamparai river overr a head of 377.04 metres (1,237 feet) available upststream of the existing Aliyar Hydel Reservoir. It i involves the construction of an underground powweer station and the installing of 4 × 100 MW reveersible pump turbine units. The project will gennerate a total of 798 Mu per annum of which 78 1 Mu will be by the conventional method and the restt lby pumped operation. The estimated cost of the project is Rs. 35,12 lakhs. Work on this project hass just been taken up and the first unit of 100 MW is exxpected to be commissioned in 1978–79.

Theermal Schemes

Adddition to Thermal Station at Ennore

99.653 This scheme contemplates installation of one moore 110 MW at the existing Ennore Thermal Staation. The capacity of 340 MW of the existing stattion will be raised to 450 MW when this additionnal unit is commissioned. Work on this scheme takken up in 1970–71 is expected to be completed in 19774–75.

Nuuclear Schemes

99.654 The Atomic Power Station at Kalpakkam witth an installed capacity of 2 × 235 MW is expected to be completed in 1977–78. Tamil Nadu's share from the power station will be 300 MW.

9.65 All the above-mentioned continuing schemes, including the thermal and nuclear schemes would involve an aggregate investment outlay of Rs. 221.23 crores. Of this, Rs. 138.45 crores or 62.6 per cent will be spent in the Fifth Plan period. As regards addition to generation capacity resulting from these projects, it should be noted that of the six hydro-electric projects, the Pandiyar-Punnapuzha Project is likely to be completed only in 1980–81, i.e., the second year of the Sixth Plan ; the Kundah Project IV stage extension is expected to be commissioned in 1976-77 and the remaining four are expected to come into operation only in 1978-79, the last year of the Fifth Five Year Plan. The addition to Ennore Thermal Station will be completed in 1974–75 and the Atomic Power Station at Kalpakkam would be completed in 1977-78. Thus, in estimating the contribution of the continuing schemes to the power supply in the State in the Fifth Plan period, the Pandiyar-Punnapuzha Project has to be left out of account. The other projects hydro, thermal and nuclear will add to generation capacity by 725 MW(i.e., 315 MW hydro + 110 MW thermal + 300 MW nuclear). But the important point to note is that the contribution of the projects expected to be completed in the last year of the Fifth Plan is 205 MW which means that, if for any reason, work on these projects is delayed and their period of completion is extended, the shortage in power supply in 1978–79 will go up to this extent. The details of cost and the additions to the grid capability resulting from the completion of the on-going projects are summarised in Table 9-12.

TABLE 9-12

Additions to capacity in the Fifth Plan by completion of ongoing projects and the costs

(in MW and RS. in lakhs)

Name of the Project	*Year of completion*	*Additions to capacity in the Plan*	*Cost of scheme*	*Outlay in Fifth Plan*
(0)	(1)	(2)	(3)	(4)
1. Pandiyar-Punnapuzha	1980–81 ..	..	1,488	1451
2. Suruliyar	1978–79 ..	35	659	371
3. Kundah Project IV Stage	1976–77 ..	110	1050	626
4. Naduvattam diversion	..	**	220	37
5. Servalar	1978 79 ..	20	681	521
6. Nellithorai	1978–79 ..	50	758	666
7. Kadamparai pumped storage	1978–79 ..	100	3512	2200
8. Addition to Thermal Station in Ennore ..	1974–75 ..	110	1755	173
9. Atomic station at Kalpakkam	1977–78 ..	300*	12000	7800
Total ..		**725**	**22123**	**13845**

* Tamil Nadu's Share.

** Energy contribution only of 69 Mu.

9.66 In addition to the costs mentioned in the last column of Table 9-12, a further outlay of Rs. 40.33 crores on account of improvement to existing mine at Neyveli and balance of payments on account of work at Kundah, Parambikulam, Kodayar and Ennore completed earlier will be incurred in the Fifth Plan period. Of this, total spendings of Rs. 178.78 crores, Rs. 98.00 crores will be met by the Union Government and Rs. 80.78 crores by the State Government.

(ii) NEW SCHEMES—1974–75 to 1978–79

9.67 Equally important as the completion of the spillover schemes is the taking up of new projects-hydro-power, thermal and nuclear-in the course of the Fifth Five-Year Plan and their early execution. A brief account of these projects is given below.

(A) HYDRO-ELECTRIC SCHEMES

1. *Cholathipuzha (Nilgiris district)*

9.68 This is an inter-state project. The river Cholathipuzha is a tributary of the Chaliar river which flows into Kerala, and forms the boundary between Tamil Nadu and Kerala at the Project site. An installed capacity of 60 MW is proposed for the power house located on the left bank of Chaliyar within Kerala State. The power generation possible is 182 Mu per annum. Subject to Kerala Government's concurrence, this project may be taken up in 1974–75, in which case it can be commissioned by 1979–80.

2. *Melkodmund and Lone Valley Diversion Project (Nilgiris district)*

9.69 This project is for the utilisation of flows from small streams viz., Melkodmund and Lone Valley which are tributaries of Sigur River flowing east of Pykara basin in the Nilgiris. This is only for augmentation of the power generation at the existing Pykara and Moyar Power stations by 30 Mu per annum. Work on this Project is expected to commence in 1974–75 and would be completed by 1977–78.

3. *Upper Amaravathy (Madurai district)*

9.70 The project has been designed to utilise the flows from Koniar, Pulavanchiar and Kumbar, tributaries of Amavarathy River, in the higher elevations for Power generation in one Power House utilising the maximum head of 899 metres (2950 feet) available in Palani hill ranges in Madurai district. The energy capability of this project is 69 Mu per annum. The proposed capacity is 1 × 20 MW. Subject to clearance by the Union Planning Commission, work on this is likely to be taken up in 1974–75 and completed in 1979–80.

4. *Shanmuganadhi (Madurai district)*

9.71 Shanmuganadhi Hydro-electric project is located in Palani Hills for harnessing the flows in the Palar and Porandalar. The maximum gross head is 630.32 metres (2,068 feet). The energy capability of this project is 131 Mu per annum and the proposed capacity is 1 × 30 MW. Subject to clearance by the Union Planning Commission, work on this is likely to be started in 1974–75 and completed in 1979–80.

5. *Paralayar (Kanyakumari district)*

9.72 This is a " Run of the river scheme " without any storage. The power house is proposed with an installed capacity of 1 × 35 MW. The energy capability of this project is 84 Mu per annum. If approved by the Union Planning Commission, work on the project may start in 1974–75 and the project can be completed in 1979–80.

6. *Pykara Ultimate Stage (Nilgiris district)*

9.73 Due to limited storage potential commanded by the main Pykara and Mukurthi Lakes, some surpluses are anticipated even after formation of new enlarged Pykara Forebay under the Naduvattam Diversion Project. The surpluses may be more when Melkodmund Lone Valley diversion project is also taken up. The surpluses are due to the lack of sufficient storage and the bottle-neck caused by the limited capacity of Pykara penstocks 10.19 cumecs (360 cusecs). It is due to this factor that the plant has to operate during most of the year at 100 per cent load factor especially during monsoon spells, though power demand is only during critical peaking hours. Hence, the present project is for increasing the installed capacity at Pykara Power House for peaking purposes and for creating additional storage for effective utilisation of the surpluses for power development.

9.74 An additional installed capacity of 100 MW is proposed at a new Power House close to the existing one, with a new penstock of maximum capacity of 13.16 cumecs (or 465 cusecs) (in addition to the existing penstock capability of 10.19 cumecs). The approximate cost of this project works out to Rs. 11·90 lakhs. The investigation of this project is under way and when cleared by the Union Planning Commission, work on this is likely to be taken up in 1976-77 and completed in 1981–82.

7. *Coonoor Kallar Valley (Nilgiris district)*

9.75 The project will utilise the flows of Coonoor, Kateri, Yerkadahalla and other streams and rivers for power generation over a head of 641.33 metres (2,104 feet). The Power House is proposed with an installed capacity of 1 × 50 MW. The energy potential is 144 Mu per annum. Subject to clearance by the Union Planning Commission, work on this is likely to be taken up in 1974–75 and commissioned by 1980–81.

8. *Hogenekal or Upper Cauvery Basin (Dharmapuri district)*

9.76 Preliminary investigations revealed the possibility of setting up a power station with a total installed capacity of 800 MW on the Cauvery river on the Tamil Nadu-Karnataka borders. This scheme envisaged two dams across the Cauvery with the Power Houses located at the foot of each of the two dams—the Upper Power House with six units of 100 MW each and the lower one four units of 50 MW each. The total cost of the scheme was expected to be around Rs. 56 crores as per estimates prepared some years ago.

9.77 Subsequently, the above scheme was revised into a single power station of total installed capacity of 250 MW to suit the irrigation requirements. Consequent on the regional approach suggested by the Ministry of Irrigation and Power, this project has again been revived and revised as an inter-State Project called the Upper Cauvery Hydro-Electric Project and preliminary investigation indicates the feasibility of establishing the following stations :—

Serial number and Power House.	*Installed capacity.*
(0)	(1)
1 Shimsha P.H. ..	150 MW (3 × 50 MW).
2 Cauvery P.H. I ..	600 MW (6 × 100 MW) (Reversible Unit).
3 Cauvery P.H. II ..	400 MW (4 × 100 MW) (Reversible Unit).
4 Cauvery P.H. III ..	300 MW (3 × 100 MW) (Reversible Unit).
5 Cauvery P.H. IV ..	200 MW (4 × 50 MW).

9.78 The above project is an inter-State project and has to be further investigated in detail and finalised in co-operation and consultation with the Karnataka Government.

Pumped Storage Schemes

9. *Koniar Pumped Storage Scheme (Madurai district)*

9.79 This proposed pumped storage project is in the Palani Hills. The Koniar reservoir of Upper Amaravathy Hydro Electric Project would itself constitute the head race pond for the project. Only a small dam for tail race pond and other water conducting arrangements will have to be constructed. The Project contemplates generation for 6 hours daily and will have an installed capacity of 100 MW to generate 183 Mu per annum, during the critical peak hours. The capital cost of the project is Rs. 658 lakhs. The project is under investigation. On clearance by the Union Planning Commission, work on this is likely to be taken up in 1976–77 and completed in 1982–83.

10. *Valar Pumped Storage Scheme (Tirunelveli district)*

9.80 This pumped storage project is proposed in Upper Tambaraparani basin. Under Valar Unit of the Upper Tambaraparani Hydro-Electric Project, a dam is proposed across Valar to regulate the tail race water of the Upper Valar Power House and to make it function as forebay for the Valar Power House. This reservoir will be made use of as the tail race reservoir.

9·81 This project contemplates generation for six hours daily during critical peaking hours and is proposed with an installed capacity of 100 MW to generate 194 Mu per year. Subject to the Union Planning Commission's approval, work on this is likely to be taken up in 1976–77 and completed by 1982–83 or later.

B. Thermal Schemes

(1) Thermal Station at Tuticorin–400 MW/1,000 MW–Estimated cost Rs. 110 crores (initial cost).

(2) Coal-based Thermal Station at Mettur Dam 2×110 MW–Estimated cost Rs. 66 crores.

9.82 From these two schemes atleast 400 MW of installed capacity is expected to be added to the grid before the end of the Fifth Five-Year Plan period.

(3) In addition to these two projects, it is proposed to start preliminary works on the establishment of a second 1,000 MW Thermal Station at Ennore.

(4) Gas Turbine Stations.

9.83 In order to meet the peaking demand arising out of the agricultural block load in the grid, it is proposed to set up about five Gas Turbine Stations of 80 MW capacity each at varlous load centres. The cost of installation of these stations is Rs. 1,000 per KW of installed capacity. Although the unit cost of generation using light diesel oil is as high as 25 to 30 paise per unit, there is an advantage in so far as these stations can be installed and commissioned within a period of 12 months and are ideally suited for meeting the peaking demand of the grid.

Second mine-cut at Neyveli and a second Thermal Station.

9.84 This will be in the Central Sector. The second Thermal Station will have to be of 800 1,000 MW capacity using the entire lignite from the second mine-cut for power generation only. Work on this should be started in the first half of the Fifth Plan period itself so that the thermal station would come into operation by the end of 1983–84.

C. NUCLEAR SCHEMES

9.85 There will be large uncovered deficits in meeting the Power requirements even after completion of the new hydro and thermal schemes proposed above. This deficit will rapidly widen by the end of the Fifth Plan period. As the gestation period of these projects will be nearly 6 to 8 years, it is necessary to initiate action in advance during the Fifth Plan period itself on a few base load stations so as to meet in full the load development during the latter part of the Perspective Plan. The schemes suggested here are for implementation bv the Central Sector.

(1) *Additions at Kalpakkam Project*

9.86 It is proposed to add another 470 MW capacity to Kalpakkam Atomic Power Project now under construction. Tamil Nadu's share out of this additional 470 MW capacity is expected to be 200 MW.

(2) *Second Nuclear Project for Tamil Nadu*

9.87 Considering the difficulties involved and the high costs of transporting coal to the Southern regions of Tamil Nadu, it would be prudent to go in for Nuclear generation. In the long-run, Nuclear Power will be cheaper. Hence, a second nuclear station in Tamil Nadu of about 1,000 MW capacity is to be located south of Madurai at or near Tuticorin This is the only possible means of meeting the power requirements of the industries coming up fast in that region.

An assessment of the Power position at the end of the Fifth Plan Period

9.88. Of the ten new hydro power schemes (including the two pumped stoarge schemes) only one—the Melkodmund and Lone Valley diversion project—is likely to be completed before 1978–79. Four of these are expected to come into operation by 1979–80 and the remaining five in later years. Thus, additions to power supply in the Fifth Five-Year Plan period are possible only from thermal schemes. The demand for power in 1978–79 is expected to be of the order of 3,360 MW and the generation capacity to meet this demand is 4,032 MW. The completion of the spillover schemes would raise the generation capacity of the grid from the present 1,569 MW to 2,294 MW leaving a deficit of 1,738 MW. It is possible to cover this deficit by expediting the work on the thermal plants as well as by making some short-term arrangements. Thus, out of the 620 MW thermal capacity now planned at Tuticorin and Mettur, a maximum generation capacity of 400 MW may be added to the grid by the end of 1978–79. This will bring down the deficit from 1,738 MW to 1,338 MW.

9.89. This deficit in generation capacity is proposed to be met on a short-term basis as follows :—

(1) By encouraging high tension consumers to have their own diesel sets, the deficit can be reduced by about 50 to 100 MW.

(2) Installing five Gas Turbines at five stations each of 80 MW capacity would contribute to a further reduction of 400 MW.

(3) Staggering of agricultural loads. The demand of the agricultural sector in 1978–79 is expected to be 1,200 MW. If the agricultural load is split into two groups, the demand on this account will be reduced by 600 MW.

(4) When the Idikki Project is completed in 1975-76, Kerala is expected to give about 200 to 300 MW relief to the Tamil Nadu grid.

9.90 The measures indicated above will take care of the deficit to the extent of 1,250 to 1,400 MW, but they are mostly of a short-term nature.

9.91 In terms of energy, the requirements are expected to increase from 8,600 Mu in 1973-74 to 15,490 Mu in 1978-79 based on a 12½ per cent growth rate. The total energy capability of the existing hydro and thermal stations of the Tamil Nadu Electricity Board is 5,681 Mu. If the relief expected from Neyveli at the end of the Fourth Five-Year Plan (1,900 Mu) and the contribution from the Naduvattam diversion scheme (69 Mu), h if it is completed by 1973-74, are added, the energy capability of the grid will rise to 7,650 Mu at the commencement of the Fifth Plan. Over the years 1974-75 to 1978-79, the completion of the spill-over hydro schemes would add 523 Mu and the thermal schemes including Ennore II Stage extension (578 Mu), additional relief from Neyveli (600 Mu), generation from Mettur and Tuticorin thermal stations (2,000 Mu), Nuclear Power Project, Kalpakkam (2,100 Mu) and Gas Turbine stations (1,000 Mu) would together contribute 6,278 Mu making in all 6,801 Mu. Thus, the total energy capability of the grid at the end of the Fifth Plan will be 14,451 Mu and since the energy requirements then will be 15,490 Mu, the deficit would amount to 1,039 Mu. This energy deficit has to be met by purchase of power from the neighbouring states.

9.92 Details regarding the new projects to be taken up in the first five years of the Perspective Plan period, their costs and the extent to which they would augment power supplies in the State are given in Table 9.13.

TABLE 9.13

New Power Development Schemes to be taken up in the years 1974-75 to 1978-79 and estimated cost

(Rupees in Lakhs)

Nature of the Project	*Year of completion expected*	*Power generation*	*Total cost*	*Outlay in the Fifth Plan* (IN MW)
(0)	(1)	(2)	(3)	(4)
Hydro Schemes				
1 Cholathipuzha	1979–80	60	739	400
2 Melkodmund Lone Valley	1977-78	30Mu	42	42
3 Upper Amaravathy	1979-80	20	555	500
4 Shanmuganadhi	1979-80	30	902	400
5 Paralayar	1979-80	35	510	500
6 Pykara Ultimate Stage	1981-82	100	1190	400
7 Coonoor Kallar Valley	1980-81	50	1,445	400
8 Hogenakal or Upper Cauvery Basin	..	800	8,000+	2,900
9 Koniar Pumped Storage	1982-83	100	658	300
10 Valar Pumped Storage	1982-83	100	645	300

+ Under investigation.

(Rupees in Lakhs)

Nature of the Project	*Year of completion expected*	*Power generation*	*Total cost*	*Outlay in the Fifth Plan* (in MW)
(0)	(1)	(2)	(3)	(4)
Thermal Schemes				
1 Tuticorin Thermal Station	1978-79	400*	18,310	8,200
2 Mettur Thermal Station	1978-79		6,553	1,680
3 Second Thermal Station at Ennore	1983-84	1,000	18,310	1,000
4 Gas Turbine Stations	One year.	400	4,000	3,000
5 Second Mine Cut and Second Thermal Station at Neyveli	1983-84	800 to 1,000	19,000	3,000
Nuclear Schemes				
1 Additions at Kalpakkam		200‡	15,000	2,200
2 Second Nuclear Project south of Madurai		1,000	30,000	5,000
Total			125,859	30,222

* Amount likely to become available in the Fifth Plan period.
‡ Share of Tamil Nadu.

Investment Outlay on Generation Scheme in the First Five-Years of the Perspective Plan

9.93. The total outlay on generation schemes in the years 1974-75 to 1978-79 required for augmenting power supplies in the manner indicated above is of the order of Rs. 440.67 crores. Of this amount, Rs. 138.45 crores will be for the completion of the spill-over schemes and Rs. 302.22 crores on new schemes. To this has to be added an amount of Rs. 40.33 crores being the balance to be paid on account of works completed in the Fourth Plan. The total of Rs. 481.00 crores is to be divided between the State Sector and Central Sector as shown below.

TABLE 9.14

Estimated Outlay on Generation Scheme, 1974-75 to 1978-79.

(Rupees in Lakhs)

Projects	*State Sector*	*Central Sector*	*Total*
(0)	(1)	(2)	(3)
1 Hydro-Power Schemes	12,014	..	12,014
2 Thermal Power Schemes	14,053	3,000	17,053
3 Nuclear Power Schemes	..	15,000	15,000
4 Balance of payment on account of works completed in Fourth Plan	2,033	2,000	4,033
Total	28,100	20,000	48,100

9.94 In covering the total deficit of 2,463 MW in the five years 1974-75 to 1978-79, the completion of ongoing schemes will account for 725 MW, the Mettur and Tuticorin Thermal Stations 400 MW and the short-term measures about 1,300 MW. It is, therefore, clear that unless top priority is given to the timely completion of the spill-over schemes of the Fourth Five-Year Plan and immediate steps are taken to commence work on the Mettur and Tuticorin Thermal Stations and expedite the work so that the expected 400 MW would be forthcoming from these works before 1978-79, the power position in the State will face a grave crisis in the course of the Fifth Five-Year Plan.

ADDITIONS TO CAPACITY 1979-80 TO 1983-84 (SIXTH PLAN PERIOD)

9.95 The deficit in generation capacity will further increase due to large load growth anticipated in the latter part of the Perspective Plan period. The grid peak demand of 3360 MW at the end of the Fifth Plan period will increase to 5983 MW by 1983-84. In order to meet the deficit at the commencement of the Sixth Plan and also to meet the increase in demand of 2623 MW during the Sixth Plan, it is important to ensure that schemes commenced in the Fifth Plan are completed before the end of the Sixth Plan.

Additions to power resulting from completion of earlier sehemes

Hydro Schemes

(i) *Spill-over Schemes*

9.96 Some of the hydro-electric schemes started in the Fourth and Fifth Five-Year Plan periods will be completed and commissioned in the latter part of the Perspective Plan years. These are :—

1. Kadamparai project I Stage—The second unit of 100 MW is expected to come into operation in 1979-80.

2. The Pandiyar-Punnapuzha project I Stage—100 MW will be completed in 1980-81.

3. Out of the hydro-schemes taken up for execution during the Fifth Plan, the following eight schemes are likely to be completed by the end of the Perspective Plan period :—

(*a*) Kadamparai II Stage ..	200 MW
(*b*) Koniar Pumped Storage ..	100 MW
(*c*) Upper Amaravathi Project.	20 MW
(*d*) Shanmuganadhi Project ..	30 MW
(*e*) Coonoor Kallar Project ..	50 MW
(*f*) Paralayar Project	35 MW
(*g*) Pykara Ultimate Stage ..	100 MW
(*h*) Cholathipuzha	30 MW
	565 MW

9.97 Together with the contribution of the Kadamparai project I stage and Pandiyar-Punnapuzha project I stage, items (1) and (2) above, the additions to power made available by the hydro-schemes in the Sixth Plan will be 765 MW.

(ii) *New Hydro-Schemes*

9.98 It is proposed to take up the following hydro-schemes during the Sixth Plan period :—

(1) *Kundah Ultimate Stage.*

9.99 The proposal is for the utilisation of the additional flows from Bhavanipuzha and Emmavipuzha streams that have not been utilised under Kundah Hydro-Electric Project (Stages I to IV) so far. The present project proposes the addition of installed capacities indicated below :—

(i) P.H. 5 (Additional Unit) 25 MW.	Bhavanipuzha, Emmavipuzha and other Minor diversions under these and Western catchment.
(ii) P.H. 6 Parson's Valley 1×20 MW.	Western catchments 2 and 3 Porthmund Parson's valley and minor diversions under Western catchment 3.
(iii) P.H. 7 Sillehalla P.H. 2×40 MW (New P.H.).	Sillehalla and other surplus of Avalanche and Emerald by means of unlined inter-connecting tunnel.
(iv) P.H. 2 (Extra Units) 2×40 MW. Total installed capacity 205 MW.	

9.100 In addition to the above, there will be extra generation to the tune of 221 Mu at Kundah P.H. 3, 6 Mu at P.H. 4 and 3.5 Mu at the proposed Nellithorai project. The project is under investigation.

(2) *Upper Manimuthar Hydro-Electric Project (Tirunelveli District)*

9.101 The Upper Manimuthar Hydro-Electric Project envisages the utilisation of flows for power generation in three power houses. The Project as now investigated consists of three Power Houses with installed capacities of 35 MW, 30 MW and 25 MW respectively. The energy potential of this project is 435 Mu per annum.

(3) *Upper Thambaraparani (5 Units) (Tirunelveli District)*

9.102 The Project envisages the construction of Power Houses in series along the Servalar River up to the proposed Servalar Reservoir (Mundanthorai Unit) besides one Power House in Thambaraparani Basin and one Power House in Kallar-Kuruniar rivers. Total installed capacity of 165 MW is proposed (20 MW, 35 MW, 40 MW, 50 MW and 20 MW) at five stations. The energy potential of this project is 557 Mu per annum.

(4) *Lower Cauvery (Salem District)*

9.103 This is a low head project to utilise the irrigation discharges from the Mettur Reservoir for Power Generation. This is proposed to be achieved by building 4 low barrages at suitable locations across the Cauvery so as to utilise a head of about 7.61 metres (25 feet) at each barrage. The energy potential has been estimated to be 549 Mu for seven months of the irrigation season. Each of the four Power Houses will have two machines of 25 MW capacity. The Power Generation will be purely seasonal.

(5) *Lower Moyar—Moyar Unit (Nilgiris district)*

9.104 The project comprises of two units. Unit-I is the Lower Moyar Unit where the flows of Moyar free catchment tail race of existing Moyar P.H., Sigur and Kedarihalla are made use of for power generation utilising the head available within the basin upto Mangalpatti. Unit-II, viz., "Kukkalathorai Unit" which is to utilise the flows of Kukkalathorai stream, is separately dealt with An installed capacity of 30 MW is proposed. The total energy generation possible is 102 Mu for an average year.

6. *Lower Moyar-II Unit (Kukkalathorai Unit) (Nilgiris District.)*

9.105 This is the second unit proposed under Lower Moyar hydel project. This will make use of the flows of Kukkalathorhalla stream, a tributary of Moyar joining down stream of Mangalpatti for power generation utihsing the head available within the basin upto Moyar confluence. An installed capacity of 1×40 MW is proposed. The total energy generated in an average year will be 211 Mu.

9.106 All the Sixth Plan projects described above are yet to be investigated in detail and hence no cost estimates are furnished. Also, none of the schemes taken up for execution during the Sixth Plan Period is likely to be completed by the end of the Perspective Plan period i.e. by 1983–84.

THERMAL AND NUCLEAR SCHEMES

9.107 No new thermal or nuclear schemes are proposed for the Sixth Five Year Plan. What is important is to expedite the work started in the earlier years of the Perspective Plan so that they would add susbtantially to total Power capacity. The following additions are expected :—

(*a*) Thermal

9.108 (i) Out of th 1220 MW thermal capacity envisaged for the Mettur and Tuticorin Thermal Projects, 400 MW capacity will come into operation during the Fifth Plan itself and the balance of 820 MW during the Sixth Plan period.

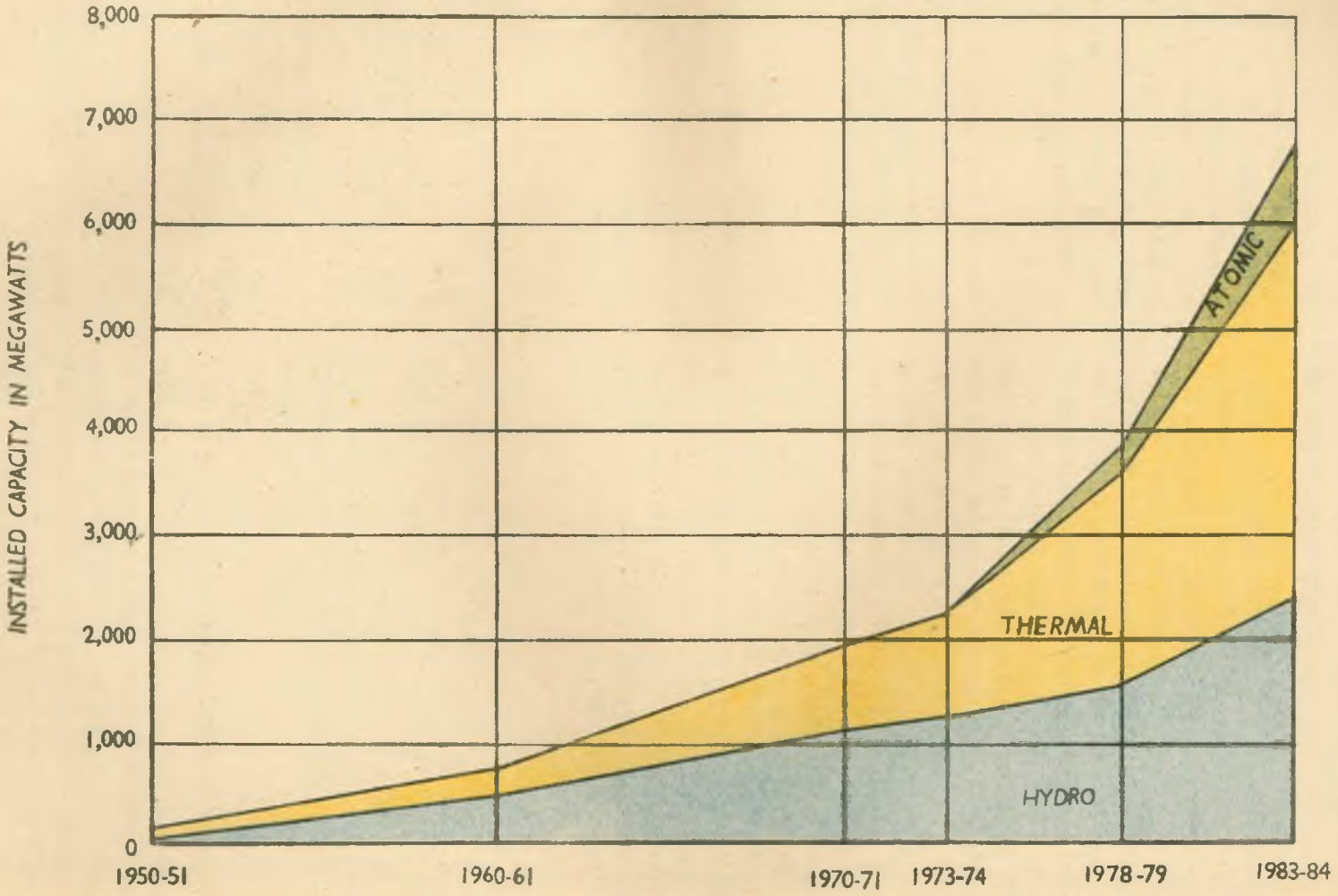
9.109 (i) It is expected that by the setting up of the Second Thermal Station at Neyveli during the Fifth Plan period, 800 MW capacity will be added to the grid by the end of 1983–84.

(*b*) Nuclear

9.110 470 MW of additional installed capacity planned during the Fifth Plan at the Kalpakkam Project will come into operation by the end of the Sixth Plan. Tamil Nadu's share from this is taken as 200 MW.

9.111 (ii) The second Nuclear station proposed to be established may not come into operation by the end of the Sixth Plan. Financial provision is made

POWER DEVELOPMENT IN TAMIL NADU



for the extension of the Kalpakkam Atomic Plant and for setting up a second Nuclear Station, South of Madurai.

AN ASSESSMENT OF THE POWER POSITION AT THE END OF THE PERSPECTIVE PLAN PERIOD

9.112 As stated earlier, the demand for power will rise from 3360 MW at the end of the Fifth Plan, i.e., 1978-79 to 5983 MW at the end of the Perspective Plan period, i.e., 1983-84. At the commencement of the Sixth Plan, the effective generation capacity of the State grid will be 3094 MW. However, in order to meet the peak demand of 5983 MW in 1983-84, the generation capacity shoul be increased to 7180 MW, or by 4086 MW in the latter five years of the Perspective Plan (7180 MW minus 3094 MW= 4086 MW).

9.113 The completion of the earlier schemes initiated in the Fourth and Fifth Five Year Plans and the execution of certain new projects would add to power supply to the extent of 3065 MW in the five years 1978-79 to 1983-84. The details are given below :—

TABLE 9.15

Additions to generation capacity in the Sixth Plan period

(in MW)

Schemes	*Additions to power*
(0)	(1)
(*a*) *Hydro Power*	
(i) Fourth Plan Hydro scheme completed in the Sixth Plan period ..	200
(ii) Fifth Plan Hydro Scheme completed in the Sixth Plan period ..	565
(*b*) *Thermal*	
(iii) Completion of two thermal Schemes of the Fifth Plan. Balance capacity added after allowing 10 per cent for auxiliaries and one unit for outage	700
(iv) Completion of second thermal station at Ennore	600
(v) Second Thermal Station at Neyveli.	800
(*c*) *Nuclear*	
(vi) Addition of 470 MW capacity at Kalpakkam (Tamil Nadu's share)	200
Total ..	**3,065**

587 C-2—13

9.114 Thus, the net deficit in respect of generation capacity at the end of the Perspective Plan is 1,021 MW (4,086 minus 3,065 MW). This deficit has to be met by continuing some of the short-term measures suggested for the Fifth Plan period—use of gas turbines, regrouping restrictions on agricultural loads—and by purchasing power from the neighbouring States.

9.115 In terms of energy, the requirements are expected to increase from 15,490 Mu in 1978-79 to 27,920 Mu in 1983-84. The completion of the spillover scheme of the Fourth and Fifth Plans (hydro-schemes) will add to energy availability to the extent of 1,077 Mu. As for contribution from Thermal and Nuclear Projects, the additional generation from thermal plants at Tuticorin and Mettur will be 4,200 Mu, second mine cut at Neyveli 3,500 Mu, additional nuclear generation from the Atomic Power Project at Kalpakkam consequent on an addition of 470 MW installed capacity (200 MW Tamil Nadu's share) 1,400 Mu and from the second thermal station at Ennore 2,500 Mu. These added to the supplies from hydro-plants will amount to 12,677 Mu. Since the energy capability of the grid at the end of the Fifth Plan is estimated to be 14,451 Mu, the additions in the course of the Sixth Five-Year Plan, namely, 12,677 Mu, will raise the energy capability of the grid at the end of the Perspective Plan period to 27,128 Mu. This falls short of the estimated energy requirements of 27,920 Mu by 792 Mu.

9.116 Of the total installed capacity in the State at the end of the Perspective Plan period, hydro-power will account for 2,304 MWor 31 per cent and thermal and nuclear power together for 5,100 MW or 69 per cent. This may be compared with the position at the commencement of the Perspective Plan with hydro power 54 per cent and thermal and nuclear 46 per cent.

Cost of the generation schemes (1979-80 to 1983-84

9.117 For obvious reasons, no exact calculation of the investment outlay on the different projects which are to be taken up only in the latter years of the Perspective Plan, is possible. Nevertheless, a rough estimate is given below which conveys an idea of the relative magnitudes involved.

TABLE 9.16

Outlay on power generation in the Sixth Plan

(Rupees in Lakhs)

Schemes	*Estimated cost*	*Proposed Outlay in the Sixth Plan*
(0)	(1)	(2)
CONTINUING SCHEMES		
A. State Sector		
1 Kadamparai pumped storage scheme—balance of I and II stages ..	3,512	1,312
2 Cholathipuzha ..	739	339
3 Upper Amaravathy.	555	55
4 Shanmuganadhi ..	902	502
5 Paralayar:	510	10
6 Pykara Ultimate stage.	1,190	790
7 Coonoor Kallar ..	1,445	1,045
8 Hogenakal or Upper Cauvery Basin Scheme	..	4,000
9 Koniar Pumped Storage Scheme ..	658	358
10 Valar Pumped Storage Scheme	645	345
11 Tuticorin Thermal ..	18,310	10,100
12 Mettur Thermal ..	6,553	4,873
13 Second Thermal Station at Ennore	18,310	17,300
Total	**..**	**41,029**
B. Central Sector		
14 Second Mine cut at Neyveli and second Thermal Station ..	19,000	**15,200**
15 Extension to Kalpakkam Atomic Plant.	15,000	**12,800**
16 Second Nuclear Station (South of Madurai) : ..	30,000	19,000
Total	..	**47,000**
NEW SCHEMES		
C. State Sector		
1 Kunda Ultimate stage	2,640	2,371
2 Upper Manimuthar.	1,230	1,000
3 Upper Thambaraparani	Under investigation	1,500
4 Lower Cauvery ...	Do.	2,000
5 Lower Moyar ...	1,336	1,000
6 Kukkalathorai (Lower Moyar-III) ...	Under investigation	1,000
Total		**8,871**
Total State Sector (A+C) ...		49,900
Total Central Sector (B) ...		47,000
Grand total		**96,900**

MEASURES TO MEET THE SHORTAGE OF POWER

9.118 In view of the basic importance of an assured supply of electric power for successfully implementing the industrial and agricultural development programmes envisaged in the Perspective Plan, we have to devote special attention to exploring all possible means of developing power adequate for the State's growth. Measures to attain this objective may be grouped as follows :—

(1) Short-term measures ;

(2) Measures to make the best use of available resources ; and

(3) Long-term measures.

1. Short-term measures

9.119 The gestation period of power projects is normally quite long, varying from 5 or 6 years in the case of Thermal projects to 10 years or more in case of Atomic projects. Since the requirement for power tends to go up rapidly, and since this is a continuing trend, it is necessary to think out, plan, investigate and initiate new development projects also continuously. However, temporary shortages and deficits are bound to occur and to tide over such crises short-term measures will have to be adopted.

9.120 In the present context in Tamil Nadu the ffollowing suggestions are made :—

Quite a good number of industries in the State—llarge, medium and small—are in the private sector. 'With massive investment programmes envisaged in tthe Perspective Plan period, the scope for the private ssector will widen. It is, therefore, worth considering wwhether industries cannot be encouraged to arrange ffor themselves power generation to some extent wwhich would supplement the efforts of the State]Electricity Board. For economic operation, it would lbe advantageous if groups of industries in particular rregions come forward and undertake generation of]power on co-operative lines with joint ownership of tthe generators and other equipments. Incentives mmay be given to such undertakings in the form of eexemptions from Electricity Consumption Tax in rrespect of self-generated energy, advancement of lloans for the purcahse of diesel generator sets on nnominal rates of interest and extension of the rrelaxation measures by the Government of India in rregard to the importing of diesel generation sets.* Also, when proposals for the starting of new iindustries, especially power intensive industries, are made, the State may advise the industries to indicate as an integral part of their project proposals, their preparedness to set up self-generating sets to meet a part of their energy requirements.

9.121 Another short-term means of relieving pressure of peak demand is the installtion of gas turbines. This has been included as part of the investment programmes of the Perspective Plan.

9.122 As regards the agricultural sector, in areas where the bulk load of the grid is agricultural, the problem of line losses and low voltage occurs. Provision of capacitors at Consumers terminal would help in solving this problem to a considerable extent. Besides, there is the possibility of reducing the demand on the grid by the staggering of agricultural loads.

2. Measures to make the best use of available resources

9·123 The hydro potential of the State is estimated at 3,494 MW. Of this, 35 per cent or 1,224 MW, has already been exploited, and 30 per cent is under investigation. Projects for using up the remaining potential have been indicated, but these require further investigation. The resources now remaining unutilised provide scope for only small plants and may not be quite economical to develop. Nevertheless in view of the problem of scarcity which the State is facing, it is imperative that the investigation of these potentialities is completed without delay. The cost of these projects may be a little on the high side, but whether this is worth incurring or not is to be judged with reference to the alternative costs of going in for other modes of power development.

9·124 Special attention is to be paid to the avoidance of delay at different levels and stages—delay in making the feasibillty study and drawing up the projects, getting it approved by the Central Water and Power Commission and the Union Planning Commission, commencing work on the project and executing it. It is worth recalling that fo r important hydro projects initiated in the Fourth Five-Year Plan period are expected to be completed only in the last year of the Fifth Plan. The additions to capacity resulting from these projects (215 MW) are taken into account in estimating the generation capacity at the end of the Fifth Plan. To the extent that there is a delay of even one year in commissioning these projects, the available supply of power will fall considerably short of the targets set, and would thus bring about a critical situation. This is equally true of the latter five years of the Perspective Plan also, and applies not only to hydro projects but to thermal and nuclear projects as well. The fact is that it is only by stretching our resources to the utmost that we can hope to approach our targets and, as such, any failure to keep up to the time schedule is bound to have serious repurcussions on the economy.

9·125 Equally important as the avoidance of delay in the implementation of projects is the avoidance of wastage and transmission loss. The estimated loss on this account in Tamil Nadu is 17 per cent of generated power compared with the all-India average of 17·31 per cent. But the point is that, in view of the seriousness of the present situation even this loss should be considered as something more than what can be afforded. This underlines the need for an efficient transmission and distribution system. With the development of the new transmission systems consequent on the augmentation of generation capacity, the problems connected with

*Government of India Public Notice No. 44 I.T.C. (PN)/73 dated 28-3-1972 and communicated in Tamil Nadu Government's G.O. Ms. No 607 Industries Department dated 12th April, 1973.

the economic operation of the grid and maintaining reliable supply will also assume great importance. In order to tackle these problems and to ensure efficient working of the electric supply system in the State, the setting up of an Electric Energy System Institute as a wing of the Tamil Nadu Electricity Board is proposed. The main function of the Institute will be to promote better operational efficiency and help in taking decisions of a wide ranging technical nature using modern mathematical tools. For this purpose, the provision of an amount of Rs. 50 lakhs is made in the Perspective Plan.

9·126 Power shortage is rapidly becoming an acute World problem and modern technology aims seriously at evolving new methods of developing power from non-conventional sources, such as Magneto-Hydro-Dynamic, Geo-Thermal, Tidal and Solar energy. Recent findings in this line would be of special interest to Tamil Nadu. While it is neither possible nor necessary to devote large funds for this purpose, it is worthwhile for the State to keep itself informed of the latest developments in foreign countries through the R and D Wing of the Central Water and Power Commission. The Tamil Nadu Electricity Board also could explore the feasibility of utilising any of these forms of energy to the extent possible.

3. Long-term measures

9·127 In the ultimate analysis, the lasting solution to the problem of power scarcity in Tamil Nadu has to be found in developing atomic power and by entering into agreements with the neighbouring States with a view to exploit and utilise the hydro resources of these States for power development and irrigation purposes by joint effort. An agreement of Tamil Nadu with the Kerala Government and also with Karnataka and Maharashtra would be of immense benefit to all these States. Much of the water resulting from heavy rains on the Western ghats flows into the Arabian sea crossing a relatively narrow strip of land. Hydro power potentialities of these flows are considerable but only a small part has been harnessed for this purpose by the Kerala State. Yet, Kerala has power surplus even in years and seasons when the monsoon is below normal. An inter-State agreement in this regard would help in making the best use of these natural resources both for irrigation and power generation. The diversion of West flowing streams is possible by constructing comparatively low dams and by means of shorter tunnels at the head reach of the streams. But the catchment area at this level being limited, the benefits accruing from such diversions will be correspondingly limited. The other alternative of constructing the dams lower down will involve much higher costs but will have the advantage of a longer irrigation potential. There is, however, the possibility of a reduction of the potential for power generation in Kerala if the West flowing rivers are diverted to the eastern side. But this can be kept to a minimum by first producing power in the power houses located on the Western slopes and then lifting the tail race water and diverting them to the eastern slopes and plains. Such an arrangement would benefit both the States, if Kerala can share the power that is generated with Tamil Nadu and the latter agrees to share with Kerala the paddy crop grown in these areas of Tamil Nadu which benefit from the diverted irrigation waters. Both the States have accepted this arrangement in principle at the meeting held at the Planning Commission in New Delhi on 12th September 1973 and as a first step, the Kerala State Government indicated its inclination to share the cost and benefits of the Idikki Stage II Project which is estimated to cost Rs. 15.50 crores. Any long-term programme in this regard should be based on (*a*) demarcation of the areas constituting the Western Ghats regions ; (*b*) a study of the excess waters available, and their location ; (*c*) best technically feasible means of diverting the waters ; (*d*) a study of the lay and nature of the lands on the Eastern side of the ghats which would benefit by the diversion; and (*e*) the feasibility and cost of developing power first and then diverting the surplus waters. The acceptable scheme would be one which reconcile all the above points. Clearly, this requires some careful preliminary studies which may be entrusted to a Cell of competent State Technical Experts working in co-operation with Union Government Specialists.

9·128 There is scope for a similar agreement among Tamil Nadu, Karnataka and Maharashtra. The Hogenekal Hydro-Electric Scheme, if taken up and implemented as a joint venture of Tamil Nadu and Karnataka, will be capable of meeting a substantial portion of the deficit of the States. The inter-State disputes concerning the sharing of

Cauvery waters are likely to be settled shortly and pending a settlement, work on the investment for the project may be taken up. Investigation of a few other projects have already been completed by the Karnataka Government. The sharing of the costs by the neighbouring States of Maharashtra and Tamil Nadu in return for an agreed amount of power supply would help to expedite work on these projects ; but here again details of the pricing of power and arrangements for the sharing of power on a long-term basis have to be worked out.

9·129 The other measure which should engage the serious attention of the State Government as well as the Central Government and on which action is to be taken without delay is the setting up of a second Atomic Power Plant in one of the Southern Districts of the State. It is worth repeating that in view of the obvious constraints in the form of lack of hydro-potentials and of coal, fossil fuel and the great difficulty of getting coal from other States, and the possible delays, there is no alternative for the State except to rely on atomic energy. Even if coal were available outside Tamil Nadu, the establishment of new coal-based thermal stations in addition to the ones already set up or will be set up in the next few years, will be uneconomical for the simple reason that transporting of coal, besides being costly, necessitates additional investment on transport. While the initial investment is heavy, generating of power by atomic energy is cheaper. In fact, the cost of nuclear power will be only about 8.5 paise per unit, whereas the cost of thermal power particularly in the Southern regions will be about 10 paise per unit. Atomic power stations can be established at load centres reducing transmission losses. In view of these relative merits, the establishment of a second Nuclear Station of about 1,000 MW capacity is recommended as part of the Fifth Five-Year Plan proposals. But, since the gestation period of nuclear stations is about 8 to 10 years, work on the second Atomic Project for Tamil Nadu should be started at the commencement of the Fifth Plan itself. The Kalpakkam Nuclear Plant is expected to come into operation in 1977–78. Tamil Nadu's share from this project is 300 MW only. A further addition to installed capacity of the Kalpakkam project included in the Fifth Plan is expected to come into operation only at the end of the Perspective Plan period and the share of Tamil Nadu from this will be 200 MW. It is thus clear that if the State is to avoid a power famine in the decade 1980–1990, development of nuclear energy is to be planned in a big way. For, in the present context in Tamil Nadu, this is the only reliable means of ensuring an adequate supply of power without which the high level of economic activity envisaged in the Plan cannot be attained and all the well-laid schemes of industrial development and agricultural expansion will go awry.

TRANSMISSION, DISTRIBUTION AND OTHER ALLIED PROBLEMS

1. Transmission and Distribution

9.130 Tamil Nadu Electricity Board has a vast net work of transmission and distribution lines operated at various voltage from 230 KV down to 11 KV and 400 V. Difficulties and problems have arisen because of low voltage in many pockets, incidence of energy losses, interruption of supply and instability in the grid.

9.131 In order to improve transmission and distribution facilities, two proposals are made. The first envisages rationalisation of transmission and distribution system in general, and establishment of 110 KV Sub-Stations for every 900 sq. Kms. with a total potential of 10 MW involving an addition of 145 Nos. new EHT/HT sub-stations and erection of about 3300 Kms. of EHT/HT lines. The estimated cost of these works out to Rs.47 crores.

9.132 The second proposal contemplates expansion of 230 KV system for satisfactory transmission of bulk loads to load centres from new power houses likely to come up and to serve as effective inter-connection. An addition of 10 Nos. 230 KV sub-stations and 7 Nos. 230 KV lines would be made under this Plan. The tentative cost of this Plan works out to Rs. 54 crores.

2. Rural Electrification

9.133 Out of a population of 41 millions in Tamil Nadu, about 70 per cent live in the villages. Rural electrification is the key factor in the socio-economic transformation of the rural areas. A crash programme was initiated by the Government of Tamil Nadu in 1969–70 to electrify all the villages and hamlets and all the Harijan colonies and this is expected to be completed soon.

9.134 There will also still be demand for power supply to operate agricultural pumpsets and for rural industries and domestic sectors. Besides, there will be demand for new industries in rural areas, like rice hulling, flour milling, oil pressing, sugar-cane crushing, small workshops, cinemas, cotton ginning, tape weaving, power looms and other miscellaneous industries. Provision has, therefore, to be made in the Perspective Plan for extension of rural electrification.

3. Acquisition of Electrical Undertakings

9.135 There are still a few private electrical undertakings in Tamil Nadu. They receive bulk power supply from the State Electricity Board grid at select points and effect the distribution in their licensed areas. The experience in regard to these private electrical undertakings has not been quite satisfactory. Firstly, this affects the tempo of rural electrification in the licensed areas ; secondly, supply conditions in the licensed areas also leave much to be desired. It is proposed that these undertakings are acquired in a phased manner and vested with the Electricity Board. This would require an allotment of Rs. 6 crores in the Perspective Plan period.

Research and Developments

9.136 Power plays a crucial role in the economic development of the State. The Perspective Plan envisages a large investment in the power sector. It is essential that due attention is given to maintaining a high level of efficiency of service by maximum utilisation of the latest advances in power technology. It is unfortunate that adequate provision was not made for power research in earlier plans. While the first three plans provided negligible outlays on research, even the Fourth Plan provides a meagre outlay of about Rs. 4 lakhs only. In the Perspective Plan period, Power Research and Development Schemes will be pursued vigorously. The broad objectives for research and development will be :—

1. *Transmission and distribution.*—Improving the efficiency of transmission by reducing line losses and co ordinating the working of different power stations.

2. *Generation.*—(*a*) Improving the efficiency of existing power stations and (*b*) Prospecting for new sources of power.

9.137. With these ends in view, the following areas of study are suggested :—

1. Transmission and Distribution

In 1973, the Tamil Nadu grid consisted of over 63,300 Kms. of High Tension lines and 1.8 lakh Kms. of Low Tension lines. Seventeen hydro stations and three thermal stations feed power into this grid. The distribution to 25.4 lakh consumers is handled by 260 High Tension sub-stations. This complicated grid will become even more intricate when the power-stations projected in the Perspective Plan are completed. Elaborate research is required to make the system economical and reliable. This would involve studies in :—

(a) High Voltage Studies

9.138 The existing length of 230 KV lines will increase. Transmission at extra-high-voltages (400 KV) will be required for the Southern regional and National grids. To prepare for the task, intensive studies in working at high voltages are required.

(b) Transmission losses

9.139 As much as 17 per cent of the energy fed into the grid by power-stations is now being lost in transmission. Methods of minimising these losses will not merely improve the economics of power supply but also increase availability of energy.

(c) Relay and Protection Studies

9.140 Relays and Protection system protect the grid network and consumers from disturbances. Better systems which will afford greater protection at less cost will be aimed at.

(d) Dynamic Power Study–Mathematical modelling and analysis.

9.141 For a better understanding of the behaviour of the grid, a mathematical model can be built using computer facilities. The model can then be used for dynamic power studies which will help in design of the power system.

(e) Economisation in Rural Electrification.

9.142 Rural electrification has been achieved to a high degree in our State. However, rural electrification, by increasing the length of the distribution network, tends to make the supply system less

efficient and less economical. Research into methods of economising both the initial cost and attendant losses in rural electrification will pay rich dividends.

2. Generation

(a) Plant Utilisation

9.143 A significant portion of the energy generated is consumed within power stations themselves. Research into more efficient methods of operating power plants can result in more economical power generation.

(b) Augmentation of Power Supply

9.144 Bigger and more economical sources of hydro power have already been exploited. However, continued studies on potential sources are necessary.

Electric Energy System Institute

9.145 Some of the abovementioned studies are being attempted in a small way in the Electricity Board. But the facilities and coverage are not enough. For undertaking the above studies in depth, an Electric Energy System Institute may be set up in the Plan period. It may be a wing of the Electricity Board. But it should have liaison with the Technical Institutions and manufacturers of electrical equipment in the State, as well as outside. This institute will also provide in-service training to the Electrical Engineers in the State to up-date their knowledge in latest methods and advances in Power Technology.

INVESTMENT IN THE PERSPECTIVE PLAN PERIOD

9.146 An abstract of the anticipated capital outlay on Power Development Schemes in the State Sector and Central Sector in the Perspective Plan period 1974-84 is furnished below:—

TABLE 9-17

Anticipated Capital Outlay on Power Development Schemes—1974 to 1984

(Rupees in Crores.)

Scheme	*Fifth Plan.*		*Sixth Plan.*	
	State sector	*Central sector*	*State sector*	*Central sector*
(0)	(1)	(2)	(3)	(4)
(i) Generation Schemes	281.00	200.00	499.00	470
(ii) Transmission and distribution	75.00	..	80.00	..
(iii) Rural Electrification	50.00	..	55.00	..
(iv) Acquisition of electrical undertakings	5.50	..	0.50	..
(v) Miscellaneous items like investigation of new schemes, research, etc.	0.50	..	0.50	..
Total ..	**412.00**	**200.00**	**635.00**	**470**

9.147 Capital outlay in the State Sector during the Fifth and Sixth Plan periods is of the order of about Rs. 80 to Rs. 125 crores per annum. The spurt in expenditure from Rs. 40 crores in the Fourth Plan to Rs. 80 crores per annum in the Fifth Plan is mainly due to the proposed execution of the two thermal projects, the Tuticorin Thermal project 600/800 MW, and the Mettur Project 2×110 MW involving a cost of Rs. 82 crores and Rs. 42 crores respectively. These are to be taken up and completed on top priority basis in order to meet the energy needs in a relatively short period of time.

9.148 There are two new Power Development Schemes in the Fifth and Sixth Plan periods which call for direct Central Government Investment.

(i) Second Mine cut and second Thermal Station at Neyveli—Rs. 240 crores (800 MW.).

(ii) Second Atomic Power Project South of Madurai—Rs. 300 crores (1000 MW.).

9.149 The execution of these projects is of crucial importance for meeting energy needs on a long-term basis. In addition to the above, it is necessary to add another 470 MW capacity to the Atomic Project at Kalpakkam which is now under execution. This will require further direct investment of about Rs. 150 crores by the Central Government. The benefits accruing out of this investment are likely to be shared by Tamil Nadu with the other Southern States.

9.150 A summary statement of the investment required in the Central Sector during the Fifth and Sixth Plan periods is given below, allowance being made for the possible spillover of the Second Atomic Power Project into the Seventh Plan.

TABLE 9-18

Capital Outlay by the Central Sector 1974-75 **to** 1983-84

(RS. IN CRORES.)

Name of the project	*Fifth Plan*	*Sixth Plan*	*Total* 1974-75 *to* 1983-84
(0)	(1)	(2)	(3)
1. Balance of work on Kalpakkam (I and II stages)	78	..	78
2. Extension at Kalpakkam	22	128	150
3. Improvement to existing mine at Neyveli	20	..	20
4. Second mine cut and second thermal station at Neyveli	30	152	182
5. Second Atomic project in the South	50	190	240
Total ..	**200**	**470**	**670**

CHAPTER 10.

Transport

Transport Development in Tamil Nadu

10.1 The development of a co-ordinated transport system, capable of adequately meeting the economic, social and defence needs should certainly be given primary importance in any scheme of long-term planning. Perspective planning is of particular relevance to transport, as the magnitude of investments in this sector is of a high order. The capital works resulting from such investments last for a long period of time. Hence the need for these development projects and the returns from them have to be visualised over a correspondingly long period of time. As such, forecasting of future demand is particularly difficult in the case of the transport sector as compared with the other sectors. Since pressure of demand on transport services is the direct effect of the expansion of the other segments of the economy such as agriculture, industry, commerce, etc., the possible growth rate of these and the shifts in their relative importance have to be examined in detail if transport planning is to be operationally successful.

10.2 The demand for transport services is determined mainly by the following factors :—

(*a*) Increase in income (*b*) Growth and mobility of population (*c*) Growth of Industries (*d*) Growth of agriculture and increasing commercialization of agriculture (*e*) Urbanization (*f*) Internal and inter-State movement of goods and services and (*g*) movement of goods to and from foreign countries (export and import trade).

10.3 During the Perspective Plan period, the per capita income of Tamil Nadu is sought to be doubled, and in order to attain this level of income the State domestic product has to be increased to Rs. 6,523 crores (at 1970-71 prices) by 1983-84, which implies a growth rate of 7.6 per cent per annum. The population of the State is expected to rise at about 2.0 per cent a year and reach 53·7 millions in 1983-84. The food grains production will be stepped upto an estimated 11·2 million tonnes. The contribution of the secondary sector to the State domestic product is likely to increase to 24 per cent as against the present 19 per cent ; and this will result in substantial expansion and dispersal of industries in both large-scale and small-scale sectors. As a consequence of this, there will be an all round growth in the movement of people and goods. The modernisation of agriculture also requires good roads, connecting major highways and inter-village roads to facilitate the movement of agricultural equipment, machinery and other inputs. Also food grains and other agricultural produce have to be moved to markets and from there to different areas in the State and outside.

10·4 Already the cities have over grown with too many industries located within their vicinity, creating problems of urbanisation. The dispersal of industries and creation of satellite towns which are accepted as an essential part of future programmes of industrial development would be possible only if timely measures are taken to provide adequate transport facilities. All these call for careful and meticulous transport planning in the State which will ensure fast, safe and economic transport services needed in a growing and changing economy in response to the public and private demand at reasonable cost consistent with the broad public objectives.

10.5 The transport system of the State comprises of (1) Roads, (2) Railways, (3) Airways, (4) Ports and Harbours, (5) Inland Waterways and (6) Metropolitan Transport. Proposals for the expansion and development of these different categories of services are presented in the following pages.

Roads

The present position

10.6 The State had a total length of 66,929 kilometres of roads of different categories as on 31st

March 1971. The break-up of this lenght, by categories of roads, roa ! surfaces and road-widths was as follows :—

TA.BLE 10·1

Category of Roads and its length (as on 31st March 1971)

(in Kms.)

Serial number and category of roads	*Total length of roads of the category*	*Length with different types of surfaces*				*Lengths with different road width*		
		Cement con-creted	*Black topped*	*Metalled*	*Un-met-alled*	*Single lane*	*Double lane*	*Multiple lane*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. National Highways	1,804	224	1,580	..	..	404	1,353	47
2. State High-ways	1,780	208	1,572	..	..	1,246	534	..
3. Major District Roads	13,776	138	12,266	1,372	..	12,949	827	..
4. Other District Roads	9,537	18	4,040	5,188	291	9,355	182	..
5. Panchayat and Panchayat Union roads	40,032	2	861	19,779	19,390	40,032	..	..
Total	**66,929**	**590**	**20,319**	**26,339**	**19,681**	**63,986**	**2,896**	**47**

Comparision with National Standards

10.7. The currently accepted standards in the country for length of roads are those evolved at the Second Conference of Chief Engineers of States, held at Bombay in 1959, known commonly as the "Bombay Plan". Keeping in view the general economic progress anticipated in the country in the succeeding 20 years, they prescribed certain standards to be achieved by the year 1981. Their targets of road lengths were not correlated to affic density as such. The emphasis was on accessibility and the standards set by them were a follows :--

TABLE 10-2

Proposed National Standards for Roads

(IN MILES)

Nature of area	*The maximum distance of any village*	
	From any road	*From main road*
(0)	(1)	(2)
1. Developed area	1·5	4·0
2. Semi-developed area ...	3·0	8·0
3. Undeveloped and uncultivable area.	5·0	12·0

Taking Tamil Nadu as a whole, these targets have already been achieved. However, there are still deficiencies in respect of length of roads relative to population, width of the major roads, carrying strength of the bridges and quality of the rural roads.

(*a*) *Length of Roads*

10.8 A comparison is made below of the road lengths of surfaced and unsurfaced roads in the State and in the country as a whole, relative to area and to population, as on 31st March 1971. It may be observed that while in the matter of length of roads in relation to area, the State compares favourably with the rest of India, the position in respect of length of roads relative to population is not very satisfactory.

TABLE 10-3

National and State Road Lengths (as on 31st March 1971)

(in Kms.)

Category of roads	*Length per* 100 *sq. Kms. area*		*Length per* 100 *lakh of population*	
	All India	*Tamil Nadu*	*All India*	*Tamil Nadu*
(0)	(1)	(2)	(3)	(4)
Surfaced ...	12	38	73	110
Unsurfaced ...	25	17	144	54
	37	55	217	164

(*b*) *Width of roads*

10.9 The 'Bombay Plan' contemplated provision of 'Two lane' width over the entire length of National Highways and over half the length of State Highways. For the remaining half of the State Highways, 12 feet wide black topped surface with 6 feet wide gravelled shoulders on either side was contemplated. The other roads were to have a 12 feet wide carriage way. Roads of any category near big cities having heavy traffic densities were to be of 'four lane' width. The roads in the State, as they now exist, fall noticeably short of these standards, since only 75 per cent of the length of National Highways and 30 per cent of the length of the State Highways have two lane widths.

(*c*) *Strength of bridges*

10.10. The standards set in the "Bombay Plan", in rrespect of strength of bridges, are :

Nattional Highways and State Highways.	Existing structures not capable of carrying atleast Indian Road Congress "B" Class loading should be strengthened and replaced.
	All new bridges and culverts should conform to prescribed higher Indian Road Congress loading.
Major District Roads ...	All new bridges should be designed to prescribed Indian Load Congress loading.
Other District Roads ...	All new bridges to be designed to Indian Road Congress "B" class loading.

10.11 The bridges on the roads, as at present, in tthe State are of various types with varying load carrrying strengths. Many of them were built in the disttant past and were not designed to comply with any prescribed standards. Since 1931 they were desiigned for "B" class loading consisting of a 10-ton rolller and 3-ton lorry. From 1946 onwards, bridges are designed for the Indian Road Congress "A" classs loading, consisting of a 28.20 tonnes lorry with two trailers of 1·36 tonnes each or "AA" class loading, consisting of a tracked vehicle of 70-tonnes andl for a maximum load for wheeled vehicle of 20 tonnes for a single axle or 40 tonnes for a bogie of two axles spaced not more than 1·2 metres, centre to centre.

10.12 The permissible laden weight for lorries as at present in force in the State is 15 tonnes. From a survey that was conducted some time ago, it emerged that about 16·5 per cent of the total number of bridges and culverts on National Highways and about 12 per cent of those on State Highways had to be strengthened to permit the carriage of the then exiisting permissible laden weight of 12 tonnes per lorrry. On a rough estimate, an expenditure of

about Rs. 9 crores will be needed to improve the bridges, including those on Major District Roads, to allow vehicles with the currently permissible laden weight of 15 tonnes to pass.

(d) Condition of Rural Roads

10.13 While road communication in Tamil Nadu in general does not fall short of the norms for accessibility under the "Bombay Plan", yet, deficiency exists in the backward Districts and also in the interior parts of other Districts.

10.14 There are about 40,000 kilometres of Rural Roads, vested with the Panchayat Unions and Panchayats. They are mostly earthen or improvised metalled roads, without proper cross drainage. The condition of these roads is far from satisfactory, due to continued negligence by local bodies for want of funds. There are also many villages without any proper access or link roads at all.

10.15 The State Government have therefore decided to undertake, by a phased programme, provision of well maintained access roads to all habitations with a population of 1,500 and above, and also where access roads already exist, to improve the existing roads in all the villages to all-weather standards. It has been estimated that the scheme will cost Rs. 19 crores. It will involve the formation of 281 kilometres of all-weather link roads connecting 200 habitations and improving 4,280 kilometres of existing kutcha roads. In the first phase, Government have sanctioned Rs. 6 crores, for the formation of new roads and for improving 1,427 kilometres of existing roads inclusive of cross drainage works. The intention is to extend similar facilities to villages with even smaller population in due course of time. The entire scheme is estimated to cost Rs. 200 crores the major part of which will be spent during the Perspective Plan period.

PLANS FOR THE FUTURE

10.16 In planning for the future, one has firstly to take note of such shortfalls in the road system as are known to exist even to meet the current requirements. Secondly, provision will have to be made to meet adequately the needs of the population and the growth of the economy that are expected in the time horizon of the present study, namely upto 1983-84. While making these provisions one has to bear in mind (i) that the tempo of economic growth in the State between now and 1983-84 is expected to be much faster than the actuals in the past plan periods ; and (ii) that there will be certain areas in which the growth rates will be much higher than the anticipated average growth rate for the State as a whole, since the agricultural and industrial growth envisaged will not be uniform over the entire State.

10.17 Keeping in mind these basic aspects, the following suggestions are made for providing new roads and for making improvements to existing roads :—

The length of roads in the State per 100 square kilometres of area is expected to go up from 55.1 as on 31st March 1972, to 55.2 on 31st March 1974, 57 on 31st March 1979 and 61 on 31st March 1984.

TABLE 10.4

Proposed new roads, other than bye-pass roads and rural roads and estimated cost

(Rupees in Lakhs.)

Serial number and period.	*Two-lane-and wider roads.*		*Single lane roads.*		*Other than black-topped or cement concreted*	
	Black-topped or cement concreted		*Black-topped or cement concreted*			
	Length Kms.	*Approximate cost*	*Length* Kms.	*Approximate cost*	*Length.* Kms.	*Approximate cost*
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. 1974–75 to 1978–79 ..	232	464	25	25	30	15
2. 1979–80 to 1983–84 ..	628	1,256	60	60	40	20

TABLE 10.5

Proposed new bye-pass roads and estimated cost

(Rupees in Lakhs.)

Serial number and period	*Numbers to be constructed*	*Cost*
(0)	(1)	(2)
1. 1974–75 to 1978–79	10	154
2. 1979–80 to 1983–84	35	500

10.18 An important highway to be constructed by 1983–84 and included in the above statement is the East Coast Road. It will be a continuous direct road along the coast, from Madras to Kanyakumari ; and it is expected to improve the economic condition of the entire area which it will be traversing and also to ease the food problem (especially in the matter of distribution) of the villages in that area to a great extent. It will be of about 768 kms. in length.

TABLE 10.6

Proposed increasing road-widths and estimated cost

(Rupees in Lakhs.)

Serial number and period	*Road-widths to be increased to*			
	Two lanes		*Four lanes*	
	Length (IN Kms.)	*Cost*	*Length* (IN Kms.)	*Cost*
(0)	(1)	(2)	(3)	(4)
1. 1974–75 to 1978–79	476	343	214	454
2. 1979–80 to 1983–84	912	626	388	608

Some of the important structures of roads included in the above statement are :—

Widening to four lanes

1. Madras-Ranipet ... ... 96 Kms.

2. Madras-Tiruchirappalli-Dindigul Road ... ... 112 Kms.

Widening to two lanes

Rameswaram-Dhanushkodi ... 32 Kms.

TABLE 10.7

Proposed improvements to surface of roads and estimated cost

(Rupees in Lakhs)

Serial number and period	*Length of roads to be improved* (IN Kms.)	*Cost.*
(0)	(1)	(2)
1. 1974–75 to 1978–79	660	507
2. 1979–80 to 1983–84	1,800	1,250

Some of the important sections of roads herein included are :—

1 Madras-Bangalore (Portion) ... 80 Kms.
2 Madras-Dindigul (Portion) ... 125 ,,
3 Ranipet-Krishnagiri (Portion) ... 32 ,,
4 Coimbatore-Kerala border (Portion). 7 ,,

TABLE 10.8

Proposed bridges and causeways and estimated cost

(Ruppees in Lakhs.)

Serial number and nature of work	1974-75 to 1978 79		1979-80 to 1983-84		*Total* 1974-75 *to* 1983-84	
	Number	*Cost*	*Number*	*Cost*	*Number*	*Cost*
(0)	(1)	(2)	(3)	(4)	(5)	(6)
Bridges to be strengthened	206	640	800	2,500	1,006	3,140
New bridges and cause-ways to be constructed	43	430	100	1,000	143	1,430
Over-bridges and subways to be constructed ..	..	..	46	2,250	46	2,250

TABLE 10.9

Proposed Rural Roads (Panchayats and Panchayat Unions) and estimated cost

(Rupees in Lakhs.)

Serial numoer and period	*New formation*		*Upgrading existing roads*		*Removal of deficiencies*	
	Length Kms.	*Cost*	*Length* Kms.	*Cost*	*Length* Kms	*Cost*
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1. 1974-75 to 1978-79 ..	2,803	1,290	3,912	2,150	1,915	860
2. 1979-80 to 1983-84 ..	5,500	3,000	10,000	5,000	4,000	2,000

10.19 In all, new formation and improvement of existing rural roads would involve a cost of Rs. 143 crores in the Perspective Plan period—Rs. 43 crores in the first five years and Rs. 100 crores in the latter five years. Of this amount, the State's share is Rs. 105 crores ; the balance of Rs. 38 crores is to be met by the local bodies.

10.20 On the whole, the total outlays on road development including National Highways but excluding Metropolitan Transport in the Perspective Plan will be Rs. 363.89 crores. It is expected that investment spendings of this order would provide employment directly to about 38 lakhs of persons.

ROAD TRANSPORT.

10.21 The proposed policy of the Government is to nationalise bus transport completely within the next five years. If this policy is to be implemented in the course of the next few years, there should be an appreciable increase in investment under this head.

10·22. Accordingly, the provision for Road Transport in the Perspective Plan may be Rs. 37.00 crores for the following :—

(i) Government's share in new Transport Corporations ;
(ii) Purchase of weigh-bridges ;
(iii) Construction of office buildings for Regional Transport Offices;
(iv) More workshops for maintenance of all Government vehicles ;
(v) Construction of bus stands, depots, etc.;
(vi) Requirements of State Transport ; and
(vii) Traffic Research-engineering, enforcement of traffic regulations and improvemesnt

These programmes will give employment to 3,93,000 persons.

RAILWAYS

The Present Position

10.23, The total route kilometres of Railway lines in the State is 3,758. Of this, 869 kilometres are broad-gauge and 2,889 kilometres metre-gauge. The length of railway lines in State relative to area and to population, compares as follows with the position prevailing in the country as a whole :

	Railway route (kilometres)	
	Per 100 sq. Kms. of area.	*Per 100,000 of population*
(0)	(1)	(2)
Tamil Nadu	2.63	10.06
All India	1.72	12.91

10.24 Compared to the country as a whole, relative to its area, Tamil Nadu is much better served in the matter of length of railway lines. It is poorly served relative to its population, but this is a factor of less significance. A very significant adverse factor in this connection, however, is the fact that the bulk of the length of railway lines in the State is metre-gauge, while the bulk of the goods traffic from and to the State is, to and from the areas served by the broad-gauge in the North.

10.25 The problems of rail transportation capacity generally arise from three factors, namely :

(i) section capacity ;

(ii) the availability of adequate number of wagons ; and

(iii) the constraints imposed by the capacity of the transhipment points, where there is break of gauge.

The expression ' section capacity ' needs some clarification. It is the limit on the capacity of each particular section of railway to deal with traffic, arising from its physcial features such as whether it is broad-gauge or metre-gauge, whether it is single line or double line, how far apart the successive stations are, and how exactly these stations are signalled. The capacity of any individual section is usually measured in terms of the number of trains that can be run over it each way daily ; and it is also affected by the motive power used, i.e., by whether the traction is by steam, diesel or electric engines.

10.26 With the steadily increasing tempo of economic activity in the State, what are now proving constraints in the free flow of goods traffic by railway to and from the State, are the section capacities over certain sections within the State itself, the absence of adequate number of wagons to meet the demands as they arise and the limitations imposed by the capacities of the break of gauge transhipsheds, particularly those at Arkonam and Tiruchirappalli. And what has to be planned now is not only the bare removal of these handicaps, but a definite further improvement in the situation commensurate with the still higher demand for rail transportation which will arise with the planned economic development of the State we have in mind.

Railway Section capacites that are likely to be needed in the Prspective Plan period

10.27 Having due regard to (1) the trends in the railway passenger and goods traffic over individual sections in the State in recent years ; and (2) the higher tempo of agricultural and industrial activities envisaged in the coming years and their expected location, an estimate has been made of the railway section capacities that are likely to be needed by the end of the Fourth, Fifth and the Sixth Plan periods. These estimates, together with the capacities either already available or expected to be available by the end of the year 1973-74, are set down below, leaving aside the sections of comparatively light traffic density over which no capacity problems are anticipated.

TABLE 10.10.

Estimated Railway section capacities needed in the Perspective Plan period

(In terms of number of trains each way daily)

Serial number and section	*Capacity expected to be available by 1973–74*	*Capacity expected to be needed*		
		By 1973-74	*By 1978–79*	*By 1983–84*
(0)	(1)	(2)	(3)	(4)
Broad Gauge				
1 Madras-Arkonam *	70(*a*)	42	54	66
2 Arkonam-Jolarpet	35	27	34	40
3 Jolarpet-Erode	37(*b*)	22	26	31
4 Erode-Coimbatore	33(*c*)	20	24	28
5 Erode-Tiruchirappalli	17	14	18	21
Metre Gauge				
1 Tambaram-Chingleput	27	26	31	36
2 Chingleput-Villupuram	25	22	27	33
3 Villupuram-Tiruchirappalli	18	18	23	28
4 Tiruchirappalli-Dindigul	18	18	25	30
5 Dindigul-Madurai	20	20	27	34
6 Madurai-Virudhunagar	21	20	28	33
7 Virudhunagar-Maniyachi	19	12	27	33
8 Maniyachi-Tuticorin	22	16	26	33
9 Villupuram-Cuddalore	26	18	21	24
10 Cuddalore-Mayuram	23	15	18	21
11 Mayuram-Thanjavur	25	18	21	24
12 Thanjavur-Tiruchirappalli	24	21	25	29
13 Virudhunagar-Tenkasi	14	11	13	16
14 Maniyachi-Tirunelveli	22	12	13	14
15 Tirunelveli-Shencottah	21	20	23	25

* The figures given are exclusive of those relating to sub-urban passenger traffic.

(a) Expected to be available by 1975-76.

(b Expected to be available by the end of the year 1974.

(c) Expected to be available by the end of the year 1976.

Proposals to Meet the Future Requirements

(a) Board-gauge sections

10.28 The figures given above, in respect of the broad-gauge sections, indicate that so far as the sections, Madras–Arkonam, Jolarpet–Erode and Erode–Coimbatore are concerned, no capacity problems are likely to arise within the time horizon covered by the present study. Also, even in regard to the remaining two sections, Arkonam–Jolarpet and Erode–Tiruchirappalli, the shortages in capacity which are seen as arising by the year 1983–84 are not severe and are such as can be met by providing additional block stations and improved methods of signalling.

NOTE:-

NUMBERS DENOTE CAPACITY IN TERMS OF NUMBER OF TRAINS EACH WAY DAILY

Railway capacity expected in 1973-1974 shown in red colour thus 33

Railway capacity needed in 1978-1979 shown in green colour thus 25

Railway capacity needed in 1983-1984 shown in blue colour thus 25

⊗ The figures given are exclusive of those relating to suburban passenger traffic.

(A) Expected to be available by 1975-1976.

(B) Expected to be available by the end of the year 1974.

(C) Expected to be available by the end of the year 1976.

10.29 Certain long-term aspects, however, call for serious thought and appropriate action in this connection.

10.30 The first of these is the need to electrify the entire section Madras to Arkonam fairly soon, instead of continuing to depend, for many more years to come, on steam and diesel traction. The growing needs of the suburban traffic of the City of Madras call for electrification of the sections Madras-Tiruvallur and Madras-Gummidipoondi by the year 1979. Both on considerations of economy in operation and of the ability to meet the further demands in line capacity which may be expected to arise within a few years of 1983-84, the advantages of electrifying the entire section Madras to Arkonam at the same time as the section Madras-Tiruvallur are self-evident and this should be done.

10.31 The second of the long-term aspects pertains to the appropriate action to be taken for meeting the further capacity needs of the section Erode-Karur, when by about the year 1983-84 the traffic requirements of that section outgrow the capacity of the single line of track that now exists. There are two alternative courses of action possible at that stage. The first is to provide a second track (66 kilometres) from Erode to Karur, converting it into a double line section. The second is to construct a new direct broad-gauge line from Salem to Karur (84 kilometres). In spite of the somewhat higher initial cost that is likely to be incurred, the second alternative is to be preferred. Firstly, it will open up new territory in the State by providing rail communication in an area where it does not now exist. Secondly, it will save immediately a haulage of about 40 kilometres on all the movements between Salem and beyond on the one hand, and Karur and beyond on the other. Thirdly, it will also provide, when in due course the existing Guntakal-Bangalore and Bangalore-Salem metre-gauge sections are converted into broad-gauge, the shortest all-broad gauge route between Guntakal and north thereof (i.e., between Western India and North Western India) and Karur and the entire area in the State south thereof.

(*b*) **Metre-Gauge Sections**

10.32 It will be observed from the figures given in Table 10–10 that by the year 1974 many of the important metre-gauge sections are expected to be working at or near their full capacity. By 1979 there will be a definite shortage of capacity over the lengths Madras to Tuticorin (via) Villupuram, Tiruchirappalli and Dindigul, as also between Thanjavur and Tiruchirappalli. By the year 1984, this shortage in capacity will become far more severe and will be there over most of the sections listed. Owing to the inherent economies in broad-gauge operation relative to metre-gauge and the declared policy of the Central Government to convert all metre-gauge lines into broad-gauge in course of time, there can be no question of doubling any of these metere-gauge sections. What is called for to meet the capacity needs that will arise by the years 1978-79 and 1983-84, is conversion of the concerned metre-gauge sections into broad-gauge by a phased programme. The need for this is beyond dispute and the real point for decision is what the phasing should be.

10.33 For consideration of the question of phasing, the concerned sections can be divided into four groups, namely :—

(i) Madras to Tiruchirappalli (via) Villupuram and Vridhachalam ;

(ii) Tiruchirappalli to Tuticorin and Tirunelveli (via) Madurai and Maniyachi ;

(iii) Villupuram to Tiruchirappalli (via) Thanjavur ; and

(iv) Maniyachi-Tirunelveli-Shencottah and Virudhunagar-Tenkasi.

10.34 It is understood that a proposal has been fully investigated and is now under the active consideration of the Railway Board (i) to construct a new broad-gauge line from Karur to Madurai (via) Dindigul and (ii) to convert the sections Madurai-Virudhunagar-Maniyachi-Tuticorin-Tirunelveli into broad-gauge. This work requires to be sanctioned forthwith and to be completed quickly and well before the year 1979. Failure to do so will inhibit the functioning of the major port coming up at Tuticorin and will very severely handicap the fertiliser unit of substantial capacity which is being located there. The work in connection with this unit is already in hand and it is expected to go into production by the year 1973-74 and to further expand in the subsequent years.

10.35 The second phase should comprise of (i) an additional broad-gauge line from Madras to Villupuram leaving the existing metre-gauge line intact, and (ii) the conversion of the Villupuram-Dindigul section (via) Vridhachalam and Tiruchirappalli into broad-gauge. The anticipated traffic densities require that this work be completed by the year 1979.

10.36 The third phase has to be the conversion into broad-gauge of the Villupuram-Mayuram-Thanjavur-Tiruchirappalli section, along with the existing metre-gauge line Madras-Villupuram and the section Chingleput-Arkonam.

10.37 The sections Virudhunagar-Tenkasi and Tirunelveli-Shencottah will have to be converted into broad-gauge along with the conversion of the metre-gauge sections in the Kerala State so that the free flow of long distance traffic to and from that State may not be handicapped by these two small sections being of different gauge from the main railway lines in the two States.

10.38. The proposal to retain the existing metre-gauge line between Madras and Villupuram in the second phase and to convert it into broad-gauge only in the thrid phase is intended to serve two purposes.. The first is to ensure that the heavy passenger traffic between Madras and the Villupuram-Tiruchirappalli section (via) Mayuram and Thanjavur, is not handicapped till the conversion of that sectiom into broad-gauge by having to chang trains at Villupuram. The second is to have, ultimately a broad-gauge double line between Madras and Villupuram so as to meet the future needs adequately.

10.39 It is proposed to improve the Cuddalore Port and the area around Cuddalore will become industrially developed soon, especially with the progress of the Salem Steel Project and the fertiliser unit of SPIC., to be started there. Therefore, the existing metre-gauge line from Salem to Cuddalore will have to be converted into broad-gauge.

10.40 The several railway works thus deemed necessary are listed below. They are in addition to a broad-gauge line from Tirunelveli to Trivandrum (via) Nagercoil with a spur from Nagercoil to Cape Comorin which has already been sanctioned and the construction of which has been taken in hand.

TABLE 10-11.

Railway Development Programmes, Estimated Cost and Employment Potential during Perspective Plan period.

(*Rs. in lakhs*).

Serial number and programme.	*Period by which the work should be completed.*	*Approximate cost.*	*Expected employment potential.*
(0)	(1)	(2)	(3)
1 Electrification of Madras-Arkonam line	Before the end of the Fifth Plan period.	809	
2 Construction of a new broad-gauge line from Karur to Madurai (via) Dindigul.	Do.	2,000	
3 Conversion of the sections Madurai-Virudhunagar-Maniyachi-Tuticorin-Tirunelveli into broad-gauge.	Do.		
4 Additional broad-gauge line from Madras to Villupuram, leaving the existing metre-gauge intact.	Do.	1,618	
Total : (1) to (4)		4,427 or Rs. 44 crores (roundly).	79,000

(0)	(1)	(2)	(3)
:5 Conversion of the Villupuram-Dindigul section (via) Vridhachalam and Tiruchirappalli into broad-gauge.	Before the end of the Sixth Plan period.	2,200	
(6 Conversion of the Salem-Cuddalore section into broad gauge.	Do.	1,576	
'7 Conversion into broad gauge of the Villupuram-Mayuram-Thanjavur-Tiruchirappalli section along with the existing metre-gauge line Madras-Villupuram and the section Chingleput-Arkonam.	Do.	3,560	
18 Construction of a new broad-gauge line from Salem to Karur.	Do.	840	
19 Conversion of the sections Virudhunagar-Tenkasi and Tirunelveli-Shencottah into broad-gauge.	Do. At the same time as the conversion of the metre-gauge sections in the Kerala State.	1,550	
		9,726	1,82,000
Total : (5) to (9)		or Rs. 97 crores roundly.	

/AIRWAYS

10.41 The demand for air transport for quick movement of persons as well as goods is bound to increase with the economic development of the State. By increasing air travel facilities it would certainly be possible to attract more foreign tourists to the South, thus providing scope for the development of tourist industry in the State. There are various factors to be taken into account before an air service can be operated on any particular new line. More important of these are :—

(1) The suitability of the air field to take commercial flights ;

(2) The suitability of the air field to take the existing type of air-crafts ;

(3) The affinity of traffic from the new station to the other stations in Tamil Nadu as well as stations in the neighbouring States : and

(4) The traffic potential to and from the new station in the event of air services being operated.

10.42. After considering the factors mentioned above, it is suggested that new airports may be opened in Tamil Nadu in the order noted below :—

(1) *Salem*

10.43 This town is an important centre between Madras and Coimbatore airports. On account of the location of a number of industries at Mettur and the steel project and industry near Salem, there is an immediate need for an air link with Salem. From the point of view of air-stage length, Salem is ideally situated, being about midway between Madras and Coimbatore. Presently, the movement of business people to Salem is mostly by road. It is possible to promote adequate air traffic between Madras and Salem and between Salem and Coimbatore.

(2) *Tuticorin*

10.44 Next to Salem, the opening of an airport at Tuticorin can be considered. At present, passengers who want to travel by air from this area have to go to Madurai. The present traffic that is carried on

the Tiruchi-Colombo sector is mainly originating from Tirunelveli and Ramanathapuram districts. With the completion of the Harbour Project and the opening of Fertilisers and Chemicals Complex at Tuticorin, this place is bound to become very important in the next ten years. As for the site for the air-field, Kayatar which is about 30 miles to the west of Tuticorin is suggested. The advantage of this site is that there was a Defence air strip at Kayatar during the last World War. The run way dimensions of the airfield are 6,000'×150'. There is another secondary run way 4,800'×150'. Both the run ways are rigid and firm and in good condition. If the improvement of Kayatar airfield is taken on hand, the cost involved will be much less because only the terminal building and fencing are required, apart from meteorological and communication facilities. There is also a good approach road from the National Highway No. 7. Electricity facilities are also available.

(3) *Cape-Comorin*

10.45 Apart from Salem and Tuticorin (or Kayatar), the operation of an air-flight from Cape-Comorin, which is an important place of tourist and pilgrim attraction may be considered. But this may be taken up in the latter part of the Perspective Plan period, i.e., Sixth Plan, 1979-84, since a number of facilities required are not available there now.

(4) *Thanjavur*

10.46 The air field, which was at Thanjavur, could be reactivated. But since Tiruchirappalli is very near to Thanjavur, the introduction of an air service to this place is not an immediate necessity. Thanjavur is fast becoming a place of tourist attraction in view of the ancient and great temples and the monuments of architectural splendour. Its importance is also enhanced by the location of the F.A.O. Unit there for agricultural development. Hence the construction of an airport will be necessary during the Sixth Plan period.

10.47 The construction of an airport is estimated to cost about Rs. 30 lakhs. Thus, if the 4 new airports suggested above are to be taken up and completed in the Perspective Plan period, the total outlay will be of the order of about Rs. 1.20 crore

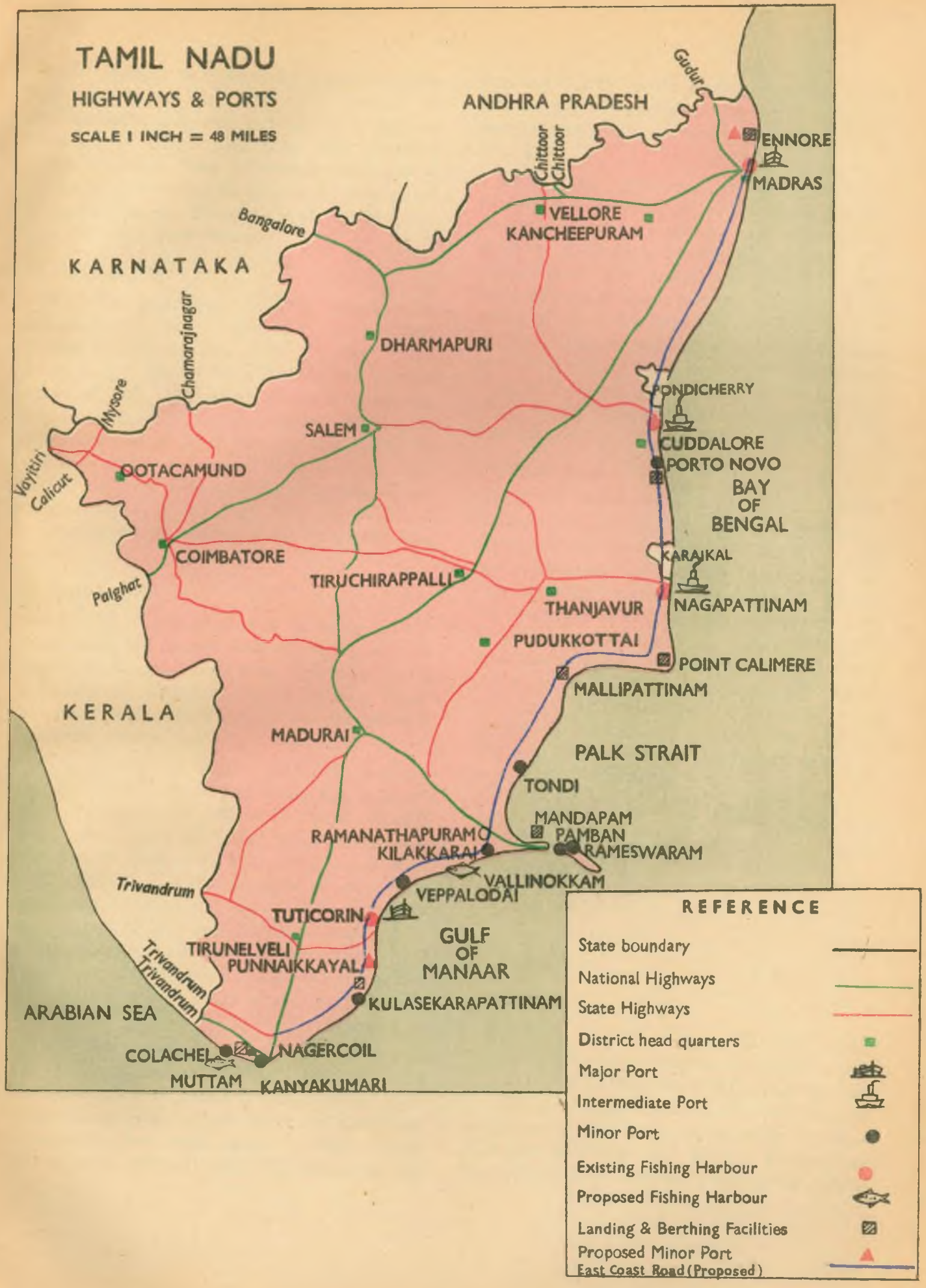
PORTS AND HARBOURS

10.48 Tamil Nadu has a long coast line of nearly 1,000 kilometres. At present, of the ports in the State, there is only one classed as a major port, i.e., Madras. There are three intermediate ports—Tuticorin, Cuddalore and Nagapattinam. Of these, Tuticorin is now being developed as a major port. There are also a few minor ports in the State. The major and intermediate ports serve as outlets for the export commodities of Tamil Nadu as well as the neighbouring States of Kerala, Karnataka and Andhra Pradesh. Similarly the imports have as their destination not only Tamil Nadu, but also most of the southern parts of India. Hence, with the development of industries in this region the strain on the present capacity of the ports is bound to increase rapidly.

(*a*) *Madras Port*

10.49 The volume of imports and exports passing through the Madras port increased from 3·04 million tonnes in 1960-61 to 4·87 million tonnes in 1965-66 and to 6·93 million tonnes in 1970-71. It is expected to go up to 9·74 million tonnes in 1973-74 and to 17·72 million tonnes and 21·11 million tonnes respectively in 1978-79 and 1983-84.

10.50 Work is already in progress for extending the facilities in Madras port. An outer-harbour is now being constructed to accommodate an oil berth and an ore berth with mechanical ore handling facilities on the outside of the existing harbour. Also there is proposal to remodel the boat basin located at the south-west corner of the harbour basin to accommodate all the crafts of the port and to construct a slipway of about 2,000 tonnes capacity to enable taking the Port Trust's dredgers also on the slipway. This project is estimated to cost about Rs. 1·54 crores. A further scheme, sanctioned by the Ministry of Food and Agriculture of the Government of India, is the construction of a Fisheries Harbour further north of the outer-harbour. Work on this project involving a cost of about Rs. 6·50 crores is expected to be completed by 1975. As part of the Fifth Five-Year Plan projects, the provision of a general cargo-container berth at the outer-harbour is being considered at an approximate cost of Rs. 3 crores. This may take about three years to complete.


TAMIL NADU
HIGHWAYS & PORTS
SCALE 1 INCH = 48 MILES
ANDHRA PRADESH
Gudur
Chittoor
Chittoor
ENNORE
MADRAS
VELLORE
KANCHEEPURAM
Bangalore
KARNATAKA
Chamarajnagar
Mysore
DHARMAPURI
PONDICHERRY
SALEM
CUDDALORE
PORTO NOVO
Vayitiri
Calicut
OOTACAMUND
BAY
OF
BENGAL
COIMBATORE
KARAIKAL
Palghat
TIRUCHIRAPPALLI
THANJAVUR
NAGAPATTINAM
PUDUKKOTTAI
POINT CALIMERE
MALLIPATTINAM
KERALA
MADURAI
PALK STRAIT
TONDI
MANDAPAM
PAMBAN
RAMANATHAPURAM
KILAKKARAI
RAMESWARAM
VALLINOKKAM
Trivandrum
VEPPALODAI
TUTICORIN
GULF
OF
MANAAR
TIRUNELVELI
PUNNAIKKAYAL
Trivandrum
Trivandrum
KULASEKARAPATTINAM
ARABIAN SEA
COLACHEL
NAGERCOIL
MUTTAM
KANYAKUMARI
REFERENCE
State boundary
National Highways
State Highways
District head quarters
Major Port
Intermediate Port
Minor Port
Existing Fishing Harbour
Proposed Fishing Harbour
Landing & Berthing Facilities
Proposed Minor Port
East Coast Road (Proposed)

10.51 Traffic at the Madras port is sure to become very heavy in the near future on account of the development of industries and agriculture and the expansion of trade; and hence this important harbour in South India will have to be improved further by constructing an additional berth costing about Rs. 3 crores. The entire work may be spread over the Sixth Plan period.

(b) Tuticorin Port

10.52 This port, which is next in importance to Madras Port, is being developed into a major port to meet the requirements of the hinterland which would in the next few years develop into a major industrial area. Expansion work in connection with this port, which is well underway, includes the construction of a Dry Dock and four berths for salt, coal, cement and general cargo. As the major part of the work is likely to be completed by the commencement of the Fifth Plan, no additional investment will be required in the Perspective Plan period.

(c) Cuddalore Port

10.53 The construction of a third big port in Tamil Nadu will become necessary in the next few years if the increasing pressure on the Madras Port is to be relieved. Cuddalore is the obvious choice because of its convenient location and the immense industrial potentialities of the hinterland.

10.54 When power becomes more freely available and the new schemes for industrialisation in Thanjavur, Tiruchirappalli and South Arcot districts take shape, there will be need for importing large quantities of machinery, raw materials and other items. Besides, with the progress of the Alloy Steel Plant at Salem and the establishment of the fertiliser unit of SPIC near Cuddalore, there will be greater activity in the Neyveli-Salem belt. New engineering units may come up, while there may also be exports of caustic soda, cement, magnesite and other items.

10.55 The usefulness and importance of Cuddalore Port will increase and the area's industrial development will be greatly facilitated, if the metre gauge railway link between Salem and Cuddalore is converted into broad gauge. A broad gauge railway track between Salem and Cuddalore will not cost heavily, as the distance involved will be only less than 250 kilometres and can be completed simultaneously with the improvement of the Cuddalore Port.

10.56 Expert opinion on the technical feasibility for further development of the Cuddalore Port may be obtained in the first instance; and to begin with, it may be developed as an alongside port and not as a major port. The work of developing the Cuddalore Port as an alongside port may cost about Rs. 20 crores of which the State's share will be Rs. 7·50 crores. It may be taken up with Central assistance and spread over the two Plan periods. The development of a fishing harbour there which may cost about Rs. 25 lakhs may be taken up in the Fifth Plan period.

(d) Minor Ports

10.57 As regards minor ports, there is scope for developing the ports at Nagapattinam, Rameswaram, Veppalodai and Punnaikayal. Ennore, a few miles north of Madras, may be developed as a minor port with advantage because of its nearness to Madras city and as the development of this port may solve the sand bar problem now faced by the Electricity Board in developing the Ennore Thermal Power Station. The feasibility of developing a few of the minor ports into fishing harbours is examined in the section dealing with Fisheries Development. The cost of the schemes under development of minor ports is as follows :

(RUPEES IN LAKHS.)

(i) Nagapattinam	24·5
(ii) Rameswaram	63 5
(iii) Veppalodai	20·5
(iv) Punnaikayal...	159·5
(v) Ennore	131·0

(e) Sethusamudram Project

10.58 The Sethusamudram Shipping Canal Project envisages the cutting of a shipping canal to connect the Gulf of Mannar with the Palk Bay near Pamban in Ramanathapuram district. The estimated cost of a scheme to provide for the movement of 30 feet draft ships will be Rs. 37·50 crores. The project will be financially a paying one; and 80

per cent of the gross earnings may be in foreign exchange. Ships going from the East to the West Coast will also save the present detour round Sri Lanka of 600 kilometres. It would reduce the shipping distance from the West Coast (off Cape Comorin) to Madras, Visakapattinam and Calcutta by 355, 295 and 259 nautical miles respectively. An additional 81 miles will be saved for ships touching Tuticorin Port enroute. The scheme will give a big boost to the Port of Tuticorin, which will now lie on the direct route of the canal. The development of the Tuticorin Port and the Sethusamudram Canal Project will stimulate the industrial potential of the Tuticorin-*cum*-Sethusamudram hinterland by providing for economical movement of goods and easy export facilities leading to competitive rates in trade and greater profits. It is worth adding that the region which would benefit most from this project is the Eastern portion of Ramanathapuram district which is one of the most backward in the State. The canal will provide a sheltered waterway for both the Merchant Marine and the Navy and the two banks of the Sethusamudram canal may well become an international tourist attraction.

10.59 This project may be spread over the Fifth and Sixth Plan periods and would involve an outlay of Rs. 12 crores and Rs. 16 crores respectively.

10.60. The total expenditure on Ports and Harbours will be Rs. 56.50 crores over the ten years covered by the Perspective Plan.

INLAND WATERWAYS

10.61 Inland Waterways function as a supplement to roadways and railways. Depending on accessibility, continuity and other natural facilities, transport of goods is cheaper by waterways as compared with other modes of transport.

10.62 In Tamil Nadu the main inland waterways are :

(1) Cooum River.
(2) Buckingham Canal.
(3) Vedaranyam Canal.

(1) *Cooum River*

10.63. The river Cooum, which runs for a distance of six miles and four furlongs within Madras City, has now been improved making it clean and tidal. Facilities are provided for pleasure boating, but the possibility of running passenger boats on the river may also be examined. It has been tentatively estimated that the capital investment required for plying passenger boat service on this river by the Government would be about Rs. 13 lakhs and annual expenditure about Rs. 4 lakhs. Also, the river may be further improved to transport cargo from the Harbour to the interior parts of the City direct. This would involve an expenditure of Rs. 2·50 crores.

(2) *Buckingham Canal*

10.64. The Buckingham Canal is a navigable channel running through the backwaters and parallel to the Coramandal Coast at an average distance of less than one mile from the sea. The canal runs for a total length of 262 miles from Mercanam in South Arcot district in Tamil Nadu to Pedda Ganjam in Krishna district in Andhra Pradesh. A length of about 162 miles lies in Andhra Pradesh and the rest in Tamil Nadu. The Buckingham canal covers a distance of about 12 miles in Madras City limits.

10.65 The bulk of the commercial traffic in the canal consists of firewood, salt, lime and shell, for which Madras is the chief market centre. A number of country boats with capacity ranging from 5 to 30 tonnes ply in the canal. The revenue from this canal is by way of licence fees, wharfage, demurrage, berm rent, etc. Cargo boats are charged at Rs. 4.50 per tonne per annum and passenger boats at Rs. 6 per tonne per annum. The revenue realised is of the order of Rs. 2 lakhs : and the expenditure has been higher than the revenue realised. If the canal is deepened, bigger barges up to 100 tonnes capacity can move; and more traffic will flow.

10.66 A High Power Technical Committee was appointed by the Tamil Nadu Government in 1958 to examine the technical feasibility and financial implication of developing the Buckingham Canal so as to augment cheap transportation facilities in Madras City and to draw up a comprehensive scheme for the purpose. The Government of India constituted the Bhagwathi Committee in 1968 to study and suggest improvements to the water transport system in the country. As an interin measure, this Committee has recommended an outlay of Rs. 20 lakhs for dredging the Buckingham Canal. The project as a whole would involve an outlay of Rs. 470 lakhs and the benefit cost ratio works out to 1 : 2.46.** A study group has been

** Source : Office of the Chief Engineer,(Irrigation), Government of Tamil Nadu.

constituted by the Government of India with representatives of the Tamil Nadu and Andhra Pradesh Governments to suggest improvements to the Buckingham Canal. It is necessary and important that early action is taken by the Centre in regard to the scheme already formulated. Part of the development works in connection with this project may be taken up and completeted before the end of the Sixth Plan. The outlay on this would be Rs. 2.50 crores during each of the two Plan periods.

(3) *Vedaranyam Canal*

10.67 The Vedaranyam Canal in Thanjavur district has the distinction of being the oldest of waterways in Tamil Nadu and was excavated in the years 1863-67. The length of the canal is 57 Kms. The object of cutting this canal was to bring the salt pans of Vedaranyam within easy reach of the then newly opened Railway terminus at Nagapattinam. But after the construction of Tiruthuraipoondi-Agasthiampalli Railway line in 1919, the canal lost much of its importance as means of transport ; and at present it serves chiefly as a drainage channel. Only small cargo boats numbering about 100 of capacity ranging from 2 to 10 tonnes ply in this canal at present carrying straw and firewood.

10.68 Traffic studies which have been conducted on the suggestion of the Government of India have highlighted the goods traffic potentialities of the canal. It is estimated that the salt production at Vedaranyam will be of the order of 6 lakh tonnes by 1975 76 and 1.2 million tonnes by 1980-81. It has also been calculated that the canal transport would enjoy an advantage of Rs. 2.50 per tonne over rail transport and Rs. 4.75 per tonne over road transport. As the number of Inland Waterways in the State is limited, this work for improving the Vedaranyam canal may be taken up in the latter part of the Perspective Plan period. The cost is tentatively fixed at Rs. 2.00 crores.

10.69 The total expenditure on the development of inland waterways will be Rs. 9.50 crores during the ten years 1974-1984.

EXPANSION OF METROPOLITAN TRANSPORT FACILITIES

10.70 There has been a tremendous growth of population of Madras City from about 8.8 lakhs in 1941 to about 24.7 lakhs in 1971 : and people continue to enter the city daily seeking employment in the city. The Corporation limits of the city have extended gradually from about 29.01 sq. miles in 1941 to the present 49.74 sq. miles. The adjoining fringe areas are rapidly getting urbanised : and several industrial undertakings and residential neighbourhoods are springing up outside the Corporation area up to many miles away from the city. These developments generate considerable movement of persons and vehicles to and from the city. The Integral Coach Factory at Perambur, the Manali Refineries and other petro-chemical industries, the Ennore Thermal Station and many other industrial establishments, both in the public and private sectors, have contributed to a sharp rise in the level of economic and business activity necessitating a corresponding rise in transport needs.

10.71 The volume of traffic crossing the Central Business district is nearly four times the traffic crossing the urban area and sixteen times the traffic crossing the Metropolitan area. Pedal cycles form the major part of the composition of traffic crossing the Central Business District cordon. The cycle traffic constitutes about 55 per cent of the total traffic. It is observed that the flow is towards the Central Business District in the morning and away from the Central Business District in the evening.* The peak hour traffic is about 8 per cent of the total traffic and is found to be between 9 and 10 hours in the morning and 17 and 18 hours in the evening. There is also the problem created by the accumulation of different types of vehicles in the busier parts of the city. On an average, a maximum of about 17,000 vehicles are found to accumulate inside the Central Business District area between 11 a.m. and 12 noon. In a survey conducted in collaboration with the State Transport Department to ascertain the actual number of bus passengers entering and leaving the Central Business District area, it was noted that about 5 lakhs of bus passengers cross the Central Business District cordon every day. Between 10 and 11 hours a maximum of 1,342 buses cross the Central Business District area carrying nearly 36,788 passengers.* Similarly, between 16 and 17 hours in the evening, a maximum of 778 buses cross the Central Business District area carrying a total of nearly 34,272 passengers.

* Source: Report on Transportation Corridors 1991 pages II-21 and II-22 prepared by the Madras Area Transportation Study Unit, Directorate of Town Planning, Government of Tamil Nadu, 1971.

10.72 The following travel corridors in Madras City have been established.

Name of corridor	*Distance in kilometres*	*Present number of trips†*
(0)	(1)	(2)
I. North-South Eastern Corridor following approximately the Buckingham Canal alignment and passing through Ennore, Kathivakkam, Tiruvottiyur, Royapuram, Tondiarpet, George Town, Chepauk, Triplicane, Santhome, Mylapore, Mandaveli, Adyar and Tiruvanmiyur.	38.8	5,46,886
II. North-South Central Corridor following approximately the alignment of the Mount Road and extending on either side.	33.6	2,89,163
III. East-West Northern Corridor following approximately the alignment of the broad-gauge railway line to Bombay from approximately Royapuram area westwards to Villivakkam, Ambattur, Avadi, etc.	28.0	2,28,136
IV. East-West Central Corridor following approximately the Great Western Trunk road and touching George Town, Anna Nagar and Poonamallee.	28.0	3,02,464
V. East-South Western Corridor following approximately the alignment of the present suburban electric line and the Grand South Trunk Road.	28.8	2,25,700
VI. The inner circular Corridor following approximately the periphery of the urban area and touching Manali complex, Anna Nagar, Ashok Nagar and Sastri Nagar.	33.6	2,30,300
VII. The intermediate circular Corridor approximately touching Ennore, Red Hills, Ambattur, Poonamallee, Meenambakkam and Muthukadu.	52.8	5,600
VIII. The outer circular Corridor approximately touching Minjur, Avadi, Tambaram and Injambakkam.	76·8	2,200

† A trip being single journey from point of starting to the point of destination.

(*a*) METROPOLITION ROAD TRANSPORT FACILITIES

10.73 In order to provide better transport facilities in the Metropolitan area and relieve traffic congestion in the city, the following proposals are made :

(1) Ring road connecting three National Highways

10.74 It is proposed to have a ring road connecting the three National Highways outside the Madras city limits. This would serve as a bye-pass for through traffic using the National Highways. It would also meet the needs of the various industrial regions developing on the outskirts of the city. This ring road (32.4 kms.) starting at Ennore and passing through Red Hills, Ambattur, Maduravayal and Porur will connect not only the three National Highways but also other important roads like the East-Coast road, Mahabalipuram Road, Arcot Road and Tiruvottiyur High Road. Including the cost of acquisition of lands, the estimate for the formation of this ring road is Rs. 160 lakhs.

(2) Road parallel to Anna Salai

10.75 It is proposed to construct a road parallel to Anna Salai (Mount Road) on the western side so that the traffic going beyond Anna Salai may be

diverted along this road. This road will be on the eastern bank of Cooum river from Dams road to Greenways road—a length of 1.8 Kms. It will have two lanes of vehicular traffic and two footpaths at the first stage. In the second stage it will be widened to accommodate four more lanes—two for vehicular and two for cycle traffic. Including the cost of acquisition of lands, the total estimated cost is about Rs. 9.47 lakhs. The work may be completed before the end of the Fifth Plan period.

(3) Widening of the South Cooum Road

10.76. As another measure of relieving traffic congestion in the city, the South Cooum road, of a length of about 1 Km. from Harris Bridge to Marshalls road on the west bank of the Cooum river, has to be widened for four lanes traffic. This would necessitate the removal of the existing temporary sheds but it will not involve any land acquisition. The estimated cost is Rs. 1.52 lakhs. The work can be taken up in the Fifth Plan period.

(4) Multi-storeyed car-parks

10.77. There is an urgent need to provide car parking facilities in the busier parts of the city. Pressure of demand on this account is bound to increase at a very fast rate in the next ten to twenty years. The Highways Research Station at Guindy has made a detailed study of this problem and suggested measures to provide off-street car parking facilities in George town and Park town areas.

10.78. The recommendations are :—

(i) A multi-storeyed garage at Lone's Square with provision for lorry parking at ground level and car parking in two upper decks ;

(ii) Surface parking within the Telephone office compound between Telephone Office and Railways booking office ;

(iii) A three-tier garage for parking cars in Flower Bazaar Island by shifting the existing police station and shops now located there ;

(iv) Surface car park opposite to Madras Medical College and Memorial Hall between Evening Bazaar Road and General Hospital Road ;

(v) Surface car park on the north of N.S.C. Bose Road between Francis Joseph street and Kondichetty street by acquiring the old property and redeveloping them ; and

(vi) Surface car park opposite to Central Station by extending the existing car park on the Buckingham Canal between Central Station and Moore Market by suitable structural modification.

10.79. These recommendations have to be examined further especially in regard to relative costs and technical feasibility before adopting them for implementation. However, immediate steps have to be taken to acquire lands. Where there is acute scarcity of lands there is no alternative except to go in for multi-storeyed car parks which would involve a cost of Rs. 20 lakhs each.

(b) METROPOLITAN RAILWAY FACILITIES

(1) Construction of underground railway in Madras City

10.80. While in the Metropolitan cities of Bombay and Calcutta, mass transport by suburban trains is predominant, in Madras City the buses have to carry more than three times the number of passengers using the trains. In designing the future transport system to cope with the anticipated increases in traffic, it is important to keep in view the need for maintaining a balance between the various systems of mass transport. This points to the need for expanding railway service. The heaviest concentration of traffic is on the North-South Eastern corridor, which follows approximately the Buckingham Canal alignment, passing through the very heart of the City. This corridor offers a very suitable alignment for a "cut and cover" underground facility. There is a strong case for a tube railway on the North-South-Eastern corridor in Madras city which may cost about Rs. 100 crores, giving employment to about 1,87,000 persons. This work may be started in the Fifth Plan period and continued in the Sixth Plan period. The cost of that part of the project which can be executed in the Perspective Plan period will be about Rs. 42 crores. The balance of work may be carried out in the subsequent plan years. Over the tube railway it would be possible to provide a roadway of Express-way standards to be used for mass transportation by buses.

(2) Circular railway

10.81. The provision of a circular loop connecting the broad gauge and the metre gauge lines at Madras with a third terminal at Anna Nagar may be necessary. The circular railway may cost about

Rs. 63 crores. The first part of the works which may be started in the Sixth Plan period would involve a cost of Rs. 33 crores.

10.82. The total expenditure on Metropolitan road and railway facilities will be Rs. 5·91 crores during the Fifth Plan and Rs. 71·20 crores during the Sixth Plan, giving employment to 0.22 lakh persons in the Fifth Plan period and 1·71 lakhs of persons in the Sixth Plan period.

10.83. To prevent further worsening of the transportation problems in the Metropolitan area, and learning from the experience of Bombay and Calcutta, it would be prudent to accord a high priority to these projects now. Postponing this would only result in investments of an order, we cannot cope with later.

RESEARCH AND DEVELOPMENT SCHEMES

10.84. At present, research relating to Highways, Traffic and Transportation is being carried out by the Highways Department and the Directorate of Town Planning. The Highways Research Station at Guindy is involved in a number of studies relating to road and bridge construction and improvements to traffic operations. The traffic and transportation functions are now the responsibility of several departments and agencies which are already burdened with the day-to-day operation and management of their respective fields. Any research work can best be carried out by first drawing up separate projects with priorities indicated and then taking them up for further study and investigation with the help of competent experts. The following fifteen projects are suggested :

Serial number and name of the Project

1. Data processing Centre for Highway Research Station ;

2. Utilisation of fly-ash for rural road construction in Tamil Nadu ;

3. Study of pre-cast culverts ;

4. Assessing the yield of different quarries in the State and standardising them for use in different works like W.B.M.,B.T., and cement concrete works;

5. Strength evaluation of bridge structures with reference to modern loading standards ;

6. A study for improving the load carrying capacity of roads in Tamil Nadu ;

7. Construction of a 600-Ton Test floor for Highway Research Station ;

8. Construction of roads in coastal and water logged areas of Tamil Nadu :

9. Utilisation of locally available low grade aggregates for road works ;

10. Pavement failures and surface enrichment treatment ;

11. A rational method of assessing the load bearing capacity of foundation piles without conducting pile load tests ;

12. Vibration study of reinforced concrete and prestressed concrete bridges of Tamil Nadu ;

13. Test track ;

14. Transportation Research ; and

15. Traffic and Transportation Studies.

10.85. The undermentioned projects are to be given priority :

(1) *Utilisation of fly ash for construction of rural roads in Tamil Nadu*

10.86. The black cotton and other clayey soils available in and around the present thermal stations like Neyveli, Basin Bridge and future thermal stations may be brought to the Laboratory along with local lime and other stabilisers and the mix can be designed properly in advance. This will facilitate expeditious road construction work.

(2) *Study of pre-cast culverts*

10.87. It is desirable to explore the advantages of the modern techniques of construction like precast work including quality control, so that maximum benefit is obtained in the form of economy of construction time and costs along with structural efficiency.

(3) *A study for improving the load carrying capacity of roads in Tamil Nadu*

10.88. Widening and strengthening of many National Highways and other State roads are in progress and many more works will be taken up in the Fifth and Sixth Five-Year Plans. The collection of data relating to sub grade soil properties, pavement thickness, traffic census, etc., of each road will be helpful in preparing and executing the plan projects in time. The detailed field investigation

f each state road may be entrusted to a sub-division with necessary staff under the guidance of the Director, Highway Research Station.

(4)*Transportation Research*

10.89. The proposed centre will concentrate mainly on transportation studies and research related to urban travel characteristics and operational aspects of different types of transportation systems. This will work in close liaison with the Traffic Engineering Cell of the Highway Research Station, the Transportation Study Unit of the Directorate of Town Planning, the various State Road Transport Undertaking and the College of Engineering, Guindy.

(5) *Traffic and Transportation Studies*

10.90. The proposed studies will include the following items :—

(i) Collection of data on the present day position with regard to land use, population, socio-economic content, travel pattern and transport systems ;

(ii) Identification of the nature and extent of deficiencies in the existing transportation systems ;

(iii) Establishment of quantifiable relationships between present day generation and distribution of travel and land use, population and socio-economic factors ; and an estimate of the future pattern based on existing relationship ;

(iv) A forecast of the movement of persons and their modes of travel in the target year or years;

(v) Assignment of estimated trips to alternative modes of travel within a co-ordinated transport system ; and

(vi) Evaluation of the efficiency and viability of the alternative means of transport and the selection of the system which best serves the needs of the future.

An abstract of the financial implications of the development programmes.

10.91. The total investment in the Transport sector is shared by the State Government, Union Government and the private sector. The total outlays for the ten years 1974-83 will be as given below :—

(Rs. in crores)

Item (0)	*Total Outlay* (1)
1. Roads	366·00
2. Road Transport	37·00
3. Railways	216·00
4. Airways	1·00
5. Ports and Harbours	56·50
6. Inland Waterways	9·50
7. Private Sector	60·00
Total ..	**746·00**

10.92. Leaving out the private sector investment which is expected to be Rs. 60·00 crores, the aggregate outlay of Rs. 686 crores is divided between the State and Central Sector schemes in the ratio 43:57 (i.e. Rs. 294 crores in State Sector and Rs. 392 crores in the Central Sector). The Central Sector investment is taken up by Railways, Airways, Major Ports and National Highways. The division envissaged in the Perspective Plan period is indicated below :—

(Rs. in crores)

Item (0)	*State Sector* (1)	*Central Sector* (2)	*Total* (3)
1. Roads	236·00	130·00	366·00
2. Road Transport ..	37·00	..	37·00
3. Inland Waterways ..	9·50	..	9·50
4. Ports	11·50	45·00	56·50
5. Railways	..	216·00	216·00
6. Airways	..	1·00	1·00
Total ..	**294·00**	**392.00**	**686.00**

CHAPTER 11

Tourism

Importance of Tourism

11.1. Tourism is an ever growing industry peculiar to the modern age. The ancient instinct of man, viz., the wander lust and the urge to explore has blossomed into the gigantic modern concept of tourism with far reaching socio-economic consequences. The fact that even small countries like Lebanon and Greece could earn considerable foreign exchange by tourist promotion should act as an eye opener to India and especially to Tamil Nadu with its rich tourist potential.

11.2. Tourism encompasses activities pertaining to visits of Tourists both domestic and foreign. A consciously planned and systematic effort to encourage and induce people to visit and stay at particular zones, regions, destinations and all measures conducive to the fulfilment of this objective constitute 'Tourist Promotion'. Tourism is a growing sector, non-controversial and largely labour intensive, in nature. It does not compete for scarce raw materials and it thrives on such factors as the natural, geographical, historical, cultural and artistic wealth of a country. It acts as a general booster of economic growth also. While directly encouraging the development of hotel, transport, travel and other ancillary industries, in addition to giving a fillip to the development of arts and crafts, it also indirectly augments the State revenues through an increase in sales tax, income-tax, entertainment tax revenues. All these benefits flow from international and domestic tourism, and the former also acts as a major contributor to the foreign exchange earnings of the country. Besides these economic benefits, there are social benefits like national integration and growth of international understanding. With the present increasing demand for leisure and recreation by one and all, tourism achieves a special significance. That is the reason why many advanced countries of the world today classify tourism as a major industry.

Tourist Potential

11.3. Tamil Nadu is rich in its tourist attractions. Tourist assets can be broadly classified as.—

I. Cultural, Historical and Traditional.

II. Scenic, Recreational and other attractions.

11.4. Cultural items include sites and areas of Archaeological and Architectural interest, buildings and places of historical significance, museums, educational, cultural and religious institutions. Traditional items include festivals, arts, handicrafts, music, etc.

11.5. Scenic items include outstanding panorama and areas of natural beauty, wild life, flora and fauna, beach resorts, hill and forest resorts. Recreational items include participation in and witnessing of sports, cultural activities and amusements peculiar to the area and visits to recreational parks, bird and animal sanctuaries, theatres and auditoriums. It also includes health resorts, natural springs and water-falls, etc.

11.6. History, Culture and Archaeology play vital roles in generating tourist traffic all over the world. Tamil Nadu is specially fortunate in its rich and ancient cultural heritage and living traditions. Ancient monuments such as historic forts, structures depicting rare architecture of different ages as far back as 3,000 years and more, ancient temples (of Pallava, Chola, Vijayanagar, Pandya and Nayak periods) and birth places of famous saints, poets and patriots abound in Tamil Nadu. Stone inscriptions in the ancient temples of the State have a special attraction. The South Indian architecture and especially the Tamilian style is unique in itself, with its splendour and picturesque temple gopurams. Tamilian rulers of the past had been maintaining relative calm and peace compared with the rest of the country, and this enabled them to concentrate on temple architecture and other

cultural pursuits in their own exclusive style inviting admiration from foreign visitors through the ages and even to-day.

THE TOURISM DEVELOPMENT CORPORATION OF TAMIL NADU

11.7. The Tamil Nadu Tourism Development Corporation was constituted in 1971 with a view to concentrate and pay special attention to promotion of tourism at State level. Co-ordinating the efforts of the Departments of Archaeology, Town and Country Planning and Tourism, the Corporation plans to achieve real results in developing tourism in the State. As a priority task, the Tourism Development Authority should improve facilities for providing better tourist information material like visual aids, literature and other publicity material. It also should take steps to improve the accommodation, food, travel, shopping, entertainment, hygiene and related aspects of tourism.

11.8. Tourism in the international field is steadily progressing year after year. The tourist traffic in India too has been steadily on the increase. Among those visiting India, the number of tourists visiting Tamil Nadu has also been increasing year after year. For the proper development of tourism, it is highly necessary to work out a complete frame work at all levels—the State, regional and local. The Tourism Development Corporation is expected to achieve this co-ordination.

TAMIL NADU BEACH DEVELOPMENT AUTHORITY

11.9. The following beach stretches in Tamil Nadu offer excellent opportunities for planned development :—

Madras.
Ennore.
Sadras.
Porto Novo.
Tranquebar.
Palk Bay area.
Rameswaram.
Tuticorin.
Tiruchendur.
Tengapattinam.
Mamallapuram.
Pulicat.
Cuddalore.
Pichavaram.
Point Calimere.
Kilkarai-Vembar.
Kayalpattinam.
Kanyakumari.
Colachel.
Nagapattinam.

11.10. It is suggested that the Government of Tamil Nadu could consider the setting up of a Beach Development Authority on similar lines as that of Metropolitan Development Authority, for properly planning and executing schemes for the development and conservation of these beach resorts. Any building activity within such areas should necessarily be done only with the concurrence of the Beach Development Authority.

WILD LIFE AND BIRD SANCTUARIES

11.11. Rapid urbanisation and pressure on land have a direct impact on the natural environment and its flora and fauna. Hence it has become essential to safeguard the valuable wild life heritage by preserving them in National Parks and Wild Life Sanctuaries. Our forests are also noted for valuable medicinal herbs. These forests have been the homes of tribal culture and traditions which are worth preserving, from the tourist view point.

11.12. To cite a few examples, the Valparai—Top slip area, the Point Calimere and the Pichavaram forests offer vast scope for development from the tourism angle.

11.13. The following six wild life sanctuaries existing in Tamil Nadu could be developed further and vastly improved with better facilities :

1. Mudumalai Wild Life Sanctuary (area 320 sq. Kms.).
2. Mudanthurai Sanctuary (area 520 sq. Kms.).
3. Point Calimere Sanctuary.
4. Vedanthangal Water Bird Sanctuary (area 29·94 hectares).
5. Guindy Deer Park and Snake Park.
6. Anamalai Wild Life Sanctuary (area 958 sq. Kms.) (Coimbatore district).

11·14. At present many of these sanctuaries are not fully protected and poaching and indiscriminate grazing take place which gravely affect the ecological balance. Of the above six, Mudumalai Sanctuary extends into Kerala (Wynad) and Karnataka (Bandipur). A co-ordinated programme and control among these three States is needed for proper development and preservation of wild life in this region. This, being an inter-State Project of high priority, could be treated as a Centrally Sponsored Scheme.

11.15. The location of the present Zoo at the Madras City should be shifted to Vandalur to safeguard the wild life and provide them with natural environment and unpolluted atmosphere for their well-being. Formation of a large aquarium is an immediate felt need for the City and similar aquaria could be organised in coastal towns like Rameswaram, Kanyakumari, Tuticorin and Cuddalore.

Publicity and Propaganda

11·16. Publicity and propaganda play a vital part in tourism development. Attractive and informative brochures, picture cards and colour films of our wild life sanctuaries, national parks and scenery have to be brought out by the Department of Tourism. Utilisation of postal stamps as an effective medium to depict the flora and fauna of the countryside should be exploited vigorously. These must be made available in various tourist centres in India and abroad.

Museums, Art Galleries and Libraries

11·17. Museums and art galleries for exhibiting South Indian Art and Culture should be set up at important cities and major towns both in our State and also in other States of the country, for giving due publicity to our ancient culture and heritage. Libraries containing literature related to our ancient history and architecture should find a place in these art galleries. Entertainment such as South Indian music, dance and drama should be popularised at the important tourist centres. Foreign and native research scholars should be given all facilities to do in-depth studies and consult reference books in our libraries.

Role of Transport in Tourism

11·18. Transport plays a very important role in developing Tourism, be it by air, water, road or rail. Air travel is preferred by tourists, especially in the international sphere on account of its quickness and comfort. Even in domestic tours, the benefit of cutting time induces many busy people to take to air travel. However, in India, bulk of tourist travel is through its Railways. Road transport is gaining importance over Rail transport in domestic tourism because of its advantage of reaching interior spots and areas of sight-seeing. Inland waterways can serve as pleasant transport to tourists and enable them to get closer to nature. Sea travel, if organised properly, offers vast scope for development.

11·19. At present there are only four airports in the State of Tamil Nadu, namely Madras, Tiruchirappalli, Coimbatore and Madurai. The Madras Airport needs to be improved and enlarged to receive Jumbo Jets. Adequate and better terminal facilities should also be provided. The other three airports require to be enlarged and provided with adequate terminal facilities. The number and frequency of flights may also require to be increased to meet the growing traffic.

11·20. Tamil Nadu possesses a good network of roads, fairly well maintained. However, with increasing volume of traffic, the existing system of roads will require improvement both in their capacity, width and standards. For promoting package tourism, inter State Highways should be developed. Development of roads between Cochin and Kodaikanal ; Thekkadi and Madurai require special attention in this respect. The road from Bangalore to Hoganekal and Dharmapuri similarly require special consideration. The existing roads which carry tourist traffic in addition to the normal traffic require widening and strengthening. Vigilant maintenance of the roads also is necessary.

11·21. In Tamil Nadu, Rail travel is popular and constitutes the common form of transport especially for long distances and for suburban mass transit. The existing metre-gauge rails should be converted to broad-gauge for increasing volume of traffic and comfort of travel and also for avoiding transits from broad to metre-gauge lines.

11·22. Tamil Nadu is an important maritime State with a coast line of about 998 Kms. At present Madras is the only major port and Tuticorin is now developing as the second major port. The quicker

development of Tuticorin Port and the implementation of the Sethusamudram Project will play a vital role in accelerating tourism in this area. The Buckingham Canal, the Cooum River and the Vedaranyam Canal can serve as inland waterways for recreational and tourists use. The historic Mamallapuram could well be connected by sea from Madras by means of regular Hover Craft. Such a kind of journey by sea along the coast is bound to attract tourists.

Role of Accommodation in Tourism

11·23. More than anything, a tourist basically requires a comfortable place to stay at reasonable cost. The type and quality of accommodation influence directly the period of stay of tourists. Growth of tourism directly depends upon the availability of decent and hygienic accommodation at various levels both for international and domestic tourists. Development of this infrastructure is very essential especially to enable travel agencies to canvass and organise in advance with confidence visits of large groups of tourists from abroad and at home.

11·24. The changing trends in tourist movements demand larger middle class accommodation rather than high class and luxury type. Generally modern tourists desire to travel wide and see more places of interest and spend more money on purchases than to pay high prices for accommodation in a few top class hotels. Of course these are also necessary, but the need is greater for middle class accommodation. Planning for future accommodation has to be done with great care, keeping these points in view.

11·25. The available hotel accommodation at present in our State is quite inadequate. Several top class hotels and many more middle level ones are needed at important cities like Madras, Coimbatore, Madurai, Tiruchirappalli, Thanjavur, Salem and also at the hill resorts of Ootacamund, Kodaikanal and Yercaud. Starting high class hotels in small towns will not be economically feasible. Hence hotels to cater to the needs of the middle class tourists are to be started in large numbers in all tourist centres. Most of the foreign visitors to our country may prefer to go in for Indian type of food and prefer our way of living, which are less costly.

11·26. The various types of accommodation required can be grouped as follows :—

1. Suitable for affluent foreign and home tourists This can be the 3 to 5-Star Hotels.

2. Suitable for low budget foreign tourists and middle class home tourists. This can comprise of 1 to 2 Star Hotels and also comfortable, neat, unstarred units having all the modern amenities.

3. Suitable for mass traffic like groups of students, agriculturists, industrial workers (mainly domestic and to some extent foreign). This can be of the type like Dormitories, Dharmasalas and Youth Hostels charging a low tariff and providing the bare minimum facilities.

Special Degree Course in Tourism

11·27. With a view to create a ' tourism consciousness ' at all levels, it is suggested that aspects of tourism may be introduced in the school and college curriculum at appropriate stages. It is recommended that the Tamil Nadu Universities may introduce a special course on Tourism at the Degree Level for imparting adequate knowledge on tourism and connected subjects. Short-term diploma courses for training suitable candidates to serve as Tourist Guides will have to be organised by the Tourism Department also. This will open up vast opportunities for the right type of young men and women who would like to make tourism their career. Properly trained guides with proficiency in two or more languages (including foreign) with a sound background of our history, culture and architecture will be great assets to the State in promoting tourism. The Universities should come forward to create this vital " force for tourism ".

An Assessment of Tourist Traffic in the Perspective Plan period

11·28. On an analysis it is observed that Delhi tops the list of tourist centres in India ; Bombay ranks the second ; Agra occupies the third ; Calcutta and Madras form the fourth and fifth respectively.

11·29. As per statistics collected by the Government of India, 3,00,995 foreign tourists visited India in 1971 of whom 38,074 visited Tamil Nadu. This figure does not include transit tourists. It is anticipated that by 1980, one million foreign tourists will visit India. It would be reasonable

to assume that the number of foreign tourists visiting Tamil Nadu by 1984 will reach about 3 lakhs.

11·30. It is very difficult to estimate the accommodation needs of the domestic traffic in tourism. Daily passenger arrivals by road and rail at Madras, Madurai, Coimbatore, Tiruchirappalli, Salem, Thanjavur, Rameswaram, Kanyakumari—the major pilgrim and tourist centres—may be taken as tentative indication of inter-State and domestic traffic. Considering the present data of arrivals of visitors in Tamil Nadu, it has been roughly estimated that the volume of domestic tourist traffic requiring facilities for overnight stay in hotels and similar establishments by 1984 would be not less than three millions.

11·31. For accommodating large groups of ordinary tourists, it should be made possible to utilise the existing Kalyanamantapams in major cities and towns for such tourists at nominal rates. These Kalyanamantapams are to be well equipped with sanitary arrangements, and good and adequate water-supply. At interior tourist spots where no such large accommodation could be immediately made available, tourist camp facilities such as tents, and sanitary facilities should be provided.

11·32. The requirement of beds for this traffic could be worked out as follows :—

For the three lakh foreign tourists, the requirement would be 10,000 beds in the starred category assuming an average stay of one week for each tourist. Of these, 5,000 will be in the first categroy, i.e., 3 to 5 Star. The remaining 5,000 could be in the second category, i.e., 2 Star and below. No provision is made in the third category, i.e., Dormitory or Dharmasala type as these requirements, if any, can be met out of the accommodation planned for the domestic traffic under this category.

11·33. As regards the 3 million domestic tourists, the number of beds required could be put at roughly 50,000 assuming an average stay of one week. Of these 10,000 will be in the low starred or unstarred category providing, however, all modern facilities at a reasonable tariff. The balance, 40,000 will be in the third category, i.e., Dormitory, Dharmasala and Youth Hostel type, as the bulk of the domestic traffic would comprise of the lower middle class, student groups and industrial workers.

11·34. The above analysis of tourist potential in Tamil Nadu is encouraging from every point of view. With the proper development of an effective infrastructure for Tourism, Tamil Nadu is bound to figure prominently in the tourist map of the country and also of the world.

PERSPECTIVE PLAN, 1974 TO 1984

Development of Tourism—Outlays on different Projects

(Rs. in lakhs)

Name of the project	*Investment*
(0)	(1)
STATE SECTOR	
1. Construction of Tourist Bungalows and improving existing tourist accommodation	170.00
2. Developing Tourist spots of Scenic beauty	170.00
3. Provision of Recreational facilities.	170.00
4. Publicity and Promotion programmes	280.00
5. Opening out link roads	80.00
6. Setting up of Museums in important cities	65.00
7. Training Courses and Programmes for Tourist Guides	40.00
8. Integrated development of Tourists spots	135.00
9. Providing modern transport facilities	170.00
10. Setting up of Museums and Art Galleries	120.00
Total 1 to 10 ..	**1,400·00**
CENTRAL SECTOR	
11. Integrated development of Tourist infrastructure including construction of Low Income Group rest houses and improving landscape	500.00
AUTONOMOUS AND INSTITUTIONAL SECTOR	
12. Construction of Hostels and Lodges for tourists	2,250.00

CHAPTER 12

Education, Science and Technology

THE EDUCATIONAL RECORD

12.1. The Educational Record of Tamil Nadu to date shows positive gains and some setbacks also. There has been an educational explosion in the State. In elementary education (Standards I to VIII) enrolment has increased from 30·88 lakhs in 1956–57 to 67·08 lakhs in 1972–73. The number of elementary schools has increased from 25,268 to 32,021 increasing the enrolment in the age-group 6 to 11 from 56·82 to 94·5 per cent and in the age-group 11 to 14, from 23·07 to 55·6 per cent. The number of teachers has increased from 88,331 to 1,65,658. During 1972–73 alone 2,475 new posts of teachers were sanctioned to cope with the demands of additional enrolment. All villages with a population of 300 and above have an elementary school within a radius of one mile. The enrolment in secondary schools (Standards IX to XI) increased from 2·04 lakhs in 1956–57 to 7·10 lakhs in 1972–73, which works out to an enrolment percentage of 34 in the group 14—17; the number of secondary schools likewise increased from 894 to 2,699 and the teachers from 20,483 to 59,891. Adult literacy centres were increased from 949 in 1960–61 to 1,448 in 1971–72. There exist 14 district central libraries, 1,437 branch libraries, 1,883 delivery stations and 6 mobile libraries, making up a total of 3,340 libraries. Students of the Scheduled Castes in the schools increased from 6·1 to 12·1 lakhs during the same period. Industrial training institutes increased from 10 with an in-take of 3,368 students in 1961–62 to 31 with an in take of 13,112 in 1972–73. Altogether 201 industries run apprenticeship training schemes for 3,417 apprentices in 489 establishments. The 14 Technical High Schools started during the Third Plan with an in-take of 840 students functioned unchanged through 1972–73. Polytechnics increased from 9 with an intake of 820 in 1956 to 35 in 1972–73 with an admission of 4,642 students.

12.2. Arts and Science Colleges have increased from 48 in 1955–56 to 169 in 1971–72. Correspondingly the number of students and teachers increased from 36,853 and 3,000 to 1·83 lakhs and 8,945 respectively. The number of teacher training colleges increased from 3 with 300 student-teachers in 1950–51 to 23 with 3,000 student-teachers in 1971–72. The number of Engineering Colleges has increased from 6 with an intake of 620 in 1956 to 12 with an intake of 1,600 students in 1971–72.

12.3. Constant attention to the improvement in the qualitative aspect is being paid. The principle of employing trained graduates as headmasters in higher elementary schools with a strength of 400 and above was introduced. Science teaching and equipment grants of Rs. 300 each to 8,400 elementary schools and Rs. 1,000 to each of the 1,550 higher elementary schools were made. Library grants of Rs. 60 each were made to 21,000 elementary schools and Rs. 120 each to 6,500 higher elementary schools. Houses for women teachers increased to 1,342 in 1971–72. All teachers now receive a single uniform grade of training, i.e., the secondary grade. Against 8·88 lakhs of students fed under the mid-day meal scheme in 1956–57, 18 lakh students from Standards I to VIII alone were being fed in 1971–72. In addition, free books and slates are provided to those beneficiaries of the mid-day meal scheme who study in standards I to III. There is also a free uniform programme financed from private donations. In adult literacy, a farmer's educational and functional literacy programme has been organised in 60 centres in the Udumalpet taluk and 60 centres in the Pollachi taluk. Instruction to the handicapped is imparted in 24 schools covering the entire State, except for the Dharmapuri and Nilgiris districts.

Investment in Education

12.4. The investment in education is comparatively high. All education in Tamil Nadu is free up to and inclusive of the Pre-University Course. In addition, 70 per cent of the 1.6 lakh students studying in arts and science colleges and the 8,200 students studying in engineering institutions are granted scholarships under one or the other of

several schemes. The State expenditure works out to a per pupil cost of Rs. 61·70 in primary schools and Rs. 244·80 in secondary schools. As for collegiate education in the sciences and arts, the figure is Rs. 542 for an aided college and Rs. 480 for a Government college. In technical education the per pupil cost in Government-run polytechnics is Rs. 2,500 and Rs. 3,160 in private institutions. The corresponding figure for an engineering college is Rs. 8,600 if it is for a Government institution and Rs. 8,530 for a private institution. The total expenditure in the State on Education, Science and Technology (both Government and other agencies) thus amounts to Rs. 148·48 crores representing 5·61 per cent of the net State income of Rs. 2,648·89 crores.

12.5. Educational management in the State involves a complex network. Education, Planning, administration and management in the State is vested in five Directors dealing with School Education, Collegiate Education, Technical Education, Medical Eduction and Legal Education. There are other educational areas, such as agriculture, forestry, fisheries, veterinary and approved schools which are under separate administrative control.

Wastage and Stagnation

12.6. There are also shortcomings in the system. There is a high wastage rate. Educational wastage is a compound of the drop-outs plus repeaters. In 1957-58, 8·57 lakh students entered standard I and it is revealing to trace as in the Table 12.1 below as to what happened to this generation of students who graduated in June 1972.

TABLE 12.1

Tabular summary of student career, 1957–72

Year	*Standard*	*Number of students enrolled in lakhs*
(0)	(1)	(2)
1957-58 ..	I ..	8·57
1961-62 ..	V ..	4·22
1964-65 ..	VIII ..	2·54
1967-68 ..	XI ..	1·66
July 1968 ..	P.U.C.	0·59
July 1968 ..	Teacher training and other post—S.S.L.C. Course	0·20
1972	B.A., B.Sc., B.Com. (graduation) re-apperances included	0·08

12.7. The most serious wastage of 51 per cent of those enrolled takes place in Standards I to IV. This is tragic for many reasons. First, the international definition of literacy is the equivalent of four years' of primary schooling. The school wastage of 51 per cent in the first four years means that, every year, more than half the children entering the primary school are being added to the 60 per cent of adult illiterates in the State, because they do not complete even full four years of education. Thus the school system is contributing paradoxically to our growing mass illiteracy. The causes for dropping out are linked with the causes for stagnation or repetition. In primary schools, repetition works out to 20 per cent ; in secondary schools, it works out to 18 per cent and in P.U.C. and Arts and Science Colleges to 44 per cent. Stagnation is primarily due to educational causes, whereas the dropping out from school and college is primarily due to economic causes.

12.8. In a specially commissioned survey on the nature, extent and causes of drop-outs in selected rural and urban areas, dropping out from school and college has been identified as being due mainly to the pull of the home and the market (farm, factory or office), and due only secondarily to the push from the school and the hours of schooling overlapping with the busy agricultural season. It is due also to out-dated curricula, mass teaching and learning techniques and the traditional examination system which highlight the memory aspect only.

12.9. It may be noted that the term "drop-out" is pejorative when, as often happens, it is either the school or the system which has failed to engage and

hold their attention. In this context "push-outs" perhaps would be a more appropriate term. The wastage in engineering education works out to an average of 18 per cent over a period of 10 years and that of polytechnic education to 20 per cent.

Out-dated curriculum and teaching methods

12.10. The present curriculum and teaching methods also pose serious problems. One of the causes for stagnation and repetition at all levels of the Education, Science and Technology system is the nature of the curriculum and the syllabus which does not correspond to the interests and aptitudes of the individual student, the continuing explosion in information and knowledge and the specific demands of the agricultural, industrial, service and cultural sectors of Tamil society. A further cause for repetition and wastage in the system is the mass teaching methods that are being followed and the learning techniques centred on memorising bits and pieces of information that are forced on the student. Here again the population explosion of the '60s' with the ensuing student bulge at all levels of the system, makes the adaptation of modern teaching technologies which follow the individual learning paths of the student difficult and costly.

The P. U. C.—a Problem

12.11. To the extent the Pre-University course has not achieved the objectives which it was intended to achieve the expenditure on this account should be considered a waste of human and financial resources which represents a loss to the State, to the parents and to the students alike. It does not add significantly to learning ability or to the skill of a student which he has not already acquired in eleven years of sound schooling. The market does not distinguish between a high school graduate and a P.U.C. non-completer or for that matter, a completer.

The burden of the examination system

12·12 The Education system is facing a near break-down in the matter of examinations. The examination itself has ceased to be an evaluation of a student's general knowledge, intellectual acumen, and capacity to learn and adjust himself to varying situations in life. The examination diploma itself instead of being treated as a mere certificate of good memory (which it actually is) is now used as the admission card for entry into the University or as a 'bill of rating', in the initial qualifying test for employment.

Education system and Employment demands

12.13. The educational wastage of the system is related to and compounded by the unemployment and the unemployability of its graduates. The March 1973 live registers of the Employment Exchanges in the country show a 35 per cent increase in the number of persons seeking employment over December 1971 figures, and a 40 per cent increase of educated job seekers in the same period. The job seekers increased from 40·69 lakhs in December 1970 to 73·71 lakhs in March 1973, 20 lakhs of the latter figure being matriculates, 10 lakhs under-graduates, and 6 lakhs post-graduates. For Tamil Nadu the current figures of unemployed is estimated at 12 lakhs and the live registers show that, as on March 1972, 2·5 lakh matriculates, graduates and post-graduates were seeking jobs. This emphasises the urgent need for relating the system of Education, Science and Technology of the State to its employment and self-employment demands.

Rising costs of education

12.14. The cost of education in the State is continuously rising due to the policy of rapid educational expansion and the inflationary situation. The State of Tamil Nadu has increased its education budget from Rs. 15 crores in 1961 to nearly Rs. 100 crores in 1973 [which works out to a rate of increase of 47·25 per cent (linear) per annum]. The State cannot continue this rate of growth in education expenditure over the Perspective Plan period without education becoming a constraint on development activity in other sectors.

12.15. The Management of education in the State has faced several limitations, arising from the absence of a clear definition of specific objectives of education, in terms of primary and secondary tasks, and time-bound plans and annual programmes. The problems faced in this field have been compounded by absence of management training programmes, refresher courses, effective recruitment, selection and promotion procedures, etc.

EDUCATIONAL GOALS

12.16. The system of education during the Perspective Plan will be developed along the following lines. The objectives of Tamil Nadu Education in

general as well as in the fields of Science and Technology should be to enable :

The Development of the personality of the child ;

The understanding of the culture and history of the State, the country and the world ;

The instruction in the moral and spiritual values of the country ;

The acquisition of scientific, technical and professional skills ;

The promotion of research to push forward the frontiers of knowledge and solve the technical and developmental problems faced by the State ; and

The democratisation of education through meeting the growing demand for education and providing social compensation for the condition of the poor majority.

These existing goals will be continued.

12.17. In addition, a major new objective during the next ten years will be to relate directly *the right to education to the right to employment* and relate various stages of the education and training system to the employment demands of society.

PRESENT STRUCTURE OF EDUCATION—ITS INADEQUACY

12.18. The problem with the present structure is that it is too long and not long enough. It requires 11 years of schooling and 4 years of college education with each year consisting of 220 working days for primary, 200 working days for secondary and 180 working days for College education and each day consisting of five working hours for all of them. A second problem is that the present aggregation of the structure into three stages, 1 to 5, 6 to 8 and 9 to 11 at the school level and 1+3 at the college level does not conform to the needs of students or to the skills demanded by society and leads to what has been termed as massive drop-outs.

12.19. A simulation model for education in Tamil Nadu has been developed on the following assumptions ; (i) The present 11 years' school curriculum is to be covered in 10 years with appropriate upgrading in the teaching programmes ; (ii) Out-of-school education activities are to be provided for the massive drop-outs at different levels; (iii) the School curriculum is to be made more functional in relation to rural and urban environments ; and (iv) Vocationalisation of secondary education will involve the growing differenciation of the high schools into three categories ; diversified high schools, comprehensive high schools and technical high schools, which in time will develop into the latter two only.

12.20. Using the simulation model, an estimate of the probable number of admission to various classes, the number of drop-outs, additional cost., etc., for the coming years has been made. Abstract of the findings is given in the two tables below:

TABLE 12-2.

Estimated additional number of School Teachers and additional cost of Teaching Programmes (1974–83)

(*A Simulation Study.*) (Rs. in lakhs)

Year	*Level*	*Additional number of teachers*	*Total additional cost of teaching*	*Total additional cost of school education.*
(0)	(1)	(2)	(3)	(4)
Proposed pattern of school education				
1974	Primary School	5,496	468.65	857.35
	Middle School	3,841	162.78	423·92
	Diversified High School	2,626	274·48	595.99
	Comprehensive High School	359		
	Technical High School	(to be in force in 1975).		
	Total ..	**12,322**	**905·91**	**1,877·26**

(0)	(1)	(2)	(3)	(4)
1979	Primary School	4,842	498.13	817.77
	Middle School	6,003	248.50	656.62
	Diversified High School	2,808		
	Comprehensive High School	796		
	Technical High School	187	354.46	750.15
		14,636	**1,101·09**	**2,224·54**
1983	Primary School	2,141	452.90	597.34
	Middle School	3,156	147.31	361.89
	Diversified High School	3,947		
	Comprehensive High School	812	459.47	986.90
	Technical High School	200		
		10,256	**1,059·68**	**1,946.13**

TABLE 12-3

Level of enrolment and proportion of drop-outs in school education (1974-83)

(*A Simulation Study*)

Year	*Level*	*Estimated school age population*	*Estimated number enrolled*	*Percentage of enrolment*	*Percentage of drop-outs*
(0)	(1)	(2)	(3)	(4)	(5)
1974	Primary School	5,164,376	5,164,376	100.00	34.00
	Middle School	2,722,688	2,134,587	78.30	13.60
	High School	2,636,300	1,267,796	48.09	7.60
		10,523,364	**8,566,759**		
1979	Primary School	5,981,576	5,981,576	100·00	31.00
	Middle School	3,081,167	2,970,245	96·40	12.60
	High School	2,883,655	1,817,856	63.04	6.60
		11,946,398	**10,769,677**		
1983	Primary School	6,547,000	6,547,000	100.00	30.00
	Middle School	3,508,136	3,508,136	100.00	12.00
	High School	3,183,372	2,387,529	75.00	5.00
		13,238,508	**12,442,665**		

12.21. Within the frame-work of the education objectives set forth, school and adult education in Tamil Nadu will conform to the following twelve specific aims :—

Restructuring of the educational pattern on meaningful and purposeful lines ;

Equalising educational opportunities and attainments ;

Improving the effectiveness of primary education ;

Providing for out-of-school education for drop-outs and continuing education ;

Liquidating adult illiteracy through a programme of functional literacy education ;

Making education science-based ;

Introducing work experience as an integral part of general education at all levels ;

Vocationalising of Secondary education ;

Re-orienting and enriching the school curriculum ;

Reforming the examination system and introducing new evaluative techniques ;

Improving the quality of teacher education ;

and

Increasing the competence of educational administrators and inspectors.

12·22. The following programmes are suggested for implementation in the Perspective Plan period :—

1. Restructuring School Education : In-Service Education of Teachers

12·23. The present eleven-year school system will be changed to that of 10 years with multiple entrance, exit and re-entry points and will be organised provisionally on the basis of 4 ; 3 ; 3 with facilities for out-of-school education for school drop-outs particularly from standards 1 to 4. This will involve an in-service training programme for 1.65 lakhs of primary school teachers during the week ends and during the summer vacation in 135 teacher training schools, 23 training colleges and 6 rural extension training centres. The secondary school teachers will be provided with in-service education in intensive courses at the teacher training schools and colleges and also at arts and science colleges. In turn these graduate teachers will organise in-service education courses for primary school teachers in their schools. Thus the link among all the stages of education will be forged through this relay system of training.

2. Equalisation of Educational Opportunities

12.24. One of the very important social objectives of education is to equalise opportunity enabling the backward or under-privileged classes and individuals to use education as a lever for the improvement of their condition.

Out-of-school education

12.25. The present system of education in Tamil Nadu is not able to hold over 50 per cent of children who enter the primary school even for a complete four-year term. It is interesting to see that these drop-out children correspond to the poor majority of the State, i.e., most of them come from poor homes. Thus in essence, the present system could not afford equal opportunities in this particular sphere to all children by giving all of them complete education. Hence a special programme of out-of-school education should be projected to extend opportunities to the pupils who leave the school early, due to various causes.

12.26. In each rural school, one additional teacher will be appointed to organise, with the help of other teachers and the educated unemployed in the village, out-of-School education programmes. Thus the equivalent of four years of schooling will be provided to the 50 per cent of children who are stagnating or have dropped out of school for work at home, field or factory. The school course and working days will be fitted into the non-busy season in each rural area. This programme will involve developing an out-of school curriculum built around the work needs of the drop-outs.

Girls education

12·27. Though the percentage of girls coming into the school is increasing year after year, the total picture of enrolment of girls is not very satisfactory. In order to increase the enrolment of girls and bring up the percentage of enrolment atleast on a par with that of boys, special steps are necessary. The

meaningful functionalisation of the curriculum for girls at appropriate stages is to be taken upand introduction of subjects like home science, home craft, sick nursing, nutrition, dietics, food preservation, fine arts, music, dancing, painting, etc.. are to be thought of. Women teachers' quarters in large numbers in rural areas and a massive voluntary scheme of free distribution of clothes to girl pupils have also to be arranged. In this area the local bodies can play a major role and the Panchayat Union General Funds should contribute liberally to these schemes.

3. Functional Literacy Programme

12.28. Education is assured to every person in Article 26 of the Declaration of Human Rights. It is also enshrined in the Directive Principles of the Constitution. Literacy and education are necessary for the economic development of Tamil Nadu. The plans for improving agricultural performance in the irrigated as well as dry areas, the development of heavy, medium and small industries in Tamil Nadu, all require a work force which can read and write and understand the new technologies. Hence, we have to bring into existence a new work force which has to be continuously educated and whose skills have to be constantly improved and updated. The mass of illeterate adults of to-day are the direct result of our incomplete educational system. To overcome this, functional literacy programmes must be continued and intensified. This functional literacy programme proposes that the three R's be taught-in *different* classes, with *different* content and in *different* methods as appropriate and related to the age-group, occupation and environment of the adults. This will be the vital stage of a life-long continuing adult education pogramme.

12.29. A five-year functional literacy programme will be launched and be followed by a programme of continuing education for the newly literate adults. In the first five-years 40,000 literacy centres will be set up, each centre giving two courses a year of four month's duration. The curriculum and study programmes for each centre will be developed by the nearest teacher training centre, which will also be responsible for developing the out-of-school curriculum referred to earlier. Each institution will produce for its neighbouring community a text of 600 to 700 words to be used by the farmer, worker, etc., which will vary with the age-group, occupation and environment of the adult. There will thus be not less than 400 functional literacy texts with which the programme will operate. The course will be preceded by a one week training for the teachers of the 40,000 literacy centres. There will be a follow-up programme to help the neo-literates to improve their literacy.

4. Vocationalisation of Secondary Education

12.30. In the present system of education, most of the time is spent on the ' literacy ' aspect only. Even in this limited sphere, the attainments are not very appreciable. To overcome this, vocationalisation of secondary education is recommended. Our present system has been training young persons so far mostly for Government services and the other so called white collared professions. The introduction of practical subjects with vocational bias in secondary schools so as to divert the students into different walks of life is very essential. To relate education to life and productivity, " work experience " should be introduced as an integral part of all education—general and vocational. The Kothari Commission* defines work experience as " participation in productive work in school, in the home, in a workshop, on a farm, in a factory or in any other productive situation". Hence our present schools should grow as comprehensive institutions which will prepare for several stages of education in a number of specialised fields rather than continue as mere institutions imparting academic knowledge only.

12.31. The close relation among the school, the home, the farm and the factory suggested for education at the primary stage through a progressive merging of school and out-of-school education (which makes work experience a part of the learning process), will be at the secondary level. Comprehensive high schools will be established starting with one for each development district. One hundred and thirty technical high schools will be established in industrial areas. The remaining high schools will have diversified courses until their conversion into comprehensive schools. The 31 industrial training institutes will be part of this

* Source : Report of the Education (Kothari) Commission—page 7—paragraph 1·25.

system. An out-of-school education programme will provide a two-way study and training relationship. On the one hand, those who have dropped out of school between standard V and X or in employment will be enabled to continue their general or vocational education. On the other hand, these who continue school will receive out-of-school training in industries, farms, co-operatives, I.T.Is., technical schools and polytechnics.

5. State Council of Educational Research and Training (SCERT)

12.32. A good deal of attention in recent years has been devoted to the techniques of revitalising class room teaching in our schools. Various Commissions, seminars and workshops emphasised the urgent need to adopt dynamic methods of teaching and to adopt modern audiovisual aids including T.V. Yet, it will be generally agreed that the impact of these on the vast majority of our schools has not been significant at all. The picture is specially dismal in the rural schools. One of the major reasons for this State of affairs is our failure to develop an agency to conduct proper educational research on teaching and training methods, curriculum construction and continuing qualitative improvement techniques. To remedy this situation it is proposed to set up the State Council of Educational Research and Training (SCERT), as a statutory and autonomous body to undertake action-oriented research. It will be generally responsible for the continuing qualitative improvement of school and out-of-school education.

12.33. The SCERT will be presided over by a Director of the rank of Head of the Department and will have the following seven divisions, each of which will be headed by an Educationist of the rank of a Joint Director and dealing with Teacher Training Curriculum, Equalisation of Educational opportunities and achievements, Co-ordination of school and out-of-school education programmes, the Science Institute, Educational Technology and Evaluation. This will be mainly an action research body. The present State Institute of Education will be merged in the State Council of Educational Research and Training and will convert itself as its Teacher Training Wing.

6. Pre-primary School

12.34. Recent research has shown that the year between three and ten are of the greatest importance in the child's physical, emotional and intellectual growth. Studies have confirmed that wastage and stagnation are markedly less among children who have grown through the pre-primary school. The modern educational policy places an emphasis on the importance of pre-primary education, especially for children from unsatisfactory home backgrounds. Normally these schools will cover the age-group 3—5. It is suggested that local bodies, voluntary agencies and private enterprise may be encouraged to increase the aggregate number of pre-primary, montessori, Kindergarten establishments and Kuzhanthaigal Kappagams from the present 1,500 to 15,000 before the end of the Perspective Plan period. The State will provide the usual grants-in-aid plus matching grants for building and equipment wherever needed.

7. Expansion of School Education

12.35. On the basis of the forecasts of the additional number of students who will be entering primary and secondary schools during the Fifth Plan period as estimated in the simulation model, provision is made for additional primary and secondary schools. However, the emphasis will lie on correction of physical deficiencies in the schools and for provision of additional housing quarters for women teachers in the remote rural areas. The need for fully equipping the schools to enable them to play their new role will be stressed.

8. Higer Education

12.36. The two traditional tasks assigned to universities were teaching and advancement of knowledge. However, in the rapidly changing world these universities are expected to perform various new and multiple functions. They are expected to provide the right kind of leadership in all walks of life, and to seek and cultivate new knowledge, to provide society with competent men and women trained in agriculture, arts, medicine, engineering and other technology and various other professions. A special responsibility of the Indian universities and institutions of higher education is to take up research in modern technologies so that our country could catch up with the advanced nations.

12.37. Higher education has also a largercultural purpose to help in particular the development of a secular culture to cater to the needs of a rapidly changing society. The Kothari Commission* gives the following pen picture about the existing state of higher education. " The existing situation in higher education during the academic year broadly alternates between slackness during the session and strain at the time of examination..... It is obvious that if higher education is not radically improved, our administration and technical progress, our intellectual standards and social advance will all be most seriously handicapped."

12.38. The Perspective Plan would therefore, emphasise that higher education in Tamil Nadu will specially aim at training the highly skilled and middle level manpower which will be needed for our economic and social advancement. The demand for highly skilled and middle level manpower will dictate the provisions of higher education facilities in the State. It is recommended that the proposed Educational Planning Cell with the co-operation of the Manpower organisation will undertake a computation of the Prospective demand in these areas (Please see paragraph 12.75).

12.39. One other important point that should be emphasised is that full utilisation of buildings and equipment and faculty power in the existing colleges is ensured.

9. State Council of Academic Awards—Under-Graduate Universities—Autonomous Colleges

12.40. With the proposal that universities in Tamil Nadu should function as top level post-graduate and research institutions in all the science and technologies, the question arises whether under graduate work could be taken away from these universities and transferred to a special body known as the State Council of Academic Awards. It is proposed to reorganise under-graduate and graduate education into a two-year fee-based intermediate course and a two or three-year pass/Hons. course in B.A., B.Sc., or B.Com. The M.A., M.Sc. and M. Com. courses will continue to be of two-year duration.

12.41. An Autonomous State Council of Academic Awards or two or three new under-graduate universities will be set up by legislation. They will be responsible for conducting undergraduate examinations, thereby lessening the burden of the universities which will then be free to devote their full attenon to higher research. The Directorate of Collegiate Education will act as the Government's executive arm in the State Council of Academic Awards.

Autonomous Colleges

12.42. It is also recommended that a system of autonomous colleges as suggested by the Kothari Commission may be brought into existence. Certain number of colleges which are ripe for that status, will be granted autonomy in the development of courses of study and methods of teaching and learning from the intermediate to M.A., M.Sc. and M.Com. levels.

Semester System

12.43. The semester system now in operation in the professional colleges in the State will be extended to the arts colleges also. The present examination system will be replaced by a system of internal assessment supplemented by external examination wherever feasible. Out-of-school education and training programmes will be given due emphasis to enable those at work to continue as college students through correspondence courses, evening classes, etc., so that there may be as many out-of-college students as those in colleges.

10. Post-Graduate Universities of Madras, Annamalai and Madurai

12.44. With the creation of the State Council for Academic Awards, the three Universities of Madras, Annamalai and Madurai will be developed as peaks of excellence in post-graduate education in arts and sciences and they will expand and intensify their programmes of research also. This will involve creating additional facilities in the faculties of the physical sciences, as also in mathematics, biological sciences, earth sciences, and the science of the atmosphere. In the social sciences, it will involve the creation of three or four additional

* Source : Report of the Education (Kothari) Commission—page 278—paragraphs 11-13.

professorships in each of the departments of economics, politics, history and statistics and more generous financing of reasearch in social sciences.

12.45. A new department of education devoted to educational research and the training of professors for teacher training colleges will be created in the Madras and the Madurai Universities. These Universities may be governed by a Council composed of the Heads of Departments thereby giving greater voice to faculty in administration.

11. The Madras University of Technology

12.46. With the rapid advance of science and technology in the State coupled with the fast expansion in industry, it is felt that the eleven colleges and technology institutes and the 36 polytechnics in the State could come under a separate Technological University.

12.47. This University with its main campus at the college of Engineering, Guindy, will establish a system of constituent autonomous and affiliated colleges, assess the engineering manpower needs of the State, organise advanced study and research programmes, develop curricula and all types of instruction materials, and aim at raising the standards in the engineering and technology sciences and also in social management sciences. The Polytechnics will also be allowed to develop into autonomous institutions in due course and the expansion of their faculties will be fostered in an appropriate manner.

12. International Institute of Tamil Studies

12.48. Tamil is one of the few ancient living languages of the world and in many parts of the world there are sizable number of Tamilians. As such, this language has an international appeal and hence 'Tamilology' has become an accepted branch of linguistic research. Accordingly the International Institute of Tamil Studies has been started in Tamil Nadu to promote and co-ordinate research in Tamil studies. It is proposed to strengthen this institute further and to expand and develop it to undetake research not only in Tamil language and literature but also in Tamil culture and ts impact on other cultures of the world.

13. Research in Science and Technology

12.49. In planning for research in Science and Technology in Tamil Nadu, the following factors are taken into account. The land, water, mineral and fuel resources of Tamil Nadu are limited compared to those of many other States in India. Its population density is high being nearly twice the all-India average. As against this, it is better placed than many other States in the matter of literacy, general levels of education and is better off with its supply of skilled man-power. It has a citizenery with a strong tradition of order and discipline. The State can boast of a wide spectrum of talent ranging from great dexterity and nimbleness of hand to capacity for sustained mental effort. Its human talent potential is extremely favourable to economic growth. Taking into account these factors, a specia climate for Research should be created and developed. The starting of the Tamil Nadu Science Foundation will be the first step in this direction.

14. Tamil Nadu Science Foundation

12.50. There is a recognised need to provide an agency to co-ordinate research and to disburse funds for promotion of science and tehnology. It is in this light only that the formation of the Tamil Nadu Science Foundation (TNSF) is recommended. It will be an autonomous, State financed, independent body founded by State charter and funded by a block grant approved by legislature. It will be governed by an Executive Council with the Chief Minister of Tamil Nadu as Chairman and the Minister for Education, Minister for Finance, the Director of the Foundation, three eminent scientists, two noted industrialists and an eminent educationist as members.

It will have the following seven divisions, each headed by a Scientist of the rank of a Joint Director:-

(1) Mathematical and Physical Sciences ;

(2) Engineering Sciences ;

(3) Biological Sciences ;

(4) Inter-disciplinary Programmes ;

(5) Natural and Human Resources ;

(6) Social Sciences ; and

(7) Technology Education.

15. Tamil Nadu Academy of Basic and Applied Sciences

12.51. The Government of Tamil Nadu is investing a large portion of its Annual Budget in Education. Most of these funds are spent on basic and applied sciences. There is at present no advisory body to advise them on policy formation and to assist them in co-ordinating the activities of the various institutions and departments of science and technology in the State. There is also at present no organisation to publish the useful results obtained by these research organisations to make them available to one and all. To fill up this gap it is proposed to establish the Tamil Nadu Academy of Basic and Applied Sciences (TNABAS) by State charter. This body shall consist of regular and honorary members numbering 400 in all. At first 100 founding members and 25 honorary members shall be nominated. Twenty-five members will be elected every year. The nominations and elections will be from among persons of eminence in the fields of basic and applied sciences. This will act as the top advisory body to the Government and will also undertake liaison work among various bodies in the field of science and technology and also publish proceedings, journals, monographs, in-depth studies, newsletters, etc.

16. Hall of Science and Industry in Tamil Nadu

12.52. To effectively project and popularise the advancement in Science and Industry among the general public and the students in particular, a Hall of Science and Industry will be established in Madras City. This Hall will not only collect, preserve and restore, artifacts of science and industry but also utilise them for an effective display to the public and the educational institutions. It will help in developing the scientific temper and outlook of the new generation and supplement science education imparted in schools and colleges with particular reference to the advancement of industries.

17. Computer Centres

12.53. There has been a steady growth in computer application in education, science, industry, data processing, information storage and retrieval, management decision-making and documentation etc., in the advanced countries of the world. Further in the field of education and research in higher technologies, there is hardly any area that does not use digital computers. To keep in step with these advanced techniques, it is proposed to promote and strengthen the utilisation of computers in Tamil Nadu. The Computer Centre in the College of Engineering, Guindy, will be expanded as a high-level one. A Computer Centre in Coimbatore will also be set up during the Fifth Plan period. Later, similar centres could be strated at Madurai and Tiruchirappalli. These centres will provide laboratory facilities for M.Sc. courses and training facilities to the engineering undergraduates. They will also meet the entire data processing needs of the Government and other institutions in the State.

18. Centre of Ocean Engineering and Marine Sciences

12.54. Tamil Nadu has fortunately a long coast line of 998 Kms. extending along the shores of all the three seas surrounding the peninsula. To reap the benefits of having such a long coast line the hidden natural resources of the ocean must be fully exploited. At present there is no high-level institution in Tamil Nadu offering comprehensive instruction in understanding the marine sciences and technology. Intensive studies in ocean engineering and marine sciences and technology are to be undertaken if Tamil Nadu is to benefit by this bounty of nature.

12.55. Hence, it is proposed to establish a centre of Ocean Engineering and Marine Sciences to undertake studies of the marine environment, the principles of ocean engineering, underwater mining in coastal waters along the continental shelf and the deep sea floor and also of marine resources management. Its ocean research programme will include :

Investigation into the anchoring and stabilisation of pipe lines and structures ;

Investigation into the extent, strength and movement of ocean sediments ;

Investigation of the stresses arising from waves and ocean currents on underwater structures ; and

Studies on the dispersion of pollutants.

19. Tamil Nadu Institute of Management

12.56. The awareness created in the last ten years of the importance of management education holds out bright prospects for further expansion in management education in the 70s also. It is interesting to see that 25 per cent of students who enter the Indian Institute of Management at Ahmedabad for the last three years are from Tamil Nadu. The growing industrialisation of Tamil Nadu is likely to lead to a greater demand for professionally trained graduates in the coming years. In addition, there is a felt need for executive development programmes for on-the-job training for executives in the various spheres of development both in the public and private sectors.

12.57. Hence, it is proposed to start an Institute of Management Training and Development for Tamil Nadu. It will

Provide basic education in management and conduct courses for graduates ;

Train and develop managers for various Government departments and agencies ;

Provide consultancy services in all management spheres ;

Undertake sponsored research projects for Government and industrial organisations ;

Undertake empirical research and case studies ; and

Promote management techniques and methods appropriate to the small-scale as well as agro-based industrial units.

12.58. The Institute will fill a serious gap in State amenities for Research and Training of supervisory personnel and middle and high level executives in addition to providing management courses for our graduates at post-graduate and doctoral levels.

20. Material Testing Bureau

12.59. With the expansion of industry at all levels, there arises a need for an impartial assessment of the performance and quality of the products which can command acceptance both from the consumers as well as from the producers. A testing bureau for Tami Nadu is essential. This will undertake test investigation on materials, products and processes of technological and engineering significance is main functions will be :

To assess the quality and performance of engineering goods objectively ;

To assess the quality of engineering materials ;

To assess the propriety and quality of engineering and technological processes ;

To conduct tests in colloboration with the Indian Standards Institution and other Standards inspecting bodies and issue certificates based on these tests ;

To develop standards in collaboration with the above bodies ; and

To guide engineering industries in the development of their products and the improvement of their quality.

21. Centre for Automotive Engineering and Development.

12.60. Madras and its neighbourhood form an important centre in the country for Automotive Engineering and Allied Ancillary industries. They produce cars, trucks, industrial vehicles, tractors and farm equipments and army tanks and a host of automotive spare parts, such as electrical gadgets, tyres, engine valves, etc.

12.61. In view of these, a Centre of Automotive Engineering and Development will be established in collaboration with Tamil Nadu's large automotive and ancillary industries with a 20 mile test track for testing vehicles. The functions of the Centre will be :

To provide modern testing facilities for complete automotive vehicles as well as for component parts. The term automotive includes, besides automobiles, tractors, bulldozers, heavy earth-moving machines, scooters, three wheelers, etc.

To provide research and developmental facilities in automotive engineering ;

To serve as a forum for technical discussion ;

To serve as a clearing house of informatio and publish a newsletter/journal : and

To induct professionals and technicians into scientific investigations in this area and to enable them to appreciate enduvaaluate their own work* better.

This centre will be developed ultimately into a National facility.

22. Centre for Urban Engineering

12.62. Urbanisation is an inevitable consequence of an industrial civilization. Rural exodus brings in its train a host of problems which act as a challenge to Engineering, Science and Technology. Cities grow into metropolitan areas and then expand as megalopolises. Unless, we plan and act effectively and in time, the result of such an expansion will be disorder, congestion, indiscriminate fouling of air, water and other natural environment leading to a heavy strain on the human mind. Urban transportation and urban housing in such a condition pose serious problems.

12.63. To tackle these, a centre for Urban Engineering will be established at the College of Engineering, Guindy. It will also take over the Traffic Engineering Cell and expand it. It will deal with all the complex problems of urban transportation, urban housing and urban environment. Its main functions will be :

To train high-level personnel in urban engineering, urban transportation, urban housing and urban environmental problems ;

To co-ordinate the facilities available in various institutions and formulate inter-disciplinary programmes for the benefit of the trainees in urban engineering ;

To conduct field surveys and collect factual data in the urban areas of the State ;

To be associated at the required levels in metropolitan planning in the State ; and

To offer considered solution for specific problems of urban development referred to the Centre, by the State Government and local bodies.

23. Development of the Public Library System and Documentation Service

12.64. In a democracy the role played by an effective public library system is vital. In the net work of libraries—Public, Academic, Special Research, and Industrial—it is the public library which serves the widest range of readers. The public library system has to cater to the literate, the semi-literate or the neo-literate and provide against lapses into illiteracy. Tamil Nadu, by passing the Madras Public Libraries Act of 1948 was one of the first states in India to make provision for library service to the public. However, this act is now in need of review, and the work has been entrusted to a Special Committee appointed by Government.

12.65. To create an effective library service through a phased programme in the rural and urban areas of the State by the end of 1984, a separate Directorate of Public Libraries with a qualified librarian as the head of the department has already been set up. At the district-level, the central librarian will have to relieve the District Educational Officers from the (ex-Officio) library work they are doing.

12.66. A separate cadre of librarians known as the Tamil Nadu Library Service will have to be formed. Adequate reading material will have to be supplied. Service points of reasonable size, adequate resources and allocation size, funds, suitable reading material, qualified staff, enlightened management, a plan of development and periodical evaluation will greatly contribute to the success of the system and its service to the public. The library cess will have to be increased from the present rate of 5 paise in the Rupee to 10 paise in the Rupee in the course of the Fifth Plan.

12.67. Taking into consideration the existence of various important Scientific and Industrial Institutions in and around Madras city, it will be essential to set up a centralised agency to attend to documentation, information storage and retrieval. This centre will also co-ordinate the activities of the different documentation system in the State.

24. Tamil Nadu Book Development Council

12.68. To provide a stimulus to the production and distribution of books of all kinds of national and international appeal, a Tamil Nadu Book Development Council will be formed, as a State Branch of the National Book Development Council.

25. EDUCATIONAL FINANCE—APPOINTMENT OF EDUCATIONAL FINANCE COMMISSION

12.69. The financing of education in Tamil Nadu raises five important issues, viz.,

(i) The desirable total investment for the State ;

(ii) The public sources of educational finance ;

(iii) The distribution of educational expenditure among various levels of education ;

(iv) The unit cost of education : and

(v) The deployment and redeployment of financial resources.

12.70. Given the present and prospective state of education in Tamil Nadu, it is computed that public educational expenditure might move from the present 4·77 per cent to 5 per cent of the State income during the Perspective Plan period. On the basis of income projections made by the State Planning Commission, this would mean an average public expenditure of Rs. 175 crores per annum in the Fifth Plan and an average of Rs. 250 crores per annum in the Sixth Plan (this figure includes the expenditure of the State, Local Bodies, Private sources, etc. etc.).

12.71. On a careful analysis of the existing patterns of expenditure, it is felt that there may be a scope for redeployment of present educational expenditure in the State. Educational finance should be tailored to meet the changing priorities and patterns of education. Educational tradition tends to cast its finances in rigid, inflexible, and therefore, uneconomic moulds. Educational outlays in various forms and at different levels of education, and the purpose of expenditure should be constantly reviewed, adjustments made and effective utilisation ensured. Educational expansion should neither merely be an additive process nor should improvements of educational quality and excellence call necessarily for large additional expenditures. In this context, the discussions at the Union Planning Commission level indicate a consensus in favour of an approach to education along the following three directions :—

(*a*) Talented persons needed for the development of the country should be identified and educated free of cost; similarly, students from the underprivileged classes should be given free education;

(*b*) To satisfy the democratic urge for higher education, a large number of correspondence courses, where per capita costs are low, should be started ; and

(*c*) From the other students, who are not underprivileged and who seek admission for full-time education in regular institutions, the full cost of University Education should be recovered.

12.72. It is therefore proposed that a small education cess on Industry and Agriculture may be levied. Further, higher education should be progressively made fee-based.

12.73. In the contemporary educational finance, there are areas where effective economies can be exercised without slowing down the expansion or arresting qualitative development. Finances so saved can be redeployed in other areas. For example, an amount of Rs. 14 crores in the Tamil Nadu State Government budget can be economised as indicated in (*a*) below and re-deployed as indicated in (*b*) below:

(*a*) *Measures to reduce outlays and increase revenue:*

(Rs. in crores.)

(0)	(1)
1 Discontinuation of grants to 100 of the present high schools and making them fee-based like matriculation schools	2·00
2 Merging of uneconomic high schools and imposing a ban on starting uneconomic institutions	1·00
3 Merging of uneconomic higher elementary schools and imposing a ban on starting of uneconomic institutions	1·00
4 Panchayat Union contribution to be fixed at 15 per cent of total expenditure on elementary education in their areas	2·00
5 Conversion of basic into non-basic types and discontinuation of stipends for training schools ..	0·50

(0)	(1)
6 Fees in training colleges (23) and physical training colleges	0.75
7 Discontinuation of the compensation grant for P.U.C. to be replaced by Intermediate	1·00
8 Decrease in grants to colleges through rising of fees by 50 per cent— .. Aided colleges 1·75 Government colleges 0·75	2·50
9 Education cess on industry and agriculture	3·00
10 Rationalised Administration ..	0·25
Total 1 to 10	**14·00**
(b) *Re-deployment*	
1 Continuous in-service training of teachers for schooling	1·50
2 Transfer of better qualified teachers from the 11 year pattern to 10 years schooling (No extra expenditure involved)	..
3 Out-of-school education for five-year schooling	3·50
4 Secondary grade teachers transferred from Class VIII of high school plus new teachers— for continuing education 1·50 for adult literacy 1·50	3·00
5 For compensatory education* for students from poor families in— High Schools .. 1·50 Colleges .. .. 1·50 ..	3·00
6 For freeships and award of living allowances in addition to the Harijan Welfare and Backward Classes Scholarships	1·00
7 For developmental research and strengthening of the State Council of Educational Research and Training	2·00

*Compensatory Education refers to an educational programme that is devised to compensate various individual and social handicaps that persons and groups suffer from. Such a programme would include :
(*a*) Special individual coaching ;
(*b*) Special group instruction ;
(*c*) Provision of special reading materials, including books and programmed instruction; and
(*d*) Arrangement of periods of study and evaluation to suit the learning path of the students involved

Educational Finance Commission

12.74. The areas of economy and re-deployment proposed above are illustrative rather than definitive. For fuller exploration of these possibilities in the light of the State policy, it is recommended that the State Government should appoint an Educational Finance Commission. This Commission will review educational expenditure in the State and recommend re-deployment of the finances in the light of the objectives and aims proposed for the system.

26. Educational Planning Cell for Tamil Nadu

12.75. An Educational Planning Cell for Tamil Nadu to be located in the office of the Secretary to Government in the Education Department or in the State Planning Commission will be established. The Cell will keep under review the relationship between the various stages and levels of education and examine the content of education at various levels with a view to recommending their adaptation to the development of the student's personality and the socio-economic and cultural needs of society. It will plan the development of Education, Science and Technology and Culture in the State. The Secretary to Government (Education) will be the head of this Cell.

27. Administration and Management of Education, Culture, Science and Technology

12.76. The planning and administration of education, science and technology in the State will be reorganised to conform to the overall objectives set forth and the specific aims, programmes and methods recommended. There is need for a continuous review of the administration and management machinery so that it keeps abreast of the changing needs and patterns of education, science and technology.

12.77. For the administration and management of education, culture, science and technology, it is recommended that under the Minister and Secretary the following six Directorates will function :—

(1) The Tamil Nadu Science Foundation (Science Directorate)—*Vide* Para. 12.50,

(2) The State Council of Educational Research and Training (SCERT)—*vide* Para. 12.32,

(3) The Directorate of School and Out-of-School Education,

(4) The Directorate of Collegiate Education*,

(5) The Directorate of Technical Education*, and

(6) The Directorate of Libraries*,

*(These are already in position and functioning.)

12.78. The Directorate of School and Out-of-School education will have an advisory wing of five divisions dealing with personnel, finance, elementary and out-of-school education, cultural promotion and vocational education, each headed by a Joint Director. It will also have an executive wing with four divisions, each headed by a Joint Director. The Joint Directors of the two circles to be formed covering the State, will have two Deputy Directors, Ten Regional Deputy Directors working under them, each of whom, will, in turn, have an advisory wing of five special officers and an executive wing of five District Educational Officers and fifty Assistant Educational Officers per district.

28. Management of School and Out-of-School Education

12.79. The Department of School and Out-of School Education will unify all school and out-of-school activities in primary and secondary education. The basic function of its director will be the integration and co-ordination of its four advisory divisions and its three executive divisions. At all levels, the advisory and executive wings will maintain their separate identity. Decisions relating to various areas will be the responsibility of the Joint Directors, with the Director intervening in their work only when co-ordination and integration are called for. Two divisions, one each for elementary education and out-of-school education, are to be created in the advisory wing in order to advise the executive wing on the curricula, teaching and training methods of elementary schools and out-of-school education wing for education for drop-outs. These are the new unified functions recommended.

12.80. Another new division recommended is the wing to be created for cultural programmes and physical education in the advisory wing in order to promote in-school and out-of-school adult programmes, the development of Tamil music, drama, poetry and painting, so as to ensure the participation of the rural and urban communities in Tamil Nadu's adventure of development. A third new division in the advisory wing will concern itself with vocational education. It will have important promotional responsibilities for vocationalisation of secondary education, the supervision of technical high schools as well as the I.T.Is, which will become the responsibility of this department.

12.81. In view of the large number of school and out-of-school programmes proposed, the State will be divided into two geographical areas, each to be placed under the care of a Joint Director. Each circle will have five Regional Deputy Directors who will hold charge over an area roughly the size of a revenue district. The Regional Deputy Directorate will have an advisory wing of five special (staff) officers, one each for examinations, inspection of science, programmes, out-of-school education and physical education and cultural schemes and an executive wing staffed by five District Educational Officers, assisted by 50 Assistant Educational Officers. The posts of Inspectress of Girls' Schools and the Inspectress of Anglo-Indian Schools may be abolished and the Regional Deputy Director will reassign this work to one of his officers.

12.82. An advisory committee to assist the Director of School and Out-of-School Education has also been recommended and it will consist of all the Joint Directors to ensure co-ordination in resolving departmental conflicts, if any. This will also be an important instrument to implement the programmes.

12.83. The following principles are implicit in the above recommendations to streamline the Directorate of Education and will have to be translated into executive orders to the extent necessary and possible :

The Director will be concerned only with advising the Government on policy, and for the rest, he will possess only co-ordination and integration functions.

12.84. Decision making will be strictly *decentralised* in accordance with the executive-line functions recommended. Each Officer-the Assistant Educational Officer, the Special Programmes Officer, the District Educational Officer, the Regional Deputy Director and the Joint Director will have his decision-making powers clearly established and will be held responsible for executing them without interference. In parti cular, the locus of decision making power in the Department of School and Out-of-School Education will lie in the Regional Deputy Directors who are posted in the districts.

12.85. Personnel recruitment, training and management, recruitment and appointment policies should be tailored to meet the specialised needs of the six departments. The positions in the Tamil Nadu Science Foundation, the Department of Libraries and the State Council of Educational Research and Training will be filled by academics of the highest quality and standing.

12.86. All executive staff will be provided with periodic management training and facilities to attend refresher courses. The District Educational Officers will be trained to play their new roles as effective educational planners and professional leaders in addition to being executives and supervisors. A judicious blend of promo tion and direct recruitment of first rate young men for the posts of District Educational Officers will be the basic policy. A sandwich pattern of training which will comprise of a six month's functional course at the SCERT followed by a practical training of three month's duration in the National Staff College,Delhi, will be organised for the State Education Service probationers. The practical training for direct recruits for the post of Assistant Educational Officers will include a month's training in departmental organisation and rules, at the SCERT, a month in the office of the Deputy Inspector of Schools, and finally a month each in the District Educational Officer's office and at the new Regional Deputy Director's office.

12.87. Planning and implementation of personnel policies may be entrusted to administrators who have a social science background and are trained in management. A *grievance tribunal* will be attached to each circle. A time limit should be set for the settlement of disputes. In view of the abolition of the system of confidential reports in the State Government, there is a need to introduce an open assessment system. The personnel department will be required to evolve such a system for the sake of objective evaluation, for rewarding efficiency and determining the training needs of personnel in the Education Department.

12.88. In financial management the major emphasis will be on the *optimal employment of scarce resources rather than on legal and procedural accountability*. The simplification and rationalisation of all administrative procedures, ranging from grants-in-aid to the placing of purchase orders, will have to be effected.

12.89. In accordance with these principles, it is recommended that the Madras Grant-in-aid Code the Madras Educational Rules, the Madras Elemene tary Education Act and the rules framed thereunder and the Madras Educational Inspection Code be revised to give greater freedom to the institution and to bring about a speedier implementation of ths above rules and regulations.

12.90. An effective system of *performance budgeting* will be developed in all the six directorates of education. In the School and Out-of-School Education Directorate, Regional Deputy Directors will be treated for purposes of financial management as *cost or responsibility centres*. Financial efficiency should be measured in terms of activity levels and variances.

Conclusion

12.91. The Tamil Nadu system of Education, Science and Technology is in retrospect a heartening one. Its achievements and weaknesses provide the basis for further advance towards making education available to all and making it relevant to the economic, social, cultural and moral demands of its society. On the basis of this assessment of Plan Perspectives for Education and taking into consideration the results of the wide-ranging consultations with legislators, Government departments, Universities, Teacher's organisation and student's unions in the State, one major conclusions emerges. They do not want for their Education, Science and Technology system more of the same. But they want a change for better results.

TABLE 12-4.

Perspective Plan Outlay on Education, Science and Technology

(Rs. In Lakhs.)

Item	*Fifth Plan*	*Sixth Plan*
(0)	(1)	(2)
(A) GENERAL EDUCATION		
1. In-service Education of Teachers	21·00	..
2. Equalisation of educational opportunities-out of school education for droup-outs.	1,409·00	1,935·00
3. Functional Literacy Programme	244·00	310 00
4. Vocationalisation of secondary education	1,026·00	5,752 00
5. Development of Public Library System	44·00	57·00
6. Qualitative improvement	698 00	709·00
7. Pre-primary Education	339 00	431 00
8. Expansion of school education	3,706·00	5,357·000
9. State Council of Academic Awards	1,117 00	1,706·00
10. Post-graduate University of Madras, Annamalai and Madurai	748 00	210 00
11. Library and Documentation Development	44 00	56 00
12. International Institute of Tamil Studies	45·00	62·00
13. Tamil Nadu Academy of Basic and Applied Sciences	7·00	9·00
14. Hall of Science and Industry in Tamil Nadu	42·00	74 00
15. Computer Centres	53 00	83 00
16. Educational Planning Cell for Tamil Nadu	50·00	68·00
17. Administration and Management of Education, Culture, Science and Technology.	152 00	182·00
Total (A)	**97,45·00 or 97·45 CRORES.**	**17,000 00 or 170 00 CRORES.**
(B) TECHNICAL EDUCATION	(RS. IN LAKHS.)	
1. Madras University of Technology	700·00	1600·00
2. Tamil Nadu Science Foundation	395·00	1,230·00
3. Tamil Nadu Institute of Management	105·00	170·00
Total (B)	**12,000·00**	**3,000·00**
TOTAL PLAN OUTLAYS	(RS. IN CRORES.)	
General Education	97·45	170·00
Technical Education	12·00	30·00
	109·45	**200·00**

Total.. Rs. 309.45 crores

Note : The following projects will be taken up by the departments to which they relate:
1. Centre of Ocean Engineering and marine Sciences;
2. Material Testing Bureau;
3. Centre of Auotmotive Engineering and Development; and
4. Centre for Urban Engineering.

CHAPTER 13.

Health Nutrition, Family Planning, Water-Supply And Sanitation.

An Assessment of the Present Position

Organisation of Health Services

13.1. The Block or Panchayat Union is taken as the base of the pyramid for the purpose of health administration. At the Block and Panchayat Union level, there exists a total of 493 Panchayat Union dispensaries. Of this number, 238 are designated as rural dispensaries and receive subsidies from the State Government ; 255 are run by the Panchayat Unions themselves. Out of 493 Panchayat Union and rural dispensaries, 304 are indigenous and 189 are modern medicine dispensaries. There are 57 indigenous municipal dispensaries and 15 indigenous Government dispensaries. Besides these, the State has 112 non-taluk government hospitals with bed strength varying from 10 to 55 and 73 Government dispensaries each staffed by a medical officer, a pharmacist, male nursing assistant, a female nursing assistant and an auxiliary nurse-mid-wife to attend to 100 to 150 out-patients per day and about 20 deliveries a month. Of the 374 blocks or panchayat unions in the State of Tamil Nadu with a population of 80,000 to one lakh in each block, some have more than one primary health centre while there are still two blocks without one altogether. There, thus exists to-day a total of 379 primary health centres in 374 blocks. The principal base from which "Operation Health" is directed is the Primary Health Centre located in the Block. It is generally composed of two wings. Each wing has a medical Officer—male or female, a health visitor, an auxiliary nurse-mid-wife and a health inspector. The general wing of Primary Health Centre has in addition a pharmacist, a male nursing assistant and a driver. To every primary health centre are attached sub-centres, each serving about 10,000 persons. A sub-centre normally employs an auxiliary nurse or mid-wife and an ayah and is located on four to eight grounds of land donated by local people. There are six to eight taluk headquarters hospitals in each district totalling 86 in all. Each hospital has an out-patient block with an average daily attendance of about 300 patients and an in-patient block with a bed-strength of 30 to 90. It is staffed with a minimum of two medical officers (one male and one female) and nursing and para-medical staff, but varies in its actual capacity for providing relief and cure according to the number of beds. The principal departments are medicine, surgery and mid-wifery with an operation theatre and facilities for post-mortem examination. At the apex, there are 13 District Head-quarters Hospitals, each containing an out-patient block with an average daily attendance of 1,000 out-patients ; 150 to 500 beds for in-patients and a Siddha wing of 10 beds. Its staff headed by the District Medical Officer includes eight to nine medical officers and some honorary medical officer. It has also five to six specialities as well as staffed, laboratory and X-ray facilities to aid diagnosis. Each hospital has an urban family planning centre. Post-mortem and family planning wards have been provided in Salem and Cuddalore Hospitals.

13.2. In actual working, the achievement falls short of the ideal. The sub-centre has to be visited twice or thrice in the course of a week by the Medical Officer. This cannot be done if the jeep is out of commission or if the only driver available is unavoidably absent from duty. The doctor is hard put to it to attend to cases of emergency which add to his normal medical stint at the consulting room in the Primary Health Centre as well as in the sub-centre. Little can be achieved in the primary heatlh centre—which has only six beds attached to it—apart from the most rudimentary health care. The taluk hospitals are restricted in their functioning to curative work, the quality

of their service suffers because of the insufficiency of their staff strength and absence of specialities The lack of adequate medical staff together with absence of transport renders proper servicing of the primary health centres by these hospitals well nigh impossible. The problems faced by the district headquarters hospitals are manifold. The District Medical Officer is charged with exacting clinical functions; he is besides responsible administratively for all the medical institutions in the district except the primary health centres. He is therefore unable to do justice to his work—either to his medical function of supervision or to his normal administrative duty of inspecting and providing leadership to the taluk hospitals. Lack of specialities and facilities for preventive care, of diagnostic facilities, of medical personnel with post-graduate degrees and the limitations imposed by low-bed strength have all detracted from the optimal use of these institutions in servicing the district population.

INDIGENOUS MEDICINE

13.3. The Arignar Anna Government Hospital of Indigenous Medicine in Madras City has 100 beds which are divided as between the Siddha, Ayurveda and Unani systems of medicine. There is a serious dearth of facilities for health care in respect of the indigenous system of medicine in the State at all levels. There is also the need for developing a coherent working relationship between the indigenous and the allopathic systems of medicine, which to-day function in separate watertight compartments.

WORKERS' HEALTH INSURANCE

13.4. At present the benefits under the Employees State Insurance Act are available to insured workers whose monthly wages do not exceed Rs. 500. The total number of insured persons and their families attached to hospitals and dispensaries is 394,250. A ceiling has been fixed on the amount payable towards the care of industrial workers by the State Government; for instance, the contribution would be limited to Rs. 210 lakhs during 1971–72. Over and above this, recourse has been made to State funds to the extent of another Rs. 105·37 lakhs in order to keep up a certain standard of quality in the services provided by the Corporation to its members. This programme which is basically sound however needs to be evaluated periodically.

COMMUNICABLE DISEASES

13.5 Communicable diseases have posed the single most serious challenge to public health in the State. Special programmes of action have been launched for controlling diseases of this category.

National Malaria Eradication Campaign

13.6. The State is divided into 13 revenue districts and work in each district is supervised by a District Health Officer. He controls two to four units, each unit covering a population of one million people. Basic Health Workers are posted in each block at the rate of one for thousand of the population.

National Filaria Control Programme

13.7. During the years 1968–72, four National Filaria Control Units functioned in the districts of Chingleput, North Arcot, South Arcot and Thanjavur, each unit covering a population of 3·5 lakhs. Eight new units are located at Villupuram, Cuddalore, Kancheepuram, Thanjavur, Nagapattinam, Pudukkottai, Srirangam and Madras City. About 13 millions of the population are at present exposed to the risk of filariasis in Tamil Nadu and the object of the programme is to provide them with protection against the disease.

The National Small-pox Eradication Programme

13.8. The principal strategy in the consolidation phase consists in a 100 per cent primary vaccination of all new-borns. In view of the recrudescence of small-pox in the neighbouring States, it has become necessary to concentrate on revaccination along side of the primary vaccination programme. The existing staff is inadequate to achieve the targets of coverage now fixed afresh. The backlog of the unprotected population is steadily growing children accounting for the bulk of the arrears.

The Cholera Control Programme

13.9 The programme is now being implemented in the four districts of South Arcot, North Arcot, Coimbatore and Tiruchirappalli. These districts

are endemic for Cholera. So far, only half the number of blocks in the four endemic districts have been covered and a Cholera Combat Team is functioning in Thanjavur district. However, since Cholera is one of the water-borne diseases, progress in the containment of this epidemic is really bound up with the provision of safe water supply and the improvement generally of environmental sanitation.

The Guinea Worm Eradication Programme

13.10 This programme begun in 1960, is now under implementation in Tamil Nadu, the whole area of the State being divided into six units for this purpose. As this disease again is principally transmitted through water, the permanent remedy would consist in the provision of safe potable water free from direct contamination and the replacement of step-wells and tanks by safer sources.

Yaws Eradication

13.11 Eight units of the Yaws Eradication Programme began work in the Coimbatore district in 1961. Their work completed, the units have since been wound up. A further survey revealed proven infections in the adjoining districts of Tiruchirappalli and Madurai. Three units have accordingly been posted for epidemiological work in Karur, Periakulam and Palani.

Mobile Epidemic Unit

13.12 Six mobile units operate in various parts of the State for the control of communicable epidemic diseases.

Plague

13.13 The nature of the plague epidemic is such that it calls for vigilance and remedial measures in areas congenial for its transmission by the ratflea ; the measures include environmental survey, epidemiological demarcation and mass immunization.

Immunization Programme

13.14 The immunization of children with triple vaccine against diphtheria, tetanus and whooping cough has been carried out on a small scale and needs to be intensified, extended and accelerated.

Tuberculosis

13.15 When the nationwide B.C.G. vaccination programme was started, the initial survey revealed the incidence of the disease among 2·5 million persons in the country (corresponding figures for Tamil Nadu being seven lakhs). The B.C.G. programme has yielded good results. One tuberculosis centre functions in each District Headquarters Hospital. In addition to T.B. clinics attached to teaching institutions there are Tuberculosis Sanatoria run by the State Government and also a few run by private and voluntary agencies. Recent emphasis has been on domiciliary treatment.

Leprosy

13.16 Estimates of the incidence of leprosy, which is a contagious disease endemic to Tamil Nadu, vary from two to five per cent of the State's population. The institutional structure pertaining to anti-leprosy measures include (1) Leprosy Treatment and study Centre, Tirukoilur ; (2) Leprosy Control Units ; (3) Leprosy Subsidiary Centres ; and (4) Survey, Education and Training Centres. Private agencies such as the Hemmerjicks Leprosy Centre, the Wallajah Leprosy Control Scheme, and the E.L.E.P. Project at Dharmapuri have all added greatly and usefully to State effort. The present trend is to integrate leprosy control with medical relief work at every relief centre in the field and reinforce curative work with a domiciliary approach. 10 Leprosy Beggar Homes are established in the State so that the mendicant lepers receive the required treatment and most important of all, they are rehabilitated both medically and occupationally.

Cancer

13.17 Treatment is given for cancer through radio-theraphy, surgery and chemotherapy in the main Government Hospitals and private centres.

MEDICAL EDUCATION AND RESEARCH

13.18 The eight Government Medical Colleges in the State annually admit a total of 1,015 students. The annual graduation has now crossed the figure of a thousand. At present, medical officers of Tamil Nadu are sent out for post-graduate education to specialized institutions within this country and some are also sent abroad for training in higher specialities like neurology, cardiology,

nephrology and gastro-enterology, for which facilities are generally unavailable in the country. The college of Indigenous System of Medicine at Palayamkottai with an annual admission rate of 30 students for the Bachelor of Indigenous medicine course in Siddha, functions with a 100 bedded siddha training hospital.

13.19 The defects in the present system of medical education are : (1) Inadequate standards of new entrants to Medical course ; School education has therefore to be upgraded before the student reaches the pre-degree level and before he can avail himself with profit of the education now provided for an undergraduate ; (2) Lack of sufficient number of experienced teachers and unwieldy number of students in every class ; (3) Insufficient knowledge of English, which could be remedied by special training in the subject during a short semester. This should be available to the student on the advice of the teachers concerned ; (4) Pay scales of teaching staff are not good enough to attract the best men to the profession.

13·20 Research is being undertaken in the upgraded departments and in the constituent departments of many medical colleges but much more remains to be done.

FAMILY PLANNING

13.21 In 1971-72, Family Planning accounted for an expendiure of Rs. 570 lakhs representing 25 per cent of the total outlay on health in Tamil Nadu. The expenditure is divided among staff, supplies and operations on the one hand and on persuasion and education on the other. About 50 per cent of the population of the State as well as of the Country as a whole are in the 15—50 age group, and females in the reproductive age group (15—45 years) constitute 25 per cent of the total population. Early marriages contribute to higher reproduction figures. In the context of high infant mortality, additional children are looked upon as a kind of insurance against a state of childlessness. The spectacular advance made in the sphere of education and employment of women will probably take time to have any deterrent effect on reproduction rate. The diaphragm (coupled with or without jelly), foam tablets, I.U.C.D. (Lippes Loop), steroid pills, tubectomy and vasectomy ar the various choices offered to eligible couples to practise spacing and limiting. 14·15 lakhs sterilisation operations have been performed till end of 1973. The average cost to the State in monetary terms of a single prevented birth has been computed at Rs. 67 for the period 1964-67. There are at least 135 effective eligible couples in Tamil Nadu per thousand of the State's population. Of these, 21 have no children, 25 have on child each, 27 have two children and 62 three or more. The last of these have been referred to as "spacers" and this is the group at which the sterilization programme is directed. They are being persuaded to accept the more decisive and once-for-all mode to realise the ideal family norm. Younger couples with two children or less (termed "limiters") prefer conventional contraceptives. Since the method of persuasion implies assent as a minimum, the "mix" of the methods in the programmes have, inter se, followed individiual preferences. It is possible to claim on the basis of the programme fulfilled so far, that Tamil Nadu's population which would have increasd, according to the 1971 census projections, to 473·94 lakhs by 1979 could now be limited to 464·79 lakhs. This figure may well and demonstrably be lowered further; thanks to work being done under the aegis of voluntary organizations which has gone unmeasured but has served usefully to augment the more comprehensive official programme and to the perceptibly rising age of marriage among women. Abortions will also add to the number of births averted when the recent law legitimizing the medical termination of pregnancy begins to be taken advantage of. A start has been made in making use of maternity and postnatal care centres for counselling on the planned family. Another effective element in the Family Planning Programme is in education and publicity carried out through mass media, such as the radio, news papers, films, hoardings, posters, leaflets and wall paintings. According to a 1971 survey, 15 per cent of all urban and 14 per cent of all rural respondents had, at one time or another, practised one or the other methods of family planning and that 13 and 11 per cent respectively had kept up with their chosen methods. The training of programme staff for the State's plans for demographic control have been organised by the Government and by voluntary agencies. Special training is imparted to medical and nursing staff in the from

of orientation, refresher, in-service and undergraduate courses. The camps for tubectomy and vasectomy operations held periodically, have perhaps succeeded more conspicuously than any other single project in marshalling formal acquiescence in the official programme. Family-planning centres within easy reach have been located in all taluk hospitals. The problems encountered by the Family Planning authorities include resistance arising from lack of privacy in the conjugal home ; social inhibitions ; norms of propriety ; the non-deterrent character of the costs of marriage and additional children ; inadequate medical care for the child and parents ; misleading reports relating to the after-effects of some programme methods, which have a tendency to multiply in the wake of intensive campaigns ; non-acceptance of the programme by in-groups and opinion elites. Information and counselling to overcome such resistance has had to be fed back into the education pattern at all levels, at the school-teacher training colleges and University. Obvious measures for immediate action would be to dovetail family planning service with immunization and nutrition programmes for school children.

NUTRITION

13.22 The factors which determine the present state of nutrition are : (*a*) The size of the population to be fed ; (*b*) Average consumption of calories and proteins and other nutrients by different segments of the population ; (*c*) Growth of the vulnerable population in terms of height and weight ; (*d*) Nutrition-related morbidity ; and (*e*) Infant and child-mortality. All these are undoubtedly related, and earlier attempts to measure the incidence of malnutrition did not integraet these factors in any purposive manner to facilitate effective action. The average calorie intake of children below three years falls short of the recommended level of 1,200 calories per head per day by 500 to 700 calories. Similarly, the shortage, in the case of pregnant and lactating mothers is nearly a third of the recommended requirement which is 2,500 for pregnant women and 2,900 for lactating mothers. The average consumption of the general adult population is of the order of 2,200 calories which is again 600 short of the recommendation. Consumption of protein by the adult population amounts only to two-thirds of the minimum recommended. Though the protein m-take of children is marginally below the recommended level, an excess of calories can here make up for the protein gap. The gap between the intake and requirement is more pronounced in the lower income groups. Judged from the National Sample Survey data for consumption expenditure in Tamil Nadu, nearly 55 per cent of the households spend less than 79 paise per day per head on food, which can barely provide a per caput 2,200 calories out of the cheapest available food. Sub-normal consumption of other nutrients is evidenced by the incidence of nutrition-related morbidity. The average weight of a child at birth in Tamil Nadu is only 2.73 kgs. Several anthropometric studies reveal that the very poor growth rates of Indian children after six months can be traced to malnutrition. Morbidity statistics from a children's hospital show that nearly 20 per cent of the incidence of disease among pre-school children can be casually related to nutrition deficiency. Likewise another set of statistics shows that a third of all deaths among pre-school children can be attributed to secondary disorders arising from malnutrition. A medical survey of 40,000 school children shows that 36 per cent of them suffer from malnutrition. Every other pregnant and lactating mother in Tamil Nadu is anaemic. Infant mortality is a true measure of a community's health ; pro contra, child health is the foundation of its eventual well-being. The infant mortality rate in Tamil Nadu is of the order of 122 per thousand live births in 1972 as per the Sample Registration Survey. Nearly a third of the deaths occur in the age-group below five years, and of these, 50 per cent occur within the first year. This reflects the poor state of maternal and child nutrition.

SANITATION AND WATER SUPPLY

Urban Water Supply

13.23 Protected and piped water-supply in urban areas has come to be regarded as essential for the control of water-borne epidemic and endemic diseases. Public Health programmes have to be linked up with the development of local Panchayat areas. The urban areas in Tamil Nadu have been defined to conform to the following norms : (*a*) they should have a unit population

of 5,000 or more with a density of not less than 1,000 per square-mile ; (*b*) 75 per cent of its inhabitants should derive their livelihood, from non-agricultural occupations. Besides 340 population concentrations, which are urban by the above definition, there are 400 town panchayats and new townships which have been named, through the initiative of the District Collector and his sanitation staff, for conferment of civic benefits under the State's urban water-supply and drainage plans. At present 58 per cent of this aggregate population of 740 towns (8.99 million people) are served by protected water supply systems in varying degrees of adequacy. In view of the rapid growth in population and increasing congestion in towns and cities, it is necessary to give prompt attention to the treatment of effluents and to the provision of adequate underground water drainage facilities in urban areas.

Urban Drainage

13.24 In urban areas, drainage schemes have not kept pace with the provision of water supply. The efficiency of the one is often the condition for the safety of the other. Thus, of the total population that can be classified as urban, a bare 24 per cent (3.75 million people) are at present served by under ground drainage schemes. Water Supply schemes are in operation in the two Corporations of Madras and Madurai, 75 municipalities, 9 townships and 55 towns. Waterborne underground drainage systems are functioning in both the Corporations but only in five municipalities and four townships. In the case of many urban towns, the townships and even the two cities, the sewerage has so far served only a part of the municipal area. This is partly due to the progressive addition of new suburbs and to the accretion to urban population from natural growth and migration, and partly to the optional use of the towns' sewer mains in the absence of effective statutory obligation (M.D.M. Act, 1939), and the consequent under-utilisation of this amenity. Solutions based on felt needs have already been, in some measure, fed back into the committed programmes for coping with the problem of urban environment. From experience, the per caput cost of the schemes has been worked out at Rs. 100 in the case of water supply and to Rs. 125 in the case of sewerage and drainage schemes. The financing of urban water supply and drainage schemes is guaranteed by the Tamil Nadu Government. The projects for Madras City are financed partly by subventions from the State Government. Loans advanced by L.I.C., to local bodies for financing water supply schemes in the urban areas are also guaranteed by the State Government. The Tamil Nadu Water Supply and Drainage Board is authorised periodically to raise loans and float debentures. The burden of the cost of water supply in its entirety is passed on to local bodies who return the loans over a period of 20 to 25 years.

Madras City Water Supply

13.25 A beginning in the city's Water Supply system, was made in 1870, when a diversion weir was constructed across Kortaliyar river, allowing its flood-waters to drain into the Cholavaram lake. The water is thence conveyed to the Red Hills Lake through an open earthern channel. The conduit from Red Hills to Kilpauk has since that time been duplicated and provided with 40 mgd. rapid-gravity filters. The distribution system was extended and diversified with provision for underground and overhead storage. This, in addition to other connected sources, has provided Madras City with 45 mgd. for many years. This has however been a precarious source, as during the failure of a monsoon, the supply dwindled to rates as low as 20 mgd. As a further improvement of drinking water conservation, the channel from Poondi was lined to reduce transit losses and the entire supply from the ayacut at Kortaliyar river was reserved for Madras City even to the exclusion of customary irrigation rights. This has made possible an increase in supply to the city of 20 million gallons which, in turn raised the per caput water supply to 25 gallons per day. A project to secure for South Madras the flood waters of the Coleroon river at Veeranam is in the process of being implemented. In the exploitation of ground-water sources through tube-wells, bore-wells, etc., the need to re-charge aquifers and prevent over-draughts which have in the past led to inland shifting of the inter face between sea water and inland ground-water has to be borne in mind.

Rural Water Supply

13·26. The main sources of water-supply in Tamil Nadu are :—(1) The Cauvery joined within

the State by the Amaravati, the Bhavani, and the Tamiraparani, (2) precipitation in the State from the two monsoons (100 cm. annually), (3) Subsoil and ground water contained in aquifers and springs and educed through natural or applied pressure. It is known that the first two sources have been inadequate to meet the water requirements of the State for irrigation, for drinking and for industrial uses. The river-flow itself cannot be used any more intensively for augmenting drinking water supplies than at present. Accelerated exploration of water resources through electric power or the deepening of wells does not automatically extend water potential but makes for competitive and eventually conflicting demands on limited resources. When a community's demand for water exceeds what it is able to harness (*a*) from the surface run-off, (*b*) from the prevention of losses through percolation and evaporation, and (*c*) from impounded water only partly replenished in aquifers and artesian wells, any extra water that a ratepayer will get can only be at the expense of his neighbour. This position has been reached in many development blocks. It is estimated that 90 per cent of all the water resources available in the State is already in active use.

13·27. Not all the available water is potable. Much of it is saline or brackish ; part of it is too hard and others contain fluorides in excess or not at all ; and all these factors call for the chemical treatment of water. At many places the water has become infested at the source with carriers of water-borne diseases. A considerable proportion of water is chemically sub-standard and bacteriologically, unsafe. Water from open step-wells, and from " Uranies " condemned as unpotable by the King Institute, Guindy, continues to be used for drinking in many villages for want of any alternative. The Public Health Institute at Nagpur and the Research Institute at Kodangayur have devised low-cost filtration devices for domestic as well as industrial use. The organisation of rural water-supply has therefore in the past meant the rationalisation and extension of local facilities already in use and the extension of devices to meet the specific needs of groups of villages in the State. Scattered benefits have been conferred on the rural community in India through several agencies over the Five-Year Plan periods. The plurality of agencies in local development has reflected not only the massiveness of the problem in the early stages, but also the multiplicity of criteria that had to be employed to obtain geographically equitable and technically balanced results and the limitations on resources which had to be spread thin over a wide area.

13·28. Of a total of 120 millions living in scarcity areas,90 per cent did not have even one safe drinking water source and as computed in 1963, a sum of of Rs. 1,000 crores would have been necessary then for the provision of such a facility. In the Fourth Plan, an amount of Rs. 150 crores was allocated to Tamil Nadu against an actual expenditure of Rs. 5·88 crores under the Third Plan. By 1965, 23,413 new drinking water wells had been constructed and 24,111 drinking water wells renovated. As on March 1970, there existed in Tamil Nadu 3,447 overhead tanks, 22,238 hand-pumps and 60,049 draw wells. A good many villages in the State had one or more of these amenities which however, needed to be upgraded.

13·29. Table Nos. 13-1 and 13-2 summarise the present position of Rural Water-Supply facilities now available in the State.

TABLE 13-1

Drinking Water-Supply position in Tamil Nadu as on 1st July 1973—(By hamlets)

Serial number and item	*Number*
(0)	(1)
1 Total number of hamlets (inhabited).	52,658
2 Number of hamlets *not having* any source of water-supply.	4,653
3 Number of hamlets having at least one source of water-supply.	48,005
4 Number of hamlets having potable water.	44.322
5 Number of hamlets *not having* potable water.	3,683
6 Number of hamlets whose sources of water-supply is free from endemic area.	45,792

(0)	(1)
7 Number of hamlets whose sources of water-supply is *not free* from endemic area.	2,213
8 Number of hamlets having adequate water-supply.	33,519
9 Number of hamlets *not having* adequate water-supply.	14,486

Source : Directorate of Rural Development, Government of Tamil Nadu, Madras.

TABLE 13-2.

Drinking Water-Supply position in Tamil Nadu as on 1st July 1973—(By Existing sources).

Serial number and source	*Number*
(0)	(1)
1 Wells	72,135
2 Overhead Tanks	4,600
3 Ground level Reservoir	1,414
4 Automatic pressure tanks	993
5 Bore wells, tube wells, hand-pumps, etc.	29,809

Source : Directorate of Rural Development, Government of Tamil Nadu, Madras.

Rural Sanitation

13·30. The attempts at rural sanitation in Tamil Nadu have been rudimentary. The Poonammallee Research Institute has developed an economical waterseal latrine which could be fabricated from local resources and building materials, together with a leach pit which is used for final disposal. Extension work is being undertaken as a pilot project in four districts as part of a research-*cum*-action programme. All the 52,658 hamlets thus remain to be provided with minimal arrangments for a centralized system of disposal of sullage and sewerage as a vital part of the Community Development Programme. Night-soil is still collected in a great many places from household latrines and conveyed to a composting pit by carts. As for inorganic and organic refuse from cafes, restaurants, houses, hotels, markets and factories which constitute the bulk of solid refuse, no satisfactory arrangements exist. A few panchayats have aracrobic oxidation ponds from which solid wastes are now being separated at present. Septic tanks, soakage pits and organised subterranean drainage are thus still the exception rather than the rule in the village.

OBJECTIVES AND TARGETS

13 31. The goal of Tamil Nadu Health policy is to improve the health of the population, particularly the 60 per cent who are not adequately served to-day through an integrated administration of public health, nutrition and family planning programmes to promote the additional status of the people with particular attention to the economically vulnerable segments of the population, to undertake a more vigorous campaign for family planning, and to provide protected and adequate water supply and sanitary facilities to all households starting with the most backward blocks.

HEALTH SERVICES

13·32. A small, economic and self contained multi-purpose dispensary called a Mini-Health Centre (M. H. C.) will provide maternity and child welfare, family planning, preventive and curative health care, applied nutrition and medical relief services. Each mini-health centre will serve 10,000 persons living within the Panchayat and this involves the establishment of 1,000 new mini-centres and re-organisation of the existing 2,700. Pharmacists numbering 3,700 will be recruited and trained exclusively from among matriculates in the villages and will be plaeed in charge of dispensaries in the mini-health centres located in their villages. These dispensaries will serve as extensions of the block level health centres which are under the supervision of medical officers. Siddha Wings will be added to these mini-health centres in the form of small rural dispensaries. 374 poly-clinic centres comparable in scale and hierarchical status to the Block Primary Health Centres, will be formed by converting and upgrading the existing facilities a the block level. These will serve the mini-health centres and a population of 80,000 to one lakh with added bed-strength. Eighty-six taluk headquarters hospitals will be up-graded to poly-clinic hospitals with a minimum of associated specialities. They will also have a Siddha wing of ten beds each.

13·33. Above these will be the District General Hospital, with a bed-strength of 400 to 650 and the entire range of specialities, together with a Siddha Wing of 20 beds and a Homeopathic wing of 10 beds. Two of these hospitals will also become teaching hospitals contributing to an aggregate State output of 1,000 graduate doctors per annum. This will be supplemented by an out-turn of 100 doctors per annum specialised in indigenous and Homeopathic medicine. The doctor-population ratio will be raised to 1 : 3,000. The number of hospital beds will likewise be raised to one bed per thousand of population and the number of nurses raised to one nurse per five beds. The auxiliary nurse-midwife ratio to the population will be stepped upto 1 : 5,000 and the pharmacist ratio to 1 : 10,000. Full-fledged health laboratory services will be set up at the State, Regional, District General Hospital, Poly-clinic Hospital and Poly-clinic centre levels.

13·34. The proposed and present designation of these centres are indicated below :

Proposed Designation	*Present Designation*
District General Hospital ..	District Head Quarters Hospital.
Poly-Clinic Hospital ..	Taluk Head quarters Hospital.
Poly-Clinic Centre ..	Primary Health Centre.
Mini-Health Centre ..	Sub-centre or Maternity and Child Welfare Centre.

MEDICAL EDUCATION

13·35. A programme of restructuring and upgrading of medical education at all levels (Pre-clinical, para-clinical, clinical, dental and nursing) involves the upgrading of two district hospitals to teaching hospitals, besides the opening of a post-graduate centre in Madras, a Homeopathic College and a second indegenous College of medicine.

13·36. Special attention will be devoted to the promotion of medical research work for which more facilities and equipment will be provided. The proposal for a three-year diploma course to meet the shortage of doctors in the rural areas, which was actively contemplated in the Approach to the Fifth Plan (Union Planning Commission), is really not germane to the problems of Tamil Nadu. For, the State's present 10,000 medical graduates will have by 1981–82 increased to 16,000 fulfilling the target-ratio of one doctor to 3,000 of the population. Rather it is a problem of more even distribution of a given supply of doctors as between the rural and urban areas by an arrangement which will conform to the State Government's avowed policy of devising an extensive and suitably equipped health service that is easily accessible to the bulk of the rural population.

NUTRITION

13·37. The nutrition programme will be directed to the vulnerable sections of the population, in particular pre-school children, pregnant and nursing women through "Kuzhanthaigal Kappagams" which are to be increased to 12,500 and through 15,300 pre-primary sections in appropriate primary schools. The feeding programmes will meet at least a third of the daily requirements for calories and nutriments of 26,00,000 children below six years of age, who constitute 50 per cent of the target population of the Perspective Plan for nutrition. The school-feeding programme will be continued and strengthened. Nutrition education will be imparted from the nursery through secondary schools to the University level.

FAMILY PLANNING (TARGETS)

13·38. The Family Planning Programmes are aimed at reducing the present birth-rate of 32 births per thousand to 25 in 1979 and to 22 in 1984 through intensification of effort, motivation and extension education. At this desired birth-rate, population of the State will be 465·79 lakhs in 1979 and 498·4 lakhs in 1984. To attain these birth-rates by 1979 and 1984 respectively, 58 couples per thousand population out of 1,175 couples per thousand will be sterilised by 1979 and an additional 50 by 1984. I.U.C.D. users will increase from 1·4 per thousand of population in 1972 to 3·0 in 1979 and 5·0 in 1984. Conventional contraceptive users will increase from 1·7 per thousand of population to 15·0 in 1979 and 23·0 in 1984.

13·39. This is based on a combination of targets, namely, 12 sterilization, 4 I.U.C.D.'s and 4 conventional contraceptives for every thousand of population and it has been computed that this "mix" among other measures would limit population growth in Tamil Nadu to the desired level by 1979. An integral part of education for family planning through school and out-of-school programmes, through the radio, films, posters, hoardings and other audio visual mass media will aim at purveying information about specific contraceptive methods, at removing misconceptions and fears regarding the consequences of sterilization, and at explaining the health, economic and ethical values of the small family. Population education will be incorporated in the school curriculum and a University centre of population studies has accordingly been suggested.

WATER SUPPLY AND SANITATION

13·40. Over 70 per cent of all urban areas have already been provided with piped and protected water-supply. The remaining 30 per cent or 562 towns are covered by on-going schemes which should be completed by 1976-77. In the rural areas, assured sources of potable water, as distinct from that used for irrigation, should be provided to all citizens of Tamil Nadu by 1975.

13·41. Construction of additional sanitary latrines, scavenge pits and other environmental sanitation works in the rural areas will be undertaken. Industries will be provided with safe disposal arrangements and monitoring of the rivers and air for pollution will be undertaken. Provisions will also be made for the conservation, disposal and re-use of water for irrigation, drinking and industrial uses, by a single agency like the Water and Drainage Board. Programmes will also be initiated for the prevention of pollution and contamination of the environment (the atmosphere and water resources in particular) by domestic and industrial effluents and fumes and gaseous emanations.

PROGAAMMES OF DEVELOPMENT AND EXPANSION IN THE PERSPECTIVE PLAN PERIOD

13·42. Development projects to be implemented the Perspective Plan period are presented below under the following heads :—

(*a*) Health Services and Education.

(*b*) Family Planning.

(*c*) Nutrition.

(*d*) Water Supply and Sanitation.

HEALTH SERVICES AND EDUCATION

13·43. Each Mini-Health Centre (Present sub-centre) will serve 10,000 people and will have a full or part-time doctor and other auxiliary personnel totalling about 8, along with a Siddha, Unani or Ayurvedic dispensary. It will be a small economical, multi-purpose, independent health unit undertaking preventive and curative work and it will refer more complicated cases to the poly-clinic centre.

13·44. The Poly-clinic Centre (present Primary Health Centre) will cater to a population of 80,000 to 1,00,000. Each centre will have 30 beds for medical, surgical, obstetric and gynaecological cases inclusive of 4 beds for tuberculosis and 2 beds for infectious diseases. The 23 district development plans provide for Poly-clinic centres. These centres are to be staffed with 1 physician, 1 obstetrician, 1 nutritionist, 1 laboratory technician, 3 pharmacists and 6 nurses and other ancillary personnel inclusive of those already in position. There will be 2 ambulances, and services of the doctors will be available to the Mini-Health Centres under its purview. The Taluk Hospitals are to be upgraded gradually into Poly-clinic Hospitals with 90 beds with additional 12 specialities and a Siddha wing with ten beds. Of the 90 beds, ten will be for tuberculosis and five for Infectious diseases.

13·45. The District Hospitals are to be upgraded gradually into District General Hospitals with 400 to 650 beds each, 22 specialities and the required additional medical and para-medical personnel. Of these, 30 will be for Tuberculosis and 20 for Infectious diseases. Each District Hospital will also have a Siddha Wing with 20 beds an a Homeopathic Wing of 10 beds. This hospital should be adequately equipped with an intensive coronary care unit a dialysis unit, adequate opthalmic services, a psychiatric clinic, a blood transfusion service and an out-patient poly-clinic.

13·46. From 1979–80 all units in the consolidation phase of the Malaria Eradication Programme must enter the maintenance phase.

13·47 The Filaria Control Programme will seek to afford protection to 13 millions of the population exposed to the risk of filariasis.

13·48 The scheme to ensure hundred per cent primary vaccination coverage of all new borns has led to some slackening in revaccination coverage. It is proposed to concentrate on re-vaccination coverage during the period of the Perspective Plan.

13·49. The Governmen of India have recommended to the State Government that the basic health services in those primary health centres which fall within 'maintenance phase area' of the Malaria Control Programme be strengthened. Such augmentation according to a certain staffing pattern as indicated by them will be eligible for full Central assistance.

13·50 The Cholera Control Programme now functions in 50 per cent villages in each block of the four epidemic districts, and will be extended to the remainmg 50 per cent of the villages.

13·51 Triple Vaccination and administration of polio-vaccine to Pre-school childcren will be undertaken during the Perspective Plan period.

13·52 To improve the maintenance of registers of births and deaths in the rural areas and the classification of diseases peculiar to the locality, it is recommended that registration work be entrusted to Health Assistants. Again to improve the compilation of mortality statistics it is proposed that primary health centres undertake such registration under the guipance of a specialised unit.

13·53. It is proposed to cover the entire State with control programme for leprosy in 10 years.

13·54 The construction of a 100-bed hospital for cancer in the campus of the Government Headquarters Hospital, Kancheepuram, is proposed. This would be affiliated to the Arignar Anna Memorial Cancer Institute, which should be expanded and further developed as the Regional Arignar Anna Memorial Cancer centre with laboratories and research facilities, radio therapeutic and radio diagnostic facilities, and bed-strength going up to 500. Centres for the detection and treatment of cancer are to be established in all teaching hospitals and district hospitals.

13·55. Chest clinics will be set up in the taluk centres. Eight additional B.C.G. Teams will be formed.

13·56 Intravenous infusion fluids, frozen dry blood plasma, frozen dry small-pox vaccine, other prophylactic vaccines like cholera, T.A.B., etc. and anti-sera are at present being produced at the King Institute, Guindy, for the entire State of Tamil Nadu. Improved techniques have to be adopted to meet the growing demands and the higher standards set by the W.H.O.

13·57 Upgrading the drug control administration and the establishment of a drug control laboratory are essential to check the production and distribution of spurious drugs.

13·58 The District Headquarters Hospitals at Tiruchirappalli and Salem will be converted into teaching hospitals and equipped to train 100 M.B.B.S., students in clinical subjects.

13·59 The Kilpauk Medical College Hospital, Royapettah Hospital, Chingleput Medical College Hospital, Tirunelveli Medical College Hospital and Coimbatore Medical College Hospital are to be upgraded so as to make them full-fledged teaching hospitals.

13·60 It is proposed that Civil Assistant Surgeons and Civil Surgeons who are now permitted both to teach and carry on private practice be made into full-time teaching staff. They will be paid an appropriate compensation for loss incurred in discontinuing practice.

13·61 A post-graduate Medical Centre at Adyar, Madras will be established.

13·62 A sum of Rs. 25 lakhs will be invested and medical research schemes will be financed with the proceeds therefrom.

13·63 It is proposed to set up a Referral Laboratory at the State level, two Regional Laboratories and laboratories at the district and taluk levels.

13·64 The nurse-to-bed ratio is to be raised to 1 : 5. To achieve this ratio, a short-fall of 3,000 nurses will have to be made good by increasing the intake of students at the existing Nurses' Training Schools.

13·65 The annual admission for training in Dentistry has to be raised in a phased manner to achieve a target ratio of one dentist for 50,000 of the population. It is propsed to start an M.D.S. Course in prosthetics, orthodontia and oral pathology in the dental wing. Every Poly-clinic hospital will have a dental surgeon. District General Hospitals of 600-bed strength would have five specialists in the rank of Civil Surgeon.

13·66 The admission to the three year B. Pharm. degree course should be restricted to candidates who have passed the two year pre-degree course in life sc sce or the inter (pharmacy) examination. A ne course leading to master's degree in Pharmacy will replace the existing M.Sc., (Pharmacy) course. A separate Institute of Pharmacy has to be formed.

13·67 It is proposed to start a second college of Indigenous Medicine in Madras City, a Post-graduate course in Siddha for training doctors in indigenous meidcine (Siddha), and an orientation couse in indigenous medicine for allopathic doctors with an M.B.B.S., degree. Programmes for Research in a phased manner will be organised in fundamental, clinical, drugs and pharmaceutical disciplines. A Homeopathic College of an accepatable standard will be started in the State.

FAMILY PLANNING (PROGRAMME)

13·68 As regards Family Planning Programme, people have not only to be informed and helped to link family planning to their family goals and aspirations but some of the social and cultural factors that stand in the way of adoption of the measures have to be overcome simultaneously by means of Extension Education and Publicity.

13·69 The economics of and the need for planned families will be taught in all schools and Colleges and also at the out-of-school education centres. Incorporation of population education as an integral part of all teacher-training programmes at graduate and secondary levels is suggested.

13.70. Long-term training is to be organised for different types of family planning personnel. A month's internment in a primary health centre will henceforth be compulsory for Para-medical Health Workers. Graduation and certification will be conditional upon such apprenticeship or orientation.

13.71. In this field of social work, it is important to enlist the support of the District Staff of other departments of the State Government, such as Women's Welfare, Agriculture, Labour, etc., and also of Group leaders, arbiters of Social and religious opinion and Members of Parliament and State Assemblies.

13.72. To bring about the harmonious and co-ordinated participation of policy impact groups in this programme, each industry, plantation business house, public and private undertaking will constitute a Health, Welfare and Family Planning Committee. Each industry will be encouraged to develop a unit-wise strategy for programme implementation.

13·73. The evaluation task will focus on the purposive assessment of the impact of the programme, the identification of areas of success and failure the reasons thereof and the feeding back of this information for the modification and improvement of the programme and its implementation.

13.74. It is proposed that certain demonstration projects be designed to expand the capacity of the existing family planning units to provide medical or motivational services both quantitatively and qualitatively.

13.75. An integrated administrative service for Health, Family Planning and Nutrition, including maternal and child care may be established.

NUTRITION

13.76. About 12,500 Kuzhanthaigal Kappagams and pre-primary sections attached to the 15,000 primary schools in the State will be opened to provide protein enriched foods for 9·18 lakhs children of the age 0–5.

13.77. Educational and feeding programmes for expectant and nursing mothers and mal-nourished children will also be organised.

WATER SUPPLY AND SANITATION

13.78. Urban Water Supply Programme to cover a population of 5·6 millions, supplying 25 galions per day per capita will be implemented.

13.79. Urban drainage to cover a population of 10·9 million people will be provided.

13.80. Madras City Water Supply will be augmented from some among the four sources and a comprehensive improvement of the City drainage system will be undertaken.

13.81. Water Supply will be provided to 4,653 hamlets where there are no water sources at present. It will be augmented in 2,213 hamlets which are situated in endemic areas, and 14,486 hamlets where the water-supply is inadequate.

13.82. Disposal of human excreta through the septic tank or leach pit is recommended for adoption in rural areas. The subject of environmental sanitation should be entrusted to the Rural Development Department.

13.83. The Tamil Nadu Water Supply and Drainage Board will become the overall agency for planning, co-ordinating, supervising and executing all programmes of water supply and drainage in the urban and rural areas.

13·84. So long as the entire urban belt is not covered with a sewerage system, night soil disposal will remain a disturbing and unsettling element in our public health programmes. Solid waste disposal has become a neglected function and it should be impressed upon the municipalities and other local bodies that their primary concern is environmental sanitation.

13.85. A programme for industrial waste disposal and control of water pollution, air pollution, etc., is to be initiated. A centre for Environmental Engineering will be established to train candidates at Post-Graduate and Doctoral levels in water supply, treatment, waste water collection and disposal, industrial waste treatment, atmospheric pollution, health and industrial hygiene.

13.86. A Centre for Urban Engineering to deal with urban transportation, urban housing and urban environment should be set up.

RESEARCH AND DEVELOPMENT

Health Services and Family Planning

13.87. The projects under this head would include—

Bio-Medical Research in Family Planning and Reproductive Physiology;

Bio-Chemical investigation on calcium oxalate formation in the kidneys and urinary tract ; Iso-enzymes of LDH and phosphatases in malignancy, cryoglobins in infections of the urinary tract—their role in kidney damage ; specialised cell for service-analysis of blood and urine for some special factors;

Research Haemotology on Anaemias and Leukaemias and the study of prevalence of Anaemia among pregnant women in rural and urban areas;

Clinical Pharmacology;

Research on Rural filariasis;

Study of efficacy of B.C.G. Vaccination in the new-born;

Expansion of research and teaching facilities at Diabetic Research Cell, Government Kilpauk Medical College, Madras;

Occupation Therapy and Social Therapy combined with the projection sheltered workshop;

Detection of Genetic diseases before onset;

Pre-malignant Lesions and Oral Cancer and treatment and rehabilitation of Oral Cancer patients ; and

Starting of a Retinal Clinic in the eye department of Madurai Medical College, Madurai.

Nutrition

13.88. The nutrition effort will concentrate heavily on Nutrition Education in all schools and colleges accompanied by research and evaluation.

Growth and Development of children in Tamil Nadu—a ten-year longitudinal and cross-sectional study of boys and girls from pre-school to teenage level.

An expanded and in some aspects new Programmes to counter food adulteration through a Food Control Cell, two Regional Nutrition Laboratories and Programme to ensure food, meat and milk and market sanitation.

Water Supply and Sanitation

13.89. A Public Health Engineering and Development Centre will be set up to deal with research and training in the following subjects ;

To develop simple methods of water transport for rural water supplies;

Sewage treatment and re-use;

To promote the use of new constructions, equipments to speed up implementation of water supply and sewage work;

Sewage flow patterns;

Industrial wastes treatment; and

Development of work on leak detection and corrosion control.

It is necessary to commence pilot studies in the desalination of sea-water on a large scale and for its eventual use for domestic and industrial purposes.

Administration

13·90. The Administrative proposals aim at the integration of health, family planning and nutrition into a single service on the one hand and decentralization of decision-making at various levels of responsibility on the other hand. It is recommended that one Director may be in charge of all the three subjects. Each of the three subjects will be under a Joint Director who will be the decision-making authority in his area. At the District Headquarters level, there will be a Civil Surgeon, who will be the Superintendent of the District General Hospital and who will be absolved of his touring duties. There will also be two other District Specialists sharing the district jurisdiction between themselves and will be in charge of Health, Family Planning and Nutrition. For every three or four districts, there will be a Regional Assistant Director of Health, Family Planning and Nutrition who will be in overall charge and will be assisted by a co-ordination committee.

13.91. It is suggested that voluntary contributions and community participation for the programmes of Health, Family Planning and Nutrition are encouraged as the State itself connot find all the finances and man-power for building an ideal infrastructure of health services.

13.92. A scheme for the collection of a health cess of 0·5 per cent of individual incomes in the rura land urban areas is also proposed.

Perspective Plan outlay on Health, Family Planning, Water Supply, Sanitation and Nutrition.

(Rs. in crores)

Item	*Fifth Plan*	*Sixth Plan*	*Total*
(0)	(1)	(2)	(3)
Health and Family Planning.	50·00	120·00	170·00
Nutrition	58·00	145·00	203·00
Water Supply and Sanitation.	100·00	220·00	320·00
Total	**208·00**	**485·00**	**693·00**

Details of outlay on Health and Family Planning—1974-75 to 1978-79.

(Rs in crores)

Serial number and name of the Project	*Perspective Plan allotment*
(0)	(1)
1 District General Hospital ..	4·88
2 The Poly-clinic Hospital	8·72
3 The Poly-clinic Centre	6·75
4 The Mini-Health Centre	13·66
5 Malaria	0·21
6 Filariasis	0·45
7 Small-Pox	1·46
8 Strengthening of Basic Health Services.	2·16
9 Epidemic Diseases	0·05
10 Immunization	0·02
11 Vital Statistics Registration System	0·01
12 Leprosy	1·42
13 Cancer	0·41

(0)	(1)
14 Tuberculosis	0·12
15 Production of Drugs including Biologicals.	0·13
16 Drug Control	0·23
17 Conversion into Teaching Hospitals.	0·15
18 Upgrading of these Teaching Hospitals.	0·24
19 Full-time Non-Practising Units ..	..
20 Post-Graduate Medical Institution.	0·64
21 Medical Research	0·07
22 Laboratory services	0·63
23 Nursing Services	0·37
24 Dentistry or Dental Surgery ..	0·05
25 Pharmaceutical Education ..	0·03
26 College of Indigenous System of Medicine.	0·02
27 Post-Graduate Education in Siddha.	0·01
28 Orientation in Siddha for M.B.B.S. Graduates.	0·01
29 Research in Indigenous Medicine.	0·03
30 Homoeopathy	0·03
31 Sterilizations, I.U.C.Ds. and Conventional Contraceptives: Targets.	5·97
32 Extension, Education and Publicity in Family Planning.	0·36
33 Populataion Education and Training.	0·11
34 Professional Training	0·10
35 Family Planning in Medical Education.	0·15
36 Incentive for Family Planning ..	0·16
37 Involvement of other departments.	..
38 Action by Special Organised Groups.	..
39 Evaluation Tasks	0·14
40 Demonstration Projects	0·05
41 Integration and Co-ordination ..	..
Total	**50·00**

RESEARCH AND DEVELOPMENT PROJECTS UNDER HEALTH AND FAMILY PLANNING.

Bio-Medical Research in Family Planning and Reproductivity Physiology.

Bio-Chemical investigation on certain diseases in man.

Research Haematology on Anaemia and Leukaemia and the study of Prevalance of Anaemia among pregnant women in rural and urban areas.

Clinical Pharmacology.

Research on Rural filariasis.

Study of efficacy of B.C.G. Vaccination in the New-Born.

Expansion of research and teaching facilities at Diabetic Research Cell, Government Kilpauk Medical College, Madras-10.

Occupation Therapy and Social Therapy combined with the project on sheltered work shop.

Detection of Genetic Diseases before onset.

Pre-malignant lesions and Oral Cancer and Treatment and rehabilitation of Oral Cancer patients.

Starting of Retinal Clinic in the eye department of Madurai Medical College, Madurai.

Details of outlay on Nutrition—1974-75 to 1978-79

(Rs. In Crores)

	Serial number and name of the Project	*Perspective Plan allotment*
	(0)	(1)
1	Kuzhanthaigal Kappagam/Pre-primary Sections.	48·26
2	Expectant and Nursing Mothers..	9·10
3	Education, Reasearch and Evaluation.	0·14
4	Prevention of Food Adulteration.	0·50
5	Administration	..
	Total	**58·00**

RESEARCH AND DEVELOPMENT PROJECTS UNDER NUTRITION

Growth and development of children in Tamil Nadu—A 10-year longitudinal and cross-sectional study of boys and girls from pre-school to teenage level.

Details of outlay on Water Supply and Sanitation—1974-75 to 1978-79.

(Rs. In Crores)

	Serial number and name of the Project	*Perspective Plan allotment*
	(0)	(1)
1	Urban Water Supply	35·39
2	Urban Drainage	18·48
3	Madras City Water Supply and Drainage.	10·41
4	Rural Water Supply	21·86
5	Rural Sanitation	0·78
6	Tamil Nadu Water Supply and Drainage Board.	0·08
7	Solid Waste Disposal	10·41
8	Industrial Waste Disposal ..	0·78
9	Centre for Environmental Engineering.	0·21
10	Centre for Urban Engineering ..	0·08
11	Research and Training in Public Health Engineering.	0·44
12	Desalination..	1·04
13	Administration, Organisation and Finance.	0·04
14	Voluntary Organisations	..
15	Financing	..
	Total	**100·00**

RESEARCH AND DEVELOPMENT PROJECTS UNDER WATER SUPPLY AND SANITATION

To develop simple methods of water treatment for rural water supplies.

Sewage treatment and reuse .. ..

To promote the use of new constructions, equipments to speed up implementation of water supply and sewage work.

Sewage flow patterns .. .. ..

Industrial wastes treatment .. ..

Public Health Engineering and Development Centre.

Development of work on leak detection and corrosion control.

Details of outlay on Health and Family Planning—1979-80 to 1983-84.

(Rs. In Crores)

	Serial Nnumber and name of the Project	*Perspective Plan allotment*
	(0)	(1)
1	District General Hospital ..	17·36
2	The Poly-Clinic Hospital	21·04
3	The Poly-Clinic Centre	16·05
4	The Mini-Health Centre	34·34
5	Malaria	..
6	Filariasis	0·76
7	Small-pox	2·76
8	Strengthening of Basic Health Services.	5·74
9	Epidemic Diseases	0·12
10	Immunization	0·03
11	Vital Statistics Registration System.	..
12	Leprosy	2·46
13	Cancer	0·86
14	Tuberculosis	0·33
15	Production of Drugs including Biologicals.	0·14
16	Drug Control	0·36

(0)		(1)
17	Conversion into Teaching Hospitals.	0·27
18	Upgrading of three Teaching Hospitals.	0·71
19	Full time Non-practising Units ..	0·68
20	Post-graduate Medical Institution ..	1·70
21	Medical Research	..
22	Laboratory Services	1·35
23	Nursing Services	1·06
24	Dentistry or Dental Surgery ..	..
25	Pharmaceutical Education	0·08
26	College of Indigenous System of Medicine.	0·03
27	Post-Graduate Education in Siddha.	0·03
28	Orientation in Siddha for M.B.B.S.	..
29	Research in Indigenous Medicine ..	0·09
30	Homeopathy	0·03
31	Sterilizations I.U.C.Ds., and Conventional Contraceptives: Target.	9·20
32	Extension, Education and Publicity in Family Planning.	0·97
33	Population Education and Training	0·20
34	Professional Training	0·23
35	Family Planning in Medical Education.	0·40
36	Incentives for Family Planning ..	0·27
37	Involvement of other Departments.	..
38	Action by Special Organised Groups.	..
39	Evaluation Tasks	0·26
40	Demonstration projects	0·09
41	Integration and Co-ordination ..	..
	Total ..	**120·00**

RESEARCH AND DEVELOPMENT PROJECTS UNDER HEALTH AND FAMILY PLANNING

Bio-chemical Investigation on certain diseases in man.

Clinical Pharmacology .. .. ..

Study of efficacy of B.C.G. Vaccination in the New-Born.

Expansion of research and teaching facilities at Diabetic Research Cell, Government Kilpauk Medical College, Madras-10.

Detection of genetic diseases before onset.

Pre-malignant lesions and Oral cancer and treatment and rehabilitation of Oral Cancer patients.

Starting of a Retinal clinic in the eye Department of Madurai Medical College, Madurai.

Details of outlay on Nutrition—1979-80 to 1983-84

(Rs. In Crores)

	Serial number and Name of the Project	*Perspective Plan allotment*
	(0)	(1)
1	Kuzhanthaigal Kappagam/Pre-primary Sections.	140·86
2	Expectant and Nursing Mothers ..	2·86
3	Education, Research and Evaluation.	0·44
4	Prevention of Food Adulteration ..	0·84
5	Administration	
	Total ..	**145·00**

Details of outlay on Water-Supply and Sanitation 1979-80 to 1983-84.

(Rs.In Crores.)

	Serial number and Name of the Project	*Perspective Plan allotment*
	(0)	(1)
1	Urban Water-supply	44·15
2	Urban Drainage	106·92
3	Madras City Water Supply and Drainage.	14·72
4	Rural Water-Supply	27·59
5	Rural Sanitation	3·73
6	Tamil Nadu Water Supply and Drainage Board.	0·09
7	Solid Waste Disposal	18·40
8	Industrial Waste Disposal	1·38
9	Centre for Environmental Engineering.	0·31
10	Centre for Urban Engineering ..	0·09
11	Research and Training in Public Health Engineering.	0·78
12	Desalination	1·84
13	Administration, Organisation and Finance. ..	
14	Voluntary Organisations	
15	Financing	
	Total ..	**220.00**

RESEARCH AND DEVELOPMENT PROJECTS UNDER WATER SUPPLY AND SANITATION.

To develop simple methods of water treatment for rural water supplies.

Sewage treatment and re-use.

To promote the use of new constructions, equipments to speed up implementation of water-supply and sewerage work.

Public Health Engineering and Development Centre.

Development of work on leak detection and corrosion control

CHAPTER 14

Rural Development

14·1. Ameliorating the living conditions of the less privileged people is one of the important objectives o the Perspective Plan. In this context the rural development programmes assume great significance, since over 70 per cent of the State's population live in rural areas. Although the programmes envisaged under various sectoral heads aim at promoting the welfare of the people in general and developing the economy as a whole, special effort is to be made to strengthen the rural base, by stream-lining agricultural extension services, providing better educational facilities and health services and by devoting greater attention to sanitation, housing, protected water-supply etc.

Community Development Programme

14·2. The Community Development Programme which was launched in 1952 aims at achieving rural development through people's participation and initiative . The unit of the programmes is the Block, with its Panchayat Union and l e constituent village panchayats. In each block, the Block Development Officer, with a team of extension workers coordinate the development schemes in the Block. The Government provide grant for the schemes on the basis of a schematic budget and the Panchayats too raise considerable amount of resources through imposition of local taxes, levies, etc.

14·3. The rural development programmes in the Perspective Plan envisage the provision of basic minimum needs which will improve the quality of life of the rural people and create substantial employment opportunities in rural areas. The Plan also lays emphasis on the need to strengthen the Panchayat Raj Institutions during the Perspective Plan period, so that they can become an effective instrument of social change.

14·4. During the last two decades of planned development, the Panchayat Raj Institutions have come to occupy a prominent place in the organisational arrangement to uplift the rural masses. The Panchayat Raj Institutions are the main links in extending the benefits of progress to the rural people. There are now 374 Panchayat Unions (Blocks) comprising of 12,628 village panchayats, 598 town panchayats and 12 panchayat townships in Tamil Nadu covering a population of 323 lakhs.

14·5. The first Five-Year Plan envisaged the covering of one-fourth of the rural population by the end of the Plan under the Community Development Programme. About 66 blocks were brought within the scope of the programme by the end of the Plan and about Rs. 4·28 crores were spent on water supply and sanitation, communication and other schemes. The Second Plan also witnessed some significant achievements and the number of community development blocks increased to 222. Nearly Rs. 9·72 crores were spent, of which a third of the expenditure was on water supply and sanitation. By the end of the Third Plan, the entire State was covered by the programmes with 374 blocks. Simultaneously, the total expenditure on Community Development went up to Rs. 22·47 crores. Special importance was attached to improvement of communications which accounted for an outlay of Rs. 6·42 crores and of water-supply, Rs. 5·88 crores. A total of Rs. 12·41 crores was spent on the Community Development Programme during the Annual Plan period 1966–69. The Fourth Plan continued to lay emphasis on link roads and water-supply and the anticipated expenditure on Community Development Programme is about Rs. 23·64 crores.

Development Programmes in the Perspective Plan Period

Social Education

14·6. Social education promotes moral, social and economic values and infuses self-confidence among the rural mass. The two important aims of this programme are (i) mass literacy and (ii) orientation of the rural people in civic consciousness and promoting leadership qualities. There are now 13,420 Social Education Centres in the State engaged in accomplishing this task. The Perspective Plan envisages establishment of more Community Recreation Centres, Rural Radio Forums, Libraries, Reading Rooms, Youth Clubs, the extension of the Functional Literacy Schemes, conducting Seminars and awarding prizes. Most of these programmes will be implemented with the co-operation of the local people and will be sustained by local efforts. Financial assistance to a limited extent will continue to be provided for the conduct of district and block level seminars and for the award of prizes. It is proposed to complete the programme of having multipurpose buildings in villages to meet the needs of their common

activities. A block Circulating Library with branch libraries will be established in all Blocks. A quarterly digest on Panchayat Administration and Extension work will be brought out. It is also proposed to replace the old and condemned radio sets with new ones at the rate of 2,500 sets per annum, during the Perspective Plan period.

PHYSICAL ASSETS FOR THE EDUCATION PROGRAMME

14·7. A large number of primary schools and quite a few middle schools are poorly equipped and are housed in rented and old buildings and in sheds. This programme visualises construction of pucca buildings and provision of other equipment. The construction of buildings for elementary and higher elementary schools in the rural areas is now undertaken by the Panchayat Union and financed out of Village Works Grant. But this scheme has worked to the advantage of financially sound Panchayat Unions only. The Perspective Plan proposes to treat all the Panchayat Unions on equal terms for extending the benefits on the basis of detailed Block Plans and District Plans. The schools which do not have proper buildings of thier own will be given priority and the aided Schools will also benefit by this Scheme. It is expected that substantial local contributions will be forthcoming to meet part of the cost of implementing this scheme.

DEVELOPMENT OF AGRICULTURE, ANIMAL HUSBANDRY AND FISHERIES

14·8. The Panchayat Raj Institutions play an important role in achieving the targets of agricultural production and in the development of animal husbandry and fisheries. Their contributions to this vital sector of the State's rural economy will be in the form of extension services, supply of agricultural inputs at subsidised prices, besides various incentive schemes.

AGRICULTURE

14·9. The programmes contemplated include the following schemes :—

(i) Providing infrastructural facilities like construction of agricultural sub-depots and additional godowns, schemes of agricultural extension work like adaptive trials, demonstrations, exhibitions, etc.

(ii) Creation of common facilities for the benefit of the Village community as a whole, like purchase of implements and machinery for hiring out to farmer and construction of Community threshing floors ;

(iii) For the benefit of groups of farmers, scheme like soil conservation, community irrigation wells, reclamation of alkaline lands, etc ;

(iv) Village afforestation, Panchayat plantations, planting of avenue trees, etc; and

(v) For the benefit of the individual farmers, schemes like supply of plant protection chemicals, supply of fertilisers, supply of power-driven equipment, etc.

ANIMAL HUSBANDRY

14.10. The programmes contemplated include provison of infrastructural facilities like Service Centres, construction of additional Veterinary Dispensaries, Sub-Centres, and quarters for veterinary staff, animal husbandry extension schemes like exhibitions, printing of publicity materials and training in poultry ; projects benefiting the village community as a whole, like creation of common facilities like supply of breeding bulls, construction of cattle sheds, organisation of sewage farms, raising of fodder grasses in Panchayat porambokes and schemes to benefit individuals like encouragement of mixed farming by supply of poultry, etc., at subsidised rates, growing of fodder and grain required for cattle and poultry.

FISHERIES

14.11. The proposals for the development of fisheries in the Panchayat Union areas are broadly introduction of fingerlings, operation of fish-nurseries and maintenance and renovation of tanks.

14.12. It is considered that the financial provision need not be proposed separately for schemes relating to Agriculture, Animal Husbandry and Fisheries. A total amount may be made available and the Panchayat Union concerned may draw up the schemes in consultation with the technical officers of the different departments concerned and then allocate the funds on the basis of the specific needs of the Union.

MINOR IRRIGATION

14.13. The Panchayat Unions now maintain the tanks—the minor irrigation sources, having an ayacut of 200 acres or less. The Panchayats have also taken over a number of ex-zamin tanks for maintenance. There are about 25,246 tanks vested with the Panchayat Unions with a total ayacut of 9,84,984 acres. With the limited resources available to them, the Panchayat Unions find it difficult to maintain most of these tanks properly. The Government provides funds to Panchayats

through local irrigation grants based on their requirements as PWD specifications and also ad-hoc grants for maintenance of these minor irrigation sources. But the amount made available each year under this scheme is far from sufficient to meet the normal expenditure. There is, therefore, an urgent need to step up the grants for improving the condition of these sources and exploiting their full irrigation potential. The Perspective Plan proposes an ad-hoc yearly increase of 10 per cent over the existing local irrigation grant to meet the increasing cost of labour, materials, etc., till the restoration scheme is implemented.

14.14. A survey of minor irrigation sources is also proposed. This would involve—

(i) Preparation of estimates for bringing the tanks up to required standards;

(ii) Examination of the feasibility of raising the F. T. L., to increase the ayacut ;

(iii) Preparing up-to-date ' Descriptive Memoirs ' for these tanks; and

(iv) Improving sluices and providing rivetments, etc.

14.15. The Village Panchayats have also the additional responsibility of maintaining the supply channels in good condition in the villages. Since the old system of collective action by the cultivators in maintaining these channels under the Kudimaramath Act has practically become defunct, the Panchayats will have to undertake the annual spring cleaning of the supply channels in a systematic way as part of their development programme.

14.16. Another aspect of minor irrigation is the exploitation of ground water through open wells, filter point tube wells and deep-bore wells. The Plan envisages provision of community wells to help the weaker sections of the Society like small and marginal farmers and tenants.

Welfare of women and children

14.17. The welfare programmes for women and children are proposed to be implemented through Mahalir Mandrams and Kuzhanthaigal Kappagams. There are about 13,124 Mahalir Mandrams functioning in the rural areas with a coverage of 2 to 3 lakhs of village women, where they learn and practice better methods of home maintenance, child care, etc. The Kuzhanthaigal Kappagam Scheme covers the daily feeding of 120,000 pre-school children in the age group 3—5, and expectant and nursing mothers at the rate of 120 for each in 1,000 Kappagams spread over 47 Blocks. The Perspective Plan contemplates a composite programme of Mahalir Mandrams with pre-schools and creaches preferably situated in villages where Primary Health Centres or sub-centres are functioning. The Plan also envisages establishment of one pre-school for 8,000 and one Mahalir Mandram for every 3,000 of population instead of the present uniform pattern of 30 Mahalir Mandrams per block.

Physical assets for Rural Development Administration

14.18. Provision of full housing facilities for the staff of the Block is essential for improving their efficiency. The Union Commissioners and Extension Officers have already been provided with staff quarters. The Plan proposes to construct in the Fifth Plan period additional residential quarters, at least three in each Block for housing the important personnel of the Panchayat Union Office. The Government will provide loan assistance to the Panchayat Unions to implement this scheme.

14.19. Women teachers appointed in primary and secondary schools in rural areas, find it difficult to get proper housing facilities there. Realising this problem the Government have already taken steps to construct quarters for women teachers at the rate of 5 per Panchayat Union and about 1,510 quarters have already been constructed. The Perspective Plan envisages accelerating this programme. It is proposed to construct 17,600 houses, 8,800 each in the Fifth and Sixth Plan.

14.20. The Plan also attaches importance to the provision of housing to sanitary workers in village and town panchayats and a target of 3,000 houses in each plan is aimed at. The Government will provide loan assistance to the Panchayat Unions for this purpose also.

Rural Water Supply

14.21. Provision of drinking water supply to rural areas has been given priority in the Community Development Programme in all the

Five-Year Plans. Though appreciable progress has been made in extending potable water supply to rural areas, still a large number of villages does not have adequate supply of water. It is estimated that there are about 4,916 villages and hamlets which do not even have a single source of public drinking water supply. In about 11,814 villages and hamlets, water supply is inadequate. Another 2,230 villages and hamlets are in endemic areas which do not have protected water supply. The Plan envisages provision of protected water supply to all villages in endemic areas and adequate water supply in places where it is inadequate at present. For villages which do not have any source, water supply will be provided through simple wells or will be covered by piped water supply.

14.22. The rural areas also suffer from low standards of sanitation and lack of drainage facilities. The Perspective Plan recognises this as a health hazard to the rural mass and schemes have been formulated to tackle this problem effectively.

RURAL ROADS

14.23. Communication facilities play an important role in accelerating the socio-economic progress of an area and hence special emphasis has to be laid on the development of rural roads in order to ensure rapid growth of the rural economy. Although significant achievements have been made in the previous plans in rural road developments yet there are still large gaps in the communication system of the villages. It is estimated that about 1,068 villages and 4,476 hamlets are yet to to be connected with link roads and this calls for new formation of a length of 20,800 kilometres of roads. The Perspective Plan envisages new formation of a length of 16,000 kilometres of roads-9,600 kilometres in the Fifth Plan and 6,400 kilometres in the Sixth Plan. It is also proposed that all the existing unsurfaced panchayat union roads and at least 50% of the unsurfaced panchayat roads will be surfaced during the Fifth Plan period. Some of the panchayat union and panchayat roads are in hilly tracts and districts. Rural roads in the Nilgiris and North Arcot districts and those in Valparai, Yercaud and Kolli hills are proposed to be black-topped to prevent erosion of road surfaces during heavy rain. Black topping of all roads in Thanjavur will also be undertaken. Adequate provision has also been made for maintenance of roads. Construction of bridges and cross-drainage works are also contemplated under this scheme.

RURAL HOUSING

14.24 Housing facilities in rural areas are not adequate. A vast majority of the rural people particularly the Harijans and the landless labourers live in thatched huts amidst unhygienic surroundings. In a welfare State, the Government has to undertake the responsibility for providing adequate shelter and proper environment to the weaker sections of the society. This can be accomplished only with the co-operation of the people and the beneficiaries. During the Perspective Plan, it is proposed to vigorously pursue the programme of allotment of house-sites to rural landless labourers and other weaker sections of the society. Also, the Government will extend oan facilities in deserving cases free of interest for construction of houses.

14.25 Since the programme of construction of houses for the landless labourers and Harijans would involve special attention, it is suggested that a Rural Housing Corporation, exclusively for the purpose of undertaking rural housing construction activities may, with advantage, be established. Any special grants that may be available from the Central Government, especially for Harijans may be obtained and placed at the disposal of this Corporation.*

RURAL ARTS AND CRAFTS

14.26 Tamil Nadu is known for its handicrafts. The village industries play an important role in the development of the rural economy by providing employment opportunities on a large scale. The Perspective Plan lays emphasis on the development of handicrafts and village industries in view of the great contribution which they can make for building up the rural economy. In respect of the handicrafts, the main thrust will be on schemes to train artisans in improved production techniques and better utilisation of materials, provision of credit facilities, arrangements for marketing and organisation of co-operatives. It is also proposed

*The Government of Tamil Nadu have now set up a Harijan Housing and Development Corporation.

to develop the coir industry in the state. The Production Unit of Carpentry and Blacksmithy managed by Panchayat Unions will be strengthened by the provision of additional machinery equipments, etc., so that they can serve effectively as Service Centres, for the repair and maintenance of agricultural implements and machines, pumptess, etc. The Tamil Nadu Khadi and Village Industries Board has formulated a number of schemes for the promotion of rural arts and crafts. The Rural Industries Project Programme which is now in operation in three units will be further extended in the Perspective Plan period.

14.27. Two Rural Work Centres are functioning now in the State-one for Handmade Paper at Mamandur (Chingleput district) and another for Ceramics at Omalur (Salem district). The following schemes are proposed during the Fifth and the Sixth Plan periods : (i) establishment of 2 more Rural Work Centres (Ceramics), (ii) expansion of the Omalur Centre for Ceramics, (iii) the starting of a Functional Industrial Estate for Ceramics ; and (iv) establishment of three more Rural Work Centres for handmade paper.

Special programmes of rural development

Rural Manpower Programme

14.28. This is to be implemented in the rural areas with a view to create tangible community assets which are capable of increasing agricultural production and which would provide additional employment opportunities to the unemployed during the agricultural slack season. The scheme is now in operation in 72 out of the 374 blocks in the State. The present policy is to exclude those Blocks which have implemented the programme for about 4 to 5 years and substitute in their places, backward Blocks in order to see that the benefits are distributed over wider areas. The programme may thus be suitably extended to other areas in the State in the Perspective Plan period.

Applied Nutrition Programme

14.29. The object of the programme is to educate the people on the need to take nutritious food and to help the community to produce nutritive foods in larger measure and make them available particularly to the vulnerable sections. The programme is proposed to be extended to 30 additional Blocks in the Fifth Plan period and 60 additional Blocks in the Sixth Plan period

Crash scheme for rural employment

14.30. The Crash Scheme for rural employment envisages provision of employment opportunities for a continuous period of 10 months for at least 1,000 unemployed persons in each District of the State. The Scheme has been designed to generate additional employment through a net-work of rural projects of various kinds, which are both labour-intensive and productive. The scheme is in operation in 230 Blocks out of the 374 Blocks in the State. It is contemplated that the scheme would be extended to all the Blocks in the State during the Perspective Plan period.

Ecological planning for rural development

14.31. The modest supply of the natural resources with which Tamil Nadu is endowed has to be taken as a first premise in all considerations relating to environment and the use of resources. While the scope for varying and prolonging the use of fixed and inert resources is limited, the position is better in the case of renewable resources. These will include items like land, water and forests which are the primary bases on which rural life rests. Therefore, it is necessary to take a long term view of these resources, and work out suitable ways of conserving these resources and utilising them in an optimal way.

Research and development programmes

14.32. There is a wide range of typically rural needs like rural housing which provide scope for research and development. A number of issues concerning rural development has to be examined from the standpoint of Administrative and Socio-economic Planning. They require detailed studies and investigation by technical experts and social scientists. A Research and Development Project for Quality Development of Handicrafts may be set up in the Madras City near the Handicrafts Design Centre in co-operation with the Handicrafts and Handloom Councils, All-India Handicrafts Board, the Southern Handicrafts Exporters' Association, the College of Arts and Crafts, Madras and the Victoria Technical Institute, Madras.

14.33. A research wing is proposed to be constituted to pool the latest developments in building construction and evolve suitable design and methods of construction of low cost houses in rural areas. This may be attached to the proposed Rural Housing Corporation mentioned earlier.

DISTRICT RURAL DEVELOPMENT CORPORATION

14·34. A District Rural Development Corporation will be established in every district to accelerate the rural development programmes. Such Corporations also serve as agencies for mobilising financial resources in the rural areas, for making the people plan-minded and for enlisting their co-operation in the efforts of the State at planned development. It would then be possible to build up more effectively the State development plans from the grass-root level. The establishment of a Tamil Nadu Rural Development Corporation at the State level to co-ordinate the working of the District Corporations is also recommended.

PERSPECTIVE PLAN OUTLAYS ON RURAL DEVELOPMENT

14·35. The development projects mentioned above cover a wide area of socio-economic activities. The financial requirements in respect of programmes related to agriculture, animal husbandry, fisheries, education, public health, water supply, rural roads, etc., are included in the allotment for these sectors. Outlays to be met by the Community Development and Rural Development sector would amount to Rs. 95 crores, of which an amount of Rs. 35 crores will be for the first five years and Rs. 60 crores for the latter five years of the Perspective Plan Period. The details of this expenditure are furnished below :

(Rs. in crores)

Programmes	*Outlay*
(0)	(1)
(i) Social Education	21·77
(ii) Rural Manpower Programme ..	12·00
(iii) Crash scheme for rural employment ..	40·00
(iv) Applied Nutrition Programme under the Panchayat Unions ..	8·20
(v) Research and Development Programmes for Rural Development	0·35
(vi) Office buildings and staff housing for Panchayat Unions. ..	12·68
Total	**95.00**

14·36. Apart from this, the Rural Housing Programme would involve an outlay of Rs. 199 crores. It is expected that financial resources for this will be found partly by the Tamil Nadu Rural Housing Corporation, but the major part has to be in the form of assistance from the Union Government.

CHAPTER 15

Co-operation

15·1. Co-operation is an effective instrument for achieving the socio-economic objectives in a planned economy. From the Second Five–Year Plan onwards, there has been a progressive increase in the allocation of funds for Co-operation and the movement has expanded its activities considerably.

15·2. Agricultural production depends to a large extent on the assistance in the form of credit, inputs, processing, storage and marketing facilities provided by Co-operatives. Development of small-scale industries as well as certain major and medium industries run on Co-operative lines has also helped greatly in building up the State's economy and raising the earning capacity of the people engaged in such industries. Also, the consumer Co-operatives have contributed to holding the price-level of consumer articles within reasonable limits. Co-operatives provide a better means for the impovement of the economic condition of the weaker sections of the community.

15·3. An assessment of the progress so far made and proposals for the Perspective Plan in respect of the Co-operatives in the administrative charge of the Registrar of Co-operative Societies are given below under the following heads :—

(1) Co-operative Credit.

(2) Co-operative Marketing and Processing.

(3) Consumer Co-operatives.

(4) Miscellaneous types of Societies.

(5) Co-operative Education and Training.

I. Co-operative Credit

15·4. Provision of credit for agricultural purposes has been and will continue to be the principal activity and responsibility of the Co-operative Movement. The central aim of all schemes relating to agricultural credit implemented during the Five–Year Plans has been to enlarge and strengthen the organisational structure so as to increase the coverage of agricultural population and meet their credit needs. The Agricultural credit societies provide short-term credit to meet current cultivation expenditure on seeds, fertilisers, labour, etc., and medium-term credit to meet such items of expenditure as purchase of ploughs, bullocks, power sprayers, storage bins, etc. The land development banks provide long term loans to meet comparatively large capital expenditure on items such as sinking of wells, installation of pumpsets, reclamation of lands, purchase of tractors, development of plantations, etc.

A. Short-term and Medium-term Credit

15·5. There are 5,243 agricultural credit societies covering all the villages and 52·2 per cent of the agricultural families in the State. The provision of credit by the Societies which was of the order of Rs. 5 crores a year at the end of the First Five–Year Plan was stepped up to about Rs. 30 crores at the end of the Third Plan and to Rs. 64·60 crores in the penultimate year of the Fourth Five–Year Plan (1972–73). In the final year of the Fourth Plan loans to the extent of Rs. 75 crores have been programmed which will work out to about 36 per cent of the total current production outlay i.e. Rs. 210 crores. 40 per cent of the 34 lakh members in these societies have been benefited by the societies. The basis and procedure for the provision of short-term credit by the agricultural credit societies have been reoriented from time to time with emphasis on the credit worthiness of the purpose and promptness of service. To make production credit available at the right time and adequately and to simplify the procedure with a view to avoid delay, the system of Annual Credit Limit has been implemented in the State since 1965–66. The crop loan system ensures the provision of credit to a member with reference to the area and crop cultivated irrespective of the fact whether he is the owner or tenant. The credit is also provided partly in the form of chemical fertilisers and pesticides.

15·6 The adoption of unlimited liability by these societies appears to be a constraint on the expansion

fo their activities. Action is being taken to make them adopt limited liability which is permissible under the provisions of the Tamil Nadu Co-operative Societies Act, so as to attract the hesitant farmers into their fold. Discrimination among members on account of local faction, personal differences, etc., is another constraint on enlargement of the membership and services, and this in spite of the fact that universal membership has been assured in the Act. It is proposed to empower the paid secretaries of these societies to admit the eligible farmers as members. Another major constraint is non-payment of the loans by the members in time thereby making themselves ineligible for fresh loans ; and sometimes when their overdues are large, the resources position is affected so that other members who have repaid promptly and are eligible for loans are denied the opportunity to get fresh loans. Where the repayment is rendered difficult on account of drought, floods, etc., the short-term loans are converted into medium-term loans by taking assistance from the Agricultural Credit Stabilisation Fund. To meet possible losses on account of natural calamities, the Agricultural Credit (Relief and Guarantee) Fund has been constituted with contributions by the Government at 1 per cent of the loans issued by the societies. It is only when there is wilful default in repayment, that the flow of further credit, is affected. With strenuous efforts to inculcate a sense of discipline in the matter of repayment and by strengthening the collection machinery, this position may be improved. Service to the weaker sections of the agricultural community has not improved to any appreciable extent in spite of the fact that Special Bad Debt Reserves have been constituted at the level of the primary societies and the central co-operative financing banks to which Government makes a contribution at 12 per cent and 4 per cent respectively of the increase in the loans outstanding. Greater attention to this need will have to be given by continuing the scheme of Government contribution to the Special Bad Debt Reserves on a more attractive basis.

15.7. In the light of the above position and with a view to further strengthening and expanding the activities of the Agricultural Credit Societies the following proposals are made for the Perspective Plan.

Coverage of Credit

15.8. The total financial outlay on production by the end of 1983-84 has been projected at Rs. 540·50 crores. With the increasing role of the land development banks, the medium-term credit requirements can be put at 5 per cent instead of the usual 20 per cent of the cultivation credit needs. On this basis, the total short-term and medium-term credit requirements by 1983-84 are estimated at Rs. 567·52 crores. Assuming that 50 per cent of the outlay will be met by the farmers themselves, the credit requirement representing the other 50 per cent will be Rs. 283·76 crores. Sixty per cent of this amount can be fixed as the proportion to be provided by the co-operatives. The amount works out to Rs. 170 crores. Thus the co-operatives will be enlarging the coverage of credit requirements from 36 per cent of the current outlay to 60 per cent of the enhanced outlay by the end of the Perspective Plan. The coverage of rural families may be increased from the present 55 per cent at the end of the Fourth Plan to 75 per cent at the end of the Perspective Plan. The effective membership which is 40 per cent now, may be increased to 80 per cent.

Revitalisation of Societies

15.9. The present scheme of revitalisation of the agricultural credit societies may be continued with modifications of the scale and terms of assistance. Out of about 5,000 societies, one half i.e., 2,500 will, after completion of their re-organisation, be on a viable basis by the end of the Fourth Plan. The remaining 2,500 societies which are potentially viable should be made viable. A sum of Rs. 75 lakhs as Government subsidy towards 50 per cent of the cost of paid Secretaries for two years (at the rate of Rs. 3,000 to each society needing support) is to be provided.

Special and Debt Reserve

15.10. Loans to the weaker sections have to be stepped up by continuing the scheme of Special Bad Debt Reserves, with Government contribution at 3 per cent and 1 per cent (to the primary societies and central banks respectively), of the additional loans issued to the weaker sections every year over the previous year. This contribution will come to Rs. 1·90 crores.

Strengthening of resources

15.11. The Co-operatives will have also to strengthen their own resources to meet the credit requirements as programmed. The share capital at the different levels may have to be increased from Rs. 30·18 crores at the end of the Fourth Plan to Rs. 41 crores. Also contribution by the State to the share capital will have to be continued and a sum of Rs. 5 crores may have to be provided for, on this account. The Co-operatives will have to increase the deposits held by them from Rs. 85 crores at the end of the Fourth Plan to Rs. 180 crores.

Agricultural Credit Stabilisation Fund

15.12. In order to provide for conversion of short-term loans into medium-term loans to meet the expenses on account of droughts and floods, the scheme of contribution to the Agricultural Credit Stabilisation Fund should be continued. At 5 per cent of the loans to be issued in the final year, Rs. 850 lakhs will have to be the contribution of the State to this fund. A sum of Rs. 195 lakhs would have been contributed by the end of the Fourth Plan and the balance of Rs. 655 lakhs has to be provided for in the Perspective Plan period.

B. LONG-TERM CREDIT

15.13. There are 223 Primary Land Development Banks at taluk and block levels with the Tamil Nadu State Land Development Bank at the State level, meeting the long-term credit needs of agriculturists. Till the end of the Third Plan the loans were predominantly for discharge of prior debts and the annual issue amounted to about Rs. 3 crores. With the routing of all long-term loans through Land Development Banks, the discontinuance of Takkavi loan as a matter of policy with effect from 1st April 1968, and simplication of loaning procedures, the emphasis was shifted to identifiable development purposes. As a result, the transaction of Land Development Banks registered a considerable increase from Rs. 6·96 crores in 1967-68 to Rs. 24·99 crores in 1971-72. The implementation of Agricultural Refinance Corporation Schemes and International Development Association Schemes for area development, is a special feature of recent years. However, the achievements under Minor Irrigation Programme have not been as anticipated in the years 1972-73 and 1973-74 owing to the following factors :

While the principles of spacing and appraisal enjoined by International Development Association discipline, are to be retained because of the distinct advantages, are-thinking is necessary with reference to down payment since the beneficiaries are not in a position to meet this commitment. This provision affects small farmers very badly in spite of the concession in the rate of down payment.

15.14. The energisation of wells for which financial commitments have already been made has become a problem in the present context of scarcity of power. Further progress will largely depend upon the capacity of the Electricity Board to meet the number involved in the energisation programme. Alternatively, diesel sets will have to be provided, wherever feasible.

15.15. In order to supplement energisation through electric pumpsets, a dieselisation scheme has been introduced since 1972-73 by which, diesel engines are supplied initially with scope for replacement by electric motors when energisation becomes feasible. A subsidy of Rs. 1,000 per diesel set is also given to the ryots who participate in the scheme. Here again, the diesel sets have got their own limitations because of their non-suitability in certain areas and excessive cost of maintenance. Added to this is the current international shortage in the supply of diesel oil also.

15·16. With a view to enable the small farmers to irrigate their lands, and in view of their inability to put up their own wells for want of repaying capacity and spacing, Lift Irrigation Societies have been started and group wells planned. The Lift Irrigation Societies are permitted to subscribe only 2·5 per cent of the loan requirement as Share Capital the other $2\frac{1}{2}$ per cent being met by the State. There are 2,342 Lift Irrigation Societies on rolls, for which 505 schemes have been for mulated and 163 sanctioned so far. It is proposed to set up 1,000 societies in the Plan period. A provision for managerial subsidy at the rate of Rs. 5,000 per society spread over a period of 3 years is considered necessary to ensure their effective functioning.

15·17. The I.D.A. aided programme for irrigation wells is linked to prior survey of ground-water. So far, the Directorate of Ground-Water has given clearance for the entire I.D.A. area which consists of 20 taluks in the Sedimentary region (Thanjavur, Tiruchirappalli and South Arcot Districts) and 18 taluks in the hard-rock region (Chingleput, North Arcot, Salem and Dharmapuri Districts). Based on a rapid survey, ad-hoc clearance has also been given in 56 taluks in the non-I.D.A. area. Conduct of a detailed ground-water survey of the whole state may take 3 to 4 years more. Taking these factors into account the following physical programme is envisaged involving a loan requirement estimated at Rs. 83·71 crores :—

	NUMBERS.
Sinking of wells	46,500
Deepening of wells	37,100
Energisation	67,700
Filter Points	36,000
Medium Tube Wells	300

15·18. Over the Perspective Plan period the outlay on account of long-term lending through Co-operative Land Development Banks inclusive of non-Minor Irrigation purposes, is fixed at Rs. 200 crores. Of this, the commitments of the State will be Rs. 22·80 crores, the detail of which are given below :—

(Rs in Lakhs)

Item	*Outlay*
(0)	(1)
A. Capital	
1 Contribution to debentures	1,600
State participation at the rate of Rs. 1 lakh per Land Development Bank after allowing for State participation already availed of by banks and including the requirements of Lift Irrigation Co-operative Societies.	140
Total A	**1,740**
B. Subsidy items to be borne by the State	
1. Subsidy for additional supervisors to be employed by Land Development Banks for Agricultural Refinance Corporation Schemes.	22·00
2. Subsidy for the Technical Supervisors to be employed by State Land Development Bank.	58·10
3. New Wells subsidy	400·00
4. Revitalisation subsidy for 66 non-viable Primary Land Development Banks.	9·90
5. Managerial subsidy to Lift Irrigation Co-operatives at Rs. 5,000 per society to be spread over a period of 3 years for 1,000 societies.	50·00
Total B	**540·00**
	1,740
	+ 540
Total commitment (A+B) ..	**2,280**

II. Co-operative Marketing and Processing

15·19. The Co-operative Marketing structure in the State consists of 123 primary marketing societies at the taluk level and the Tamil Nadu Co-operative Marketing Federation at the state level. There is, however, one district level marketing federation for Thanjavur District. The marketing societies arrange for the marketing of agricultural produce of the farmers by auction system at their marketing yards. Grading and correct weighment are adopted. The middlemen between the producer and buyer are thus kept out. To enable the producers to wait for a better price, loans are issued on the pledge of produce. The societies also purchase and sell agricultural produce on their own or on

an agency basis. They are engaged in the distribution of chemical fertilizers and other inputs. They have established plants for the processing of different agricultural produce before marketing. Several schemes of financial assistance under the successive Five Year Plans have been and are being implemented for developing the marketing societies and assisting them in their activities. Assistance is given in the form of share capital, managerial subsidy, construction of godowns, establishment of processing plants, constitution of Price Fluctuation Fund and purchase of lorries, etc. The major activities envisaged for the Perspective Plan are indicated below :—

A. MARKETING

15·20. During 1969–70, agricultural produce was marketed to the value of Rs. 24·47 crores. But this came down to Rs. 22·02 crores in 1972–73, mainly because in the latter years, the Government and the Food Corporation of India did not associate the marketing societies in their procurement operations as in 1969–70. Paddy being the main crop and the procurement policy undergoing changes frequently, the marketing societies have not been able to do much in the marketing of paddy and consequently their role in marketing of agricultural produce as a whole has received a set-back. In the marketing of commercial crops such as cotton, groundnut, chillies, gingelly, arecanut, etc., they have made substantial progress. It is expected that the operations of the marketing societies will reach the level of Rs. 25 crores for 1973–74 i.e. last year of the Fourth Plan. The target fixed for the final year of the Perspective Plan is Rs. 75 crores.

15·21. By 1973–74, 48 marketing societies would have been assisted with managerial subsidy for the employment of qualified managers, accountants, etc. The remaining 75 societies may be assisted to the extent of Rs. 7·50 lakhs during the Perspective Plan Period.

15·22. Subsidies amounting to Rs. 5 lakhs may be provided to 70 societies for purchase of grading equipment and employment of grading staff.

15·23. To encourage the marketing societies to take up outright purchase and sale of agricultural produce on a larger scale and meet the risk involved, contribution of their Price Fluctuation Fund may be made to the extent of Rs. 50 lakhs at 2 per cent of the value of the agricultural produce purchased outright and sold, and 5 per cent of the value of agricultural produce purchased outright, processed and sold.

B. DISTRIBUTION OF AGRICULTURAL INPUTS

(i) Fertilisers

15·24. The marketing societies have been engaged in the distribution of chemical fertilisers through the agricultural credit societies, to an appreciable extent during the last two decades. Pool fertilizers were distributed by them on monopoly basis for some years and later private trade and Panchayat Unions were also associated with the Government for distribution. In June 1973 the Government Marketing Federation as the sole wholesale distributors of Pool fertilisers for the entire State except Thanjavur District and the Thanjavur Co-operative Marketing Federation for Thanjavur District. The two Federations are dealing in non-pool fertilisers also on an increasing scale. They are distributing fertilisers through 3,600 agricultural credit societies functioning as retailers. The primary co-operative marketing societies are functioning as sub-wholesalers. The Federations are expected to handle 2·5 lakh tonnes of fertilisers—both pool and non-pool put together, valued at about Rs. 25 crores, by the end of 1973-74. With the commissioning of the SPIC and IFFCO* and other indigenous manufacturing units, the quantity of fertilisers handled by the co-operatives is likely to go up to 6 lakh tonnes valued at Rs. 60 crores by the end of 1983-84. For raising the necessary loan for this extent of business, the Federations will require Rs. 3 crores as margin money of which 70 per cent i.e. Rs. 2·10 crores may be provided as Government share capital in conformity with the existing pattern. As the Government have already provided Rs. 1·14 crores, the balance of Rs. 0·96 crore may be provided during the Perspective Plan period and this amount could be reimbursed by the National Co-operative Development Corporation.

(ii) Seeds

15·25. The co-operatives are distributing seeds also, along with the Agriculture Department.

* India Farmers Fertiliser Co-operative Limited, in Gujarat.

During 1971-72, 96 Co-operative Societies distributed seeds of the value of Rs. 10·27 lakhs. Their volume of business will increase, if the Agriculture Department agrees to supply on consignment basis, which is under consideration.

15·26. On the suggestion made by the NCDC for setting up a Seed Development Corporation in Tamil Nadu, The Tudiyalur Co-operative Agricultural Services Limited has been selected, in view of the efficiency with which the society has been functioning and its nearness to the Agricultural University at Coimbatore, to form the Corporation. The society, in consultation with the University has formulated a scheme to raise various kinds of seed crops such as paddy, groundnut, cotton-seed, sunflower seed, pulses, etc., in 23,000 acres of land in Coimbatore District to produce 25,000 tonnes of seed per annum. The scheme will be implemented in a phased manner and will be completed by 1975. To begin with, Rs. 1·38 crores as block cost and Rs. 1·12 crores as working capital will be invested in the scheme. The setting up of the Corporation will become a land mark in agricultural and Co-operative development.

(iii) **Pesticides**

15·27 The distribution of pesticides in Tamil Nadu is being attended to by the Agriculture Department through their depots in the Panchayat Union areas. Some co-operatives procure pesticides from the Agriculture Department and distribute them to ryots. During 1971–72 and 1972–73, the co-operatives distributed pesticides of the value of Rs. 44·08 lakhs and Rs. 52·92 lakhs respectively. The TamilNadu Co-operative Marketing Federation proposes to take up distribution on a larger scale.

15·28. The Tudiyalur Co-operative Agricultural Services has established a pesticides formulation unit with a capacity of 2,400 tonnes of dusting powder and 3lakh tubes of emulsifying concentrates a year and the unit has been functioning successfully but its progress has been hindered due to the recent scarcity of raw materials. It has proposed to establish another unit during 1973-74 and the NCDC has been approached for financial assistance of Rs. 1·99 lakhs out of the total cost of Rs. 2·15 lakhs for establishing the Unit.

15·29 The Tudiyalur Co-operative Agricultural Services has also established recently a Parathion Preparation Factory, but it has not gone into production for want of raw materials. The Insecticides Board, New Delhi, and M/s Bayer & Co., have been contacted in the matter. In view of the great demand for pesticides, the Co-operatives may establish 3 more Pesticides Production units during the Perspective Plan Period at a cost of Rs. 10 lakhs.

C. Storage

15·30. The Co-operatives are expected to handle 8 lakh tonnes of fertilisers by 1983-84. The production of foodgrains, which stood at 72·02 lakh tonnes in 1972-73, is expected to go up to 111·50 lakh tonnes by the end of 1983-84. For storing fertilisers and agricultural produce it is necessary to provide atleast one godown of 150 tonnes capacity to each agricultural credit society.

15·31. By the end of the Fourth Plan, 2,300 credit societies are expected to own godowns. Provision may be made for the construction of 1,500 godowns during the Perspective Plan period. The godown will consist of two parts, one for storage of produce and the other for storage of chemical fertilisers. There will also be a service shed.

15·32. Under the Central Sector scheme for provision of storage facilities, the National Co-operative Development Corporation provides 62·5 per cent of the cost of construction as long-term loan outside the Plan and the balance of 37·5 per cent is given by the State Government as subsidy within the plan resources. It is presumed that the same pattern of loan and subsidy would be available during the Perspective Plan period, whether the loan portion is met by the NCDC or it is raised from any financial institution.

15·33. It is expected that 1,000 godowns will be completed between 1974-75 and 1978-79 at a cost of Rs. 350 lakhs and 500 godowns between 1978-79 and 1983-84 at a cost of Rs. 200 lakhs. Thus during the Perspective Plan period, 1,500 rural godowns will be constructed at a cost of Rs. 550 lakhs. The storage capacity with the co-operatives which will be 3·24 lakh tonnes at the end of the Fourth Plan will increase to 5·49 lakh tonnes by 1983-84.

D. Processing

15·34. Most of the agricultural commodities have to undergo one or more stages of processing before they reach the consumers. The processing agency

accounts largely for the sizable price spread between the producer and the consumer. Processing activity on co-operative basis thus becomes necessary for helping the farmer to get his fair share of the consumer price. The processing units are set up by the co-operative marketing societies as their adjuncts with financial help from Government. Government extends assistance towards block cost, margin money for raising working capital and managerial assistance towards cost of staff. The folloing processing units have been established by the co-operatives :—

Type of Processing Unit	*Number of Units*	*Annual capacity in tonnes*
(0)	(1)	(2)
1 Groundnut Decorticators	25	70,000
2 Cotton Gins	18	30,000
3 Rice Hullers	31	44,600
4 Oil Expellers	6	5,800
5 Modern Rice Mills ..	13 (Since transferred to the Civil Supplies Corporation.)	2,16,000
6 Coffee Curing Plant ..	1	4,000
7 Solvent Extraction Plant	1	9,000
8 Fruit Processing Unit ..	1	3,000
9 Tapioca Processing Unit	1	3,000
10 Cardamom Oil Extraction Unit.	1	10
11 Oil Mills	1	1,800
12 Pineapple Processing Unit (under installation).	1	150

Besides, two Sunflower seed oil extraction plants will be set up each costing about Rs. 42 lakhs. They are expected to be commissioned towards the end of 1974.

15·35 During the Perspective Plan period, the installation of the following processing units will be undertaken. The number of units to be set up and the total cost are indicated below. Of the total cost, the share capital contribution will be met by the State Government while the block cost (loan) will be met by the NCDC or the financing institutions—

(Rs. In Lakhs.)

Type of Unit	*Number of Units*	*Block cost*
(0)	(1)	(2)
1 Sunflower Seed Extraction Plants.	4	168
2 Tapioca Processing Unit.	2	60
3 Coconut Oil Complex ..	3	144
4 Cotton Seed Oil Mill ..	2	96
5 Cotton Ginning and Processing Unit.	10	90
6 Paper Mills	1	45
7 Groundnut Oil Complex.	1	120
8 Ginger Chips Processing Unit.	1	5
9 Potato Chips Unit ..	1	5
10 Barley Processing Unit.	1	5
11 Cashew Apple Processing Unit.	1	24
12 Coconut Fibre ..	1	20
13 Processing Unit for Rubber-based Industry.	1	60
Total ..		842

15·36 Of the total outlay, a sum of Rs. 178·08 lakhs will be given by the State Government as share capital and a sum of Rs. 637·40 lakhs will be obtained as loan from the NCDC and financing institutions. The balance of Rs. 26·52 lakhs will be met by the societies from their own resources.

III. Consumer Co-operatives

15·37 One of the major objectives of the Five-Year Plans is to stabilise the prices of basic consumer articles like foodstuffs, clothing, fuel and other essential household goods. For this purpose it is necessary that consumer co-operatives are assigned a dominant role in the distribution system to facilitate reduction in distribution cost and ensure healthy trading practices.

15·38 Thirty Co-operative wholesale stores with 376 retail depots attached to them and 1,132 primary co-operative stores have been distributing consumer goods at reasonable prices. Under the accelerated programme of consumers' co-operative

schemes, 13 department stores in towns with population exceeding one lakh have been opened. To expand the business of consumers stores and to diversify their trade, modern retail outlets popularly known as mini-super markets have been established by the Co-operative Wholesale Stores. So far, financial assistance has been given to set up 58 retail outlets. Government have taken shares in the consumers co-operative stores and have also provided financial assistance towards their working capital, purchase of lorries, construction of godowns and also for setting up small sized and large sized consumer industries.

15·39 As a result of the several measures undertaken for strengthening and stabilising the consumer co-operative structure, the sales effected through the consumer co-operatives in the State amounted to Rs. 60 crores during 1972-73 as against a target of Rs. 50 crores at the end of the Fourth Plan period. The coverage anticipated is 31 per cent of the population and 14 per cent of the retail trade. The financial outlay of Government for implement these schemes during the Fourth Plan is Rs. 153·87 lakhs, of which an amount of Rs. 72·14 lakhs is in the State Plan

15·40 The several schemes now under implementation will have to be continued during the Perspective Plan period i.e. 1974–75 to 1983–84. In addition, it is considered desirable to take up rehabilitation programme of financially weak Co-operative Wholesale Stores and Primary Stores by providing financial assistance by way of working capital loan, share capital and subsidy. Twenty-five Co-operative Wholesale Stores and 300 Primary Stores Societies may be taken up for rehabilitation involving a total financial assistance of Rs. 95 lakhs as indicated below :—

(Rs. In Lakhs.)

Item	*Outlay*
(0)	(1)
Twenty-five Co-operative Wholesale stores at Rs. 2 lakhs working capital loan each	50
Three hundred Primary stores at Rs. 15,000 each (Rs. 6,000 share capital loan, and subsidy Rs. 4,500 and Rs. 1,500 for purchase of furniture and Rs. 3,000 as managerial subsidy).	45
	95

15·41 The several schemes that will have to be implemented during the Perspective Plan period, the number of societies requiring Government assistance and the financial outlay of State Government are indicated below :—

Perspective Plan : Schemes and Outlay

(Rs In Lakhs.)

Name of the Scheme	*Number of societies to be assisted*	*State Government's involvement*
(0)	(1)	(2)
1. *Co-operative Wholesale Stores*		
(*a*) Construction of godowns.	20 at Rs. 75,000 each.	15·00
(*b*) Purchase of lorries.	15 at Rs. 75,000 each.	11·25
(*c*) Working capital loan for rehabilitation.	25 at Rs. 2 lakhs each.	50·00
2. *Primary Stores*		
(*a*) Share capital assistance.	100 Societies at Rs. 10,000 each.	10·00
(*b*) Managerial subsidy.	150 Societies at Rs. 3,000 each.	4·50
(*c*) Revitalisation Programme.	300 Societies at Rs. 15,000 each.	45·00
3. *State Consumer's Federation*		
(*a*) Share Capital Assistance.	..	10·00
(*b*) Construction of godown-*cum*-office building (one building for the Apex Federation and three Regional godown-*cum*-office buildings).	..	21·00

(0)	(1)	(2)
(*c*) Purchase of trucks (Four units at Rs. 75,000 each).	..	3·00
(*d*) Assistance for buffer stock operation.	..	4·00
(*e*) Subsidy towards creation of staff cadre.	..	3·00
(*f*) Setting up of consultancy and promotional cell.	..	4·00
4. *Consumer Industries*		
(*a*) Block capital	5 units at Rs. 1 lakh each.	5·00
(*b*) Managerial subsidy.	..	0·25
5. *College Store* ..	20 units at Rs. 2,000 each.	0·40
6. *Modern Retail Outlets*		
(*a*) Setting up of modern retail units.	150 units at Rs. 60,000 each.	90·00
(*b*) Construction of business premises.	50 units at Rs. 40,000 each.	20·00
7. Training Programme for imparting training to various personnel working in consumer societies.	..	5·00
Total	..	301·40

15·42 Out of the total outlay of Rs. 301·40 lakhs suggested for the Perspective Plan Period of 10 years, Rs. 88·25 lakhs will be spent in the Fifth Plan period (1974-75 to 1978-79).

15·43 As a result of these programmes it is expected that the sales effected by the consumer co-operatives at the end of 1983-84 will be about Rs. 100 crores.

IV. MISCELLANEOUS TYPES OF CO-OPERATIVES

15·44 Different types of Co-operative Societies have been formed for the benefit of the weaker sections of the community like labourers, salt workers, washermen, barbers, etc.

15·45 No specific scheme for the development of these societies was implemented during the First and Second Five-Year Plans.

Labour Contract Societies

15·46 There are 107 labour contract societies in the State. They execute works both skilled and unskilled and engage the members on the jobs. During the Third Plan, financial assistance was given to select societies to expand their activities. However, most of the societies are dormant or not functioning for want of finance or lack of managerial guidance. These societies have to be activised and new societies are to be formed. The financial assistance which they would require by way of loans, contribution to share capital, working capital, purchase of minor implements, etc., will be of the order of Rs. 3 lakhs.

Societies for Washermen

15·47 During the Third Plan period, the organisation of societies for washermen was taken up on a district basis. Assistance was given to the members for the purchase of equipment, implements and materials essential for their profession. There are now 16 societies (including three co-operative laundries) in the State. These societies will be activised by giving financial assistance to the members to carry on their profession and to set up power laundries in important towns. The financial assistance required will be Rs. 3 lakhs.

Societies for Barbers

15·48 There are now 17 societies for barbers. No specific programmes was drawn up and implemented for the development of these societies upto

the end of the Third Plan. Though financial assistance (for purchase of furniture, mirrors, equipments, etc.) was given to select societies during the years 1966-67 to 1968-69, this has not proved fruitful and effective. It is considered desirable to establish modern hair dressing saloons in important towns on co-operative basis. They will be given financial assistance to the extent of Rs. 2 lakhs towards the cost of equipment, furniture, furnishings, etc.

Societies for Salt Workers

15·49 There are now 13 societies functioning for the salt workers. It is proposed to organise Salt Workers Co-operative Societies in the coastal areas where Government salt lands are available for lease and to develop the activities of the societies already formed by giving financial assistance to the tune of Rs. 2 lakhs for the construction of platforms, preparation of bunds, scrapping, crystalling, condensing, electric power, transport, etc.

Block Level Agro-Engineering and Service Centres

15·50 With a view to alleviate the problem of unemployment among engineers and provide customer service in agricultural machinery and repair facilities to pumpsets and other types of agricultural machinery, the scheme of organisation of Agro-Service Co-operative Centres was taken up for implementation during the Fourth Five-Year Plan. Sixteen District Co-operative Agro-Service Societies and 153 Agro-Engineering and Service Co-operative Centres at block level have been formed. It is proposed to organise more block level centres to bring the number to 300. Each of the 300 centres will require Rs. 1·17 lakhs towards purchase of machinery, construction of workshop, etc. Of this, a sum of Rs. 0·50 lakh will be given as share capital by the Government of India, Rs. 0·30 lakh by the State Government towards construction of workshop and managerial subsidy and the balance of Rs. 0·37 lakh will be raised by the centres by way of share capital.

V. Co-operative Education and Training

15·51 For the successful development of the Co-operative movement, it is necessary to educate the masses in the social and economic fields and also train sufficient number of personnel to carry on the administration of the various Co-operative Institutions and the Co-operative Department efficiently.

15·52 Before the Plans, there were three co-operative training institutes in the State, one for training departmental candidates and two for candidates for employment in Co-operatives.

15·53 During the Second and Third Plan periods, the number of institutes for training the non-official candidates was increased from two to seven. There is also a Co-operative Training College run under the aegis of the Committee for Co-operative Training (National Co-operative Union of India) for training candidates to be directly recruited as Senior Inspectors, Co-operative Sub-Registrars and Deputy Registrars. It also conducts special short term courses in Co-operative Banking and Audit for intermediate level personnel of this State and other States. The Tamil Nadu Co-operative Union, which is an apex institution, is in charge of propoganda and publicity of the Co-operative movement. It organises the celebration of All India Co-operative Week, as well as conferences, seminars, etc.

15·54. In order to give instruction to the members of the Managing Committees, office bearers, existing members and prospective members of the co-operative societies in Co-operative principles and practices, the Tamil Nadu Co-operative Union implemented a scheme of member education in 1957-58 and continued it up to 1967-68 but had to discontinue it in that year on ground of economy.

15·55. In order to assist the Tamil Nadu Co-operative Union in its Co-operative education and propaganda activities, co-operative unions at the district and taluk levels have been organised during the last two years. The following proposals are made for improving the facilities for training and education :

Emphasis has to be laid on the provision of specialised courses to enable the departmental officers and executives of Co-operatives to be abreast of the developments in their respective fields.

15·56. At present, the departmental officers are deputed for special short-term courses in Co-operative Banking and Co-operative Audit to the Co-operative Training College, Madras ; in Co-operative Marketing to the Co-operative Training College, Bangalore ; and in Land Development Banking to the Co-operative

Training College, Hyderabad. The senior officers are deputed to the Vaikunth Mehta National Institute of Co-operative Management, Poona, for specialised courses in Inventory Management, Financial Management, Material Management, etc. It is considered necessary to have a Co-operative college for this State so that in-service training might be provided to the departmental officers, as well as officials such as Secretaries and Assistant Secretaries working in the co-operative societies. It is, therefore, proposed to set up a Co-operative College for the State of Tamil Nadu. The proposed college will impart training in subjects like Co-operative Audit of Accounts, Co-operative Banking, Co-operative Marketing, Management, Financial Administration, Research, etc., besides giving general basic and in-service training for intermediate and Senior level Officers. An outlay of Rs. 145 lakhs will be required for running this college which would cover cost of building, staff, stipends, etc.

15·57. Similar specialised courses are necessary for the employees of Co-operatives at the lower levels. Hence, it is proposed to conduct specialised courses in Co-operative Marketing, Co-operative Audit, Co-operative Banking, Urban Credit, Consumer Co-operation, etc. In addition, functional courses, viz., courses on salesmanship, accounts-keeping, management of agricultural supplies, etc., will be conducted. For implementation of this teaching project in the existing training institutes the present staff will have to be augmented and increased facilities like library and other equipments will have to be provided. The total cost will come to Rs. 25 lakhs.

15·58. The scheme of member education may b revived so that the present members, prospective members, office bearers and managing committee members can be trained in Co-operative principles and accounting procedures. The provision under this scheme will be Rs. 30 lakhs.

15·59. An abstract of the outlay on the various programmes under 'Co-operation' in the Perspective Plan period is given below :—

Financial Outlay (State Sector) on Co-operation in the period 1974-84

(Rs. In Crores).

Head of development	*Outlay proposed for Perspective Plan period*
(0)	(1)
I. Co-operative Credit	37·00
II. Co-operative Marketing and Processing.	18·00
III. Consumers Co-operatives ..	3·00
IV. Miscellaneous types of Co-operative Societies.	1·00
V. Co-operative Education and Training.	2·00
Total ..	**61·00**

CHAPTER 16.

Urban Development

URBAN SITUATION

URBAN POPULATION GROTH AND DISTRBUTION

16.1. The growth rates of urban and total population of the State in the past five decades show that urban growth has been generally twice the rate of growth of the total population. Thus, while the total population has doubled in the past five decades, the urban population has increased five times during the same period. The State's urban population in 1971 stood at 12·5 millions distributed over 443 urban centres. The urban content of the total population of the State was a little over 30 per cent as against 19 per cent for the whole country. Tamil Nadu is the second highest urbanised State in the country, next only to Maharashtra. In terms of number of urban centres, Tamil Nadu stands first with 443 towns as against 289 in Maharashtra. Table 16·1 shows the percentage of urban population and the number of towns in the larger States of the country.

16.2. The distribution of urban population in different classes of towns shows that 78 per cent of the total urban population is concentrated in the first three categories of towns (Class I to Class III), which number only 123. The balance of 22 per cent is distributed in the remaining 320 smaller urban centres (Class IV to Class VI). Of the 123 centres, the Class I towns numbering 17, account for 43·80 per cent of total urban population of the State. Madras urban agglomeration accounts for 3·1 million population (nearly 25 per cent of the total urban population) and the four urban agglomerations of Coimbatore, Madurai, Tiruchirappalli and Salem account for 2·3 millions or nearly one-fifth of the State's urban population. Thus, these five urban agglomerations alone account for nearly 43 per cent of the State's urban population.

16.3. A further study of the urbanisation pattern has revealed that the proportion of the total urban population in Class I towns increased from 26·9 per cent in 1931 to 43·80 per cent in 1971 ; in Class II towns, the percentage remained more or less stationary, while there was only a marginal increase in the share of Class III towns. The percentage of population in Class IV to Class VI towns showed a substantial decrease during this period. This trend, coupled with the increase in the number of towns in Class I to III categories, indicates the concentration and preferential growth of bigger urban centres and also forewarns that the future prospects and problems of urbanisation will lie in these classes of towns, i.e., towns with plus 20,000 population. It also highlights that there is scope and need to develop smaller urban centres with plus 5,000 population not only to arrest the rapid growth of the major towns of the State, but also to provide centres of growth for rural development, thus achieving a regional balance of urban development. Table 16·2 shows the growth in the number of towns and the growth in the share of urban population in each class of towns from 1931 to 1971.

TABLE 16-1

Number of towns and percentage of urban population by States, 1971.

State	*Number of towns.*			*Per cent to urban population*
	Class I to III.	*Class IV to VI*	*To*	
(0)	(1)	(2)	(3)	(4)
1 Maharashtra	107	182	289	31·20
2 Tamil Nadu	123	320	443	30·28
3 Gujarat	69	148	217	28·13

	(0)	(1)	(2)	(3)	(4)
	Wes t Bengal	58	79	137	24.59
5	Karnataka	60	171	231	24.31
6	Andhra Pradesh	90	117	207	19.35
7	Rajasthan	44	113	157	17 61
8	Madhya Pradesh	61	181	242	16.26
9	Uttar Pradesh	109	184	293	14.00
10	Bihar	62	99	161	10.04
11	Assam	16	59	75	8.39

(*Source* : Census of India, 1971.)

TABLE 16·2

Number of towns and proportion of urban population in each Class of Towns, 1931-71.

Class of towns		*Years*				
		1931	1941	1951	1961	1971
(0)		(1)	(2)	(3)	(4)	(5)
Class I (+ 100,000) ..	Number	5	6	8	11	17
	Percentage of urban population.	26·9	29·3	35·5	37·8	43.9
Class II (50,000 to 99,999).	Number	7	10	13	22	27
	Percentage of urban population.	13·6	12·3	10·9	14·1	13·5
Class III (20,000 to 49,999).	Number	35	38	55	60	79
	Percentage of urban population.	19·2	18·6	23·4	20 8	21·0
Class IV (10,000 to 19,999).	Number	62	71	81	96	117
	Percentage of urban population	22·2	22·7	18·6	18·1	13·3
Classes V and VI (less than 10,000).	Number	97	111	117	98	203
	Percentage of urban population.	18·1	17 1	11·6	9·2	8·3

URBAN SERVICES

16·4. The basic services considered essential for a satisfactory urban environment are water-supply, drainage and urban transportation, apart from medical care, education and other social requirements. The prevailing situation in almost all the present urban centres is far from satisfactory. The inadequacy of these services is more pronounced in the larger urban centres of the State and some of these services are conspicuous by their absence in the smaller ones.

(a) Water-Supply

16·5. The provision of protected water-supply in many of the urban centres is only around 10 to 15 gallons per capita per day, which is far from satisfactory. The total urban population served with protected water-supply by 1971 was about 9 millions distributed over 141 urban centres. In 37 centres, work for provision of such protected water-supply is in progress and would serve about 0·9 million urban population. This still leaves a large number of urban centres yet to be provided with this basic service. While the supply of protected water is very inadequate and the facility has to be extended to many more centres in the State, the question of finding sources to secure the additional requirements is posing a serious problem in the State.

(b) Drainage

16·6. While the water-supply position is unsatisfactory, the situation in respect of provision of underground drainage is worse. Sewerage system exists only in the two City Corporations of Madras and Madurai, five municipalities, and four townships and town panchayats covering only about 3·75 million population. Even in these centres, the system does not cover the entire corporate areas. It is essential that all urban centres are provided with underground drainage facility, as otherwise the population concentrations therein would pose serious health hazards.

(c) Urban Transportation

16.7. Traffic and transportation pose a major problem in the large agglomerations of the State, especially in the Madras Metropolitan Area The increasing numbers of motor vehicles coupled with the presence of slow moving vehicles and cycles in these major urban agglomerations which have inherited unregulated growth with inadequate road widths are causing serious transportation problems. Majority of commuters of these large agglomerations depend upon the bus service in the absence of an integrated transportation system. Organized suburban railway services are available in one sector of the Madras Metropolitan Area serving a very limited number of the commuters. In none of these cities, the fleet strength and frequency of bus trips are adequate to meet even the present-day needs. The provision for parking and terminal facilities in these urban centres are conspicuous by their gross inadequacy and pose considerable problems in their central areas.

(d) Urban Housing

16.8. Housing situation in the major urban centres is causing concern. Lack of adequate housing is the main cause behind the large number of slums found in all the major urban agglomerations. The backlog in housing is heavy and a massive effort is required to wipe out the deficits and to meet the demand of the rapidly growing urban population. There are no detailed housing statistics available for correctly estimating the housing shortage. It can, however, be estimated indirectly by computing the difference between the number of house-holds and the present housing stock, adding to it the number of kutcha houses requiring replacement and the number of houses required to replace the pucca and semi-pucca houses which have outlived their utility. It has been estimated from available information that in Class I towns, the deficit is of the order of 510,000 dwelling units, not including the number required to replace the pucca and semi-pucca houses that have outlived their utility. This works out to nearly 100 houses per 1,000 population. Assuming the same deficiency in Class II and III towns as well, the shortage in these towns would be in the order of 440,000 dwelling units, adding up to a total deficiency of 950,000 dwelling units. The bulk of the shortage would be in respect of the housing requirements of the economically weaker and low income groups of the population. With a view to tackle the problem of providing satisfactory housing to these sections of the community, the Government have set up the Tamil Nadu Housing Board and Tamil Nadu Slum Clearance Board. The Housing Board has

programmes to provide housing and open developed plots in almost all major urban centres of the State and housing for slum families in important urban centres excluding Madras City where the Slum Clearance Board has launched a massive programme for re-housing slum dwellers.

16.9. Organized housing in the State, on a large scale, was taken up from the beginning of the Second Five-Year Plan with the constitution of the State Housing Board. The Housing Board's activities include large-scale land acquistion and development, provision of houses and flats under the Low and Middle Income Housing Schemes, Subsidised Industrial Housing Scheme and Government Servant's Rental Housing Scheme, apart from other smaller projects like Housing Schemes for Plantation Workers, Village Housing, etc. Under the land acquisition and development scheme, the Housing Board had acquired and developed up to December 1972, a total area of nearly 4,200 acres. The Board had provided about 7,200 houses and flats under the Government Servants' Rental Scheme ; 5,000 under LIG Housing Scheme and 3,400 under the MIG Housing Scheme during the same period, besides other housing projects. The Board has a massive programme for building houses in the urban areas of the State utilising the Revolving Fund provided by the Housing and Urban Development Corporation. The areas in which housing facilities with HUDCO finance are being provided are Korattur Neighbourhood Scheme, Kalaignar Karunanithi Nagar, Arignar Anna Nagar, Kotturpuram and Seniamman Koil area within the metropolitan area.

16.10. Since the establishment of the Slum Clearance Board in 1971, the Board has so far constructed 11,092 tenements for re-housing slum families so far and this figure is likely to go up to 15,470 by 31st March 1974 in the City of Madras. The work of the Board has gone a long way to meet the needs of housing of the City's slum population.

Urban Land Utilisation

16.11. The land utilisation pattern in the urban centres of the State, particularly in the larger centres presents a picture of haphazard and uncoordinated development. Lands under parks, playgrounds and other open spaces are very meagre, resulting in a congested and unhealthy environment. The major extent of land is under residential use followed by public and semi-public uses. Lands under communication and industry occupy the next place followed by parks and playfields. Commercial use accounts for the smallest extent of land.

Programmes under the Porspective Plan

Regional Planning ann urban Development

Regional Planning

16.12. The high growth rate in the last two decades in the Madras Metropolitan Area and, in and around the major cities of Madurai, Coimbatore, Tiruchirappalli and Salem, if allowed to continue unmodified by conscious planning, is bound to create imbalances not only in the spatial location of urban population but also in the economic structure and urban environment within these centres. There is, therefore, an urgent need to devise methods by which the future urban population in the State can be distributed in a planned manner. A regional policy has a key-role to play in the attainment of this objective. The objectives to be achieved through such a regional policy are :

(1) To ensure a reasonably balanced spatial distribution of urban population and centres within the State ;

(2) To ensure that cities and towns do not become so large as to create dis-economies in the scale of provision of infrastructure or in the maintenance of services and facilities ;

(3) To ensure that urban dispersal is not too broad-based but selective, so that the available scanty resources are put to most efficietn use ;

(4) To ensure co-ordination between the distribution of urban population and the State's economic development programmes to maximise the benefits to the community ; and

(5) To ensure that smaller growth centres are identified and developed to provide the necessary infrastructural facilities and services to the rural communities served by them, thus improving their socio-economic conditions.

16.13. The Government have already launched a programme for Regional Planning within the State to achieve the above objectives. The State has been delineated into eight planning regions and Regional Plans have been formulated for all of them. These Regional Plans supported by Sub-Regional Plans to be prepared for smaller areas within the regions would spell out the future urbanisation pattern and identify a hierarchy of urban centres indicating the optimum population for each of them. These plans would also suggest priorities in the development of towns to secure a well balanced and planned urban development within the State.

Planning Legislation

16.14. As a supporting measure, the Government have already enacted a Town and Country Planning Legislation, viz., the Town and Country Planning Act, 1971. The Act provides for the preparation of Regional Plans, Master Plans for urban centres, New Town Development Plans and Detailed Development Plans for smaller areas. The Act empowers the constitution of Regional Planning, Local Planning and New Town Development Authorities apart from the constitution of a State Town and Country Planning Board to co-ordinate all physical planning activities in the State.

Urban Development

16.15. If the past growth trend of the urban population is assumed to continue, the State will have nearly 40 per cent of its 1991 population and about 37 per cent of its 1984 population in urban centres. In terms of absolute figures, the urban population will reach a figure of 18·00 millions in 1984 as against 12·5 millions in 1971, an increase of 5·50 millions. A careful examination, as to how the future urban population should be distributed, has revealed that most of this future urbanisation should be channelised along certain well-defined urban corridors in the State. These are in main, the Madras-Coimbatore corridor, the Madras-Madurai corridor, the Madurai-Nagercoil corridor and the Salem-Cuddalore corridor. The remaining urban population will have to be housed in a few major urban settlements outside these corridors and in a number of service and growth centres distributed equitably over the State.

MADRAS METROPOLITAN AREA

16.16. The Madras Metropolitan Area occupies a pivotal position and has a strategic location at the confluence of these major corridors. The Madras Metropolitan Development Plan has proposed to house a population of 5·3 millions by 1991 and 4·5 millions by 1984 within the metropolitan area. This population will be further channelled into the present urban core of the metropolis consisting of the Madras City and its immediately surrounding urban area and a number of urban nodes to be developed along the well-defined transportation corridors. As an integral part of the Madras Metropolitan Plan, it is also proposed to develop three satellite towns at about 50 kms. from the City along these corridors. These are Marai Malai Nagar near Chingleput, Tiruvallur and Gummidipoondi. Measures to implement this plan have already been taken on hand by the recently constituted Madras Metropolitan Development Authority. This Authority is provided with sufficient planning and co-ordinating powers through a recent amendment of the Town and Country Planning Act, 1971. To cater to this massive concentration of urban population, a Comprehensive Traffic and Transportation Plan, has also been evolved which includes provision of a Rapid Transit System more or less parallel to the sea-coast running North-South through the City centre.

Other Urban Centres

16.17. Of the remaining population, abou 3 millions are proposed to be housed in the four major urban agglomerations of Madurai, Coimbatore, Tiruchirappalli and Salem. The remaining 10·50 millions are proposed to be accommodated in the centres along the major corridors and the other Class-I to Class-III urban centres. A small portion of this population will be channelled to the service and growth centres to be identified by the sub-regional plans. Based on the hierarchy of urban centres identified under the Regional Plans, Master Plans have been prepared or are under preparation for the more important urban centres identified, which will spell out the strategy of development of these centres.

URBAN LAND POLICY

16.18. The massive increase in the urban population of the State during the Perspective

Plan period calls for a well-defined urban land policy, as land is the primary base for all urban activities. Such an urban land policy, should ensure that—

(1) sufficient land is made available for urban development at the right time and at the right place ;

(2) the land is acquired at a reasonable cost and made available for various urban activities at reasonable price ;

(3) speculation on urban land is discouraged ; and

(4) the increase in land values on account of community action is mopped up for the welfare of the community.

16.19. To implement such an urban land policy, the following measures should be instituted :—

(1) examination of the various legislative powers currently in force and the extent to which they need updating or modification ;

(2) to undertake large-scale land acquisition and development in and around the major urban centres of the State, in order to make available enough lands for urban development at the proper time and proper place ; and

(3) alloting all public land on a leasehold basis.

16·20 Intensive development activity has to be encouraged in all areas of high cost land in urban centres. The construction of multi-storeyed and high density buildings has to be insisted upon all major and important roadside lands. Bank loans should be made easily available for such intensive developments. All lands falling within town limits irrespective of whether they are put to urban or non-urban use should be taxed in the same manner and at the same rate as urban land. Such a policy of non-discriminatory taxation will discourage non-urban uses of land within cities

URBAN SERVICES SUGGESTED.

16·21. The more important among the urban services are protected water-supply, underground sewerage and traffic and transportation, apart from urban housing which is discussed separately. The programmes needed to provide these services and actions initiated are discussed below.

Water-Supply and Drainage

16.22. Assuming that protected water-supply is to be provided to the urban centres to the standards recommended by the World Health Organisation, which is 45 gallons per capita per day, the total requirement of water in 1984 will be 535 mgpd. The seriousness of this problem will be apparent if the 1984 requirements is compared with the current supply, which is only of the order of 165 mgpd. Tamil Nadu is one of the States where water resources have been fully exploited and the provision of this additional quantity of water for urban development will pose a serious problem. To achieve this objective, there is need to evolve better techniques of water management and also additional resources. The Tamil Nadu Water and Drainage Board has programmes to provide required water to the various urban centres on the basis of a long range plan. These plans will meet, if not the full requirements, at least a substantial part of it. In so far as underground drainage is concerned, the problem is one of finding resources, but the said Board is instituting measures to provide drainage systems at least in the more important urban centres on a priority basis.

Urban Transpotation

16·23 In the matter of urban transportation, as already indicated, studies have been completed in respect of the Madras Metropolitan Area and the process of implementation of this Plan is expected to commence in the Fifth Five-Year Plan period. Studies have also been initiated in two of the four major urban agglomerations, namely, Coimbatore and Madurai and these Transportation Studies will be extended to the other major urban centres on a priority basis. These studies will provide the data necessary to frame Comprehensive Plans of integrated networks of traffic and transporation facilities capable of meeting the requirements of the anticipated population in the urban centres and also a network of terminal facilities for passenger and road transport.

Urban Housing

16·24 It is programmed to further intensify the house building activity during the Perspective Plan period, both for rehablitation of slum dwellers and provision of houses for the other sections of the community.

SLUM CLEARANCE AND IMPROVEMENT

16.25 A massive house building programme for re-housing of the slum dwellers both in the City of Madras and the other major urban centres of the State, and a programme for effecting improvements to the existing slum areas have been proposed. The policy of the Slum Clearance Board in so far as re-housing and improvement of the conditions of slum dwellers is :

(1) To provide pucca tenements or houses to the families in the slum areas as far as possible within or close to the area taken up for clearance ; and

(2) To provide basic amenities such as paved path-ways or access-ways, street lighting, water-supply and drainage and bath and lavatories in slum areas which are not likely to be taken up for clearance within the next ten years so as to provide improved living conditions to the families living in these areas immediately.

16·26 The proposals include building of 95,000 houses and flats to re-house slum dwellers at an outlay of Rs. 72·50 crores and providing basic amenities in the other slum areas.

OTHER HOUSING PROGRAMMES

16·27 During the Perspective Plan period, public housing through the Housing Board is expected to be implemented under the following main programmes :

(1) Acquisition and development of land to provide developed plots for various housing projects in important urban centres of the State ;

(2) Utilisation of the funds from HUDCO and other institutions such as LIC and public borrowing for building of houses on a large-scale ; and

(3) Building of flats and houses under Low Income-Group and Middle Income-Group Housing, Government Servants' Rental Housing and Subsidised Industrial Housing, apart from other smaller projects.

16·28. During the Plan period, it is proposed to acquire and develop land in and around the major urban centres of the State to provide about 250,000 house plots. A total of 65,000 Low Income-Group houses and about 32,500 houses for Middle Income-Group has been proposed besides about 2,000 houses for Higher Income-Groups and 5,200 houses under the Government Servants' Rental Housing Scheme. Considering the importance of provision on housing for the industrial labour in the State, a programme for constructing about 14,000 houses has been proposed under the Subsidised Industrial Housing Scheme. Large-scale housing is also planned during the Perspective Plan period in the Urban Nodes of the Madras Metropolitan Area and the Satellite Towns which have been taken up for development by Madras Metropolitan Development Authority as part of the Metropolitan Development Programmes, independent of the targets of the Housing Board. The Government have also recently constituted "The Tamil Nadu Harijan Housing Corporation Limited" to undertake a substantial programme of construction of houses for Harijans designed to remove the present serious inadequacies, which characterise the Harijan housing situtation.

RESEARCH IN REGIONAL PLANNING, URBAN DEVELOPMENT AND HOUSING

16·29. There is urgent need for research in urban development to implement the policy on a sound and scientific basis. Research in urban development would include determination of optimum size of urban communities, types of urban patterns inter-urban and infra-urban migration, municipal financing and tax systems, urban employment, levels of infrastructure facilities, transporation, etc. It is proposed to establish a Research Institute during the Fifth Five-Year Plan period to undertake such research in the fields of Regional Planning, Urban Development and Housing.

OTHER RECOMMENDATIONS

(1) Industrial Housing Colonies

16.30. A few townships have been developed m places where Central Government industrial undertakings are located. Housing colonies for their staff have been constructed in these townships such as in Neyveli. It is observed that there is considerable waste of space and the township has also not been growing satisfactorily in a self-supporting manner. This is mainly due to the fact that private activity is restricted. As the township accommodates only the staff employed in the project, it is unable to expand its scope or increase its activity. When such

townships are developed, the Government should make provision for private development too, in addition to public housing to encourage development of new economic activities and thereby introduce an element of dynamism into life in the township. Sites may either be leased out on long-term basis or allotments made to private persons (other than members of staff of the project) for housing as well as for commercial purpose.

(2) Government's role in accelerating private house building activity and encouraging the use of locally available cheap building materials

16·31. Government's housing policy is primarily oriented to satisfy the housing needs of the lower income groups. The investible surplus resources of the people should be mobilised and directed, to the extent possible, towards development of housing. The people have to be encouraged to help themselves in this regard with only limited assistance from the Government. For this purpose, a proper environment is to be created and financial assistance is to be given through a network of housing finance institutions.

16·32. Government can offer assistance in the form of loans to housing finance institutions at rates of interest lower than prevailing market rates and assist in procuring building materials.

16·33. There is scope for reducing the cost of construction of houses, by use of locally available cheap building materials (such as compressed mud-walls, stabilised earth instead of the traditional brick and cement walls in lower income-group housing and proper designing of the structure and pattern with an eye on economy). Countrywood should liberally be used for ordinary type of doors and windows for houses. The Forest Department should encourage this by devoting attention to mass production of timber useful for this purpose. Research studies and experiments have to be undertaken by Government or the Housing Board for utilising locally available cheaper materials.

(3) Town Planning Administration

16·34. The activities of the Town Planning Department have increased manifold during the recent years. Prior to 1938, the department was headed by a technically qualified officer, but since then the department has been headed by generalist administrators, who hold the posts of Director of Municipal Administration and Town Planning. This position needs to be reviewed and a technically qualified planner may be posted as the head of the Town Planning Department, since the work of the department is of a highly technical nature.

FINANCIAL OUTLAYS

16·35. Financial outlays for the Perspective Plan period 1974-1984 on the various programmes discussed above are given in the Table 16-3 appended.

TABLE 16-3.

Financial Outlays : Perspective Plan— 1974 to 1984.

(Rs. in Lakhs.)

Name of the project	*Outlay*
(0)	(1)
A. REGIONAL PLANNING AND URBAN DEVELOPMENT	
(a) *State Sector*	
1 Preparation and implementation of detailed Development Plans in urban areas—Assistance by loans to Local Planning Authorities.	200
2 Formulation and implementation of Master Plans for urban areas including setting up of Local Planning Authorities.	200
3 Formulation and implementation of Regional Plans including setting up of Regional Planning Authorities.	200
4 Formulation and implementation of Plans for New Towns, Satellite Towns and Urban Nodes including setting up of New Town Authorities and Planning Authorities.	450
5 Setting up of Tamil Nadu State Town and Country Planning Board and strengthening the Directorate of Town Planning.	60
6 Urban Development including acquisition of land—(a self-financing scheme.)	1,500
7 Research in Urban Planning, Publicity and promotion of Planning including library and equipment.	60

(0)	(1)
8 Training of specialists in Town Planning.	25
9 Comprehensive Traffic and Transportation Studies of major cities (including equipment).	150
10 Implementation of Metropolitan Plans for major Cities including setting up of Metropolitan Development Authorities.	475
11 Remunerative enterprises, loan assistance to Local Bodies.	480
Total [A (a)]	**3,800**
(b) *Central Sector*	
12 Pilot Research Projects in Growth Centres.	6
13 Implementation of Metropolitan Plans, Satellite and New Town Plans.	4,994
Total [A (b)]	**5,000**
(c) *Co-operative and Autonomous Sector*	
14 Implementation of Satellite Town Plan.	1,000
New Town Plans	2,000
Total [A (c)]	**3,000**

(0)	(1)
B. URBAN HOUSING.	
(a) *State Sector*	
1 Subsidised Industrial Housing Scheme.	700
2 Low Income Group Housing Scheme.	2,930
3 Middle Income Group Housing Scheme.	2,200
4 Land acquisition and Development Scheme.	5,320
5 Tamil Nadu Government Servants' Rental Housing Scheme.	1,800
6 Slum Clearance Improvement Scheme.	7,250
Total [B (a)]	**20,200**
(b) *Central Sector*	
7 Setting up manufacturing plants for building materials (as bricks, prefabrication, etc.)	800
(c) *Autonomous and other Institutions.—*	
8 Subsidised Industrial Housing ..	242
9 Low Income Group Housing ..	7,500
10 Middle Income Group Housing ..	8,300
11 Other types of houses	958
Total [B (c)]	**17,000**

CHAPTER 17.

Craftsmen Training and Employment Services

PROGRAMMES FOR IMPROVING CRAFTSMEN TRAINING FACILITIES

17.1. The demand for craftsmen is a function of several inter-related factors like the volume of investment, the scale of production and the level of technological advancement. Estimates have been based on available information, relating to increase in labour force, inter-sectoral shift of labourers and growth rates envisaged for the different sectors of the economy.

17.2. Atleast 12 new Industrial Training Institutes with a total sanctioned capacity of 2,500 seats and a few Rural Training Institutes to train workers in the agro-industrial estates will be started. With a view to reduce overcrowding in the trades which have reached a surplus stage in the employment market and for introducing new and popular trades with reference to the demand position in the employment market, a comprehensive scheme of diversification of trades will be implemented. Atleast 4 more centres will be opened during the Perspective Plan for conducting evening classes for industrial workers. The quality of the craftsmen, no doubt, will depend on the quality of the teaching staff and hence, the Craft Instructors recruited for the new Industrial Training Institutes including those who have already undergone training in the Central Training Institute will be sent for refresher training in the Central Training Institute and Industrial establishments. Suitable schemes for apprenticeship training under the Apprentices Act of 1961 will also be implemented besides strengthening the State Directorate of Employment and Training with a curriculum development cell and a planning division. Staff quarters for the essential staff in the Industrial Training Institutes, and hostels for the students will have to be constructed. The entire Craftsmen Training Programme will be evaluated during the Fifth and Sixth Plans. Provision for Research and Development is also made. For implementing all the above schemes, the outlay required in the Perspective Plan will be Rs. 875·00 lakhs.

PROGRAMMES UNDER THE EMPLOYMENT SERVICE

17·3. It is felt that Employment Service needs considerable improvement and expansion during the Perspective Plan period in order to make it play its role in co-ordinating the supply and demand of manpower. Greater stress is to be laid on improving and expanding the activities of the Department of Employment and Training in the Perspective Plan. The activities of the Department can be broadly categorised into : Placement service, collection of Employment Market Information, Vocational Guidance Service, Occupational Research and Analysis, Training and placement of the Physically Handicapped, Training and placement of repatriates from Burmah and Ceylon, Implementation of the Compulsory Notification of Vacancies Act, Staff Training, special efforts at placing the educated unemployed, special assistance and guidance to Scheduled Caste/Scheduled Tribe applicants and public relations.

Expansion of Placement Service

17·4 Under "Placement", the problem is one of staffing. The present staffing is too low to cope with the ever increasing number of job seekers who call at the exchanges. Also, there is need to cover the rural areas. With this end in view, at least 15 sub-employment offices will be established in selected towns in Tamil Nadu with a population of 25,000 and above during the Fifth Plan and a few more sub-employment offices during the Sixth Plan. In the bigger districts, additional employment offices with their areas of jurisdiction properly specified will be set up, so as to serve the public better. Besides the above, with a view to catering specially to the manpower requirements of the proposed steel plant and dealing exclusively with the placement of technical categories of applicants below degree level including diploma holders, a project Employment office at Salem and another Employment office at Madras will be established. The existing District Employment and Sub-employment Offices will be strengthened

adequately. To tone up the standard of efficiency of registration at exchanges and to improve the guidance service, Registration Interviewers will be appointed in all the Employment Offices. Taking into account, the work load at the District Employment Offices, atleast 5 posts of District Employment Officers and 2 posts of Deputy Chiefs will be upgraded into that of Assistant Directors in important and major districts including University Employment Bureau. Adequate staff will be given to each of three existing University Employment Information and Guidance Bureau on a continuing basis to prepare projects on the employability of educated youth, to organise publications to modernise University Employment Programmes and to be in charge of audiovisual and Library materials. Similar Bureau should be started in the Tamil Nadu Agricultural University at Coimbatore. Schemes for the creation of a Public Relations and Publicity Unit for the proper liaison between the public and the Employment Department will also be implemented. A special cell to identify potential entrepreneurs from among the unemployed engineers/technicians and craftsmen and to ensure proper utilisation of Bank loans in new projects will be set up. The Perspective Plan outlay for the above schemes will be Rs. 201·00 lakhs.

Vocational Guidance

17·5. The programme of Vocational Guidance seeks to use the information on job opportunities to the best advantage of the job-seekers. It involves an assessment of the aptitudes, interest and abilities of prospective school leavers and helping them to get into suitable jobs. The programme has to be developed fully to cover all youths during the Perspective Plan period.

17.6. Vocational Guidance Units will be set up in the three Employment Exchanges at Nilgiris, Dharmapuri and Cuddalore and also in select sub-employment offices. In order to improve the efficiency of the Vocational Guidance Scheme, an independent Evaluation and Implementation cell will be set up, besides a State Study Centre for studying and processing occupational and training materials and for editing and issuing reports of guidance interest. Effective placement of candidates of Scheduled Caste/Scheduled Tribes and Ex-services personnel and giving them vocational guidance are very important and hence, specia attention has to be devoted to ensure that they get the maximum benefit out of these facilities. A printing unit will be attached to the Department of Employment and Training so that all the items of printing for the department will be done speedily. This, in turn, would facilitate quick dissemination of Employment Market Information and improve the efficiency of Vocational Guidance and Occupational Information Programmes. It is estimated that the outlay on this account will be Rs. 79·00 lakhs in the ten years 1974-84.

Occupational Research and Analysis

17.7. Occupational Research and Analysis is the pivot around which all the Employment Service activities revolve. It studies, classifies and analyses information on the different occupations in the economy and transmits this information to employment officers, guidance workers, councillors, students, teachers, parents, job-seekers, personnel managers, research workers, etc.

17.8. In the course of its working for well over two decades now, the employment organisation has developed considerable expertise and experience by operating special schemes like the employment market information service, occupational research and analysis and vocational guidance. This expertise will now be used to offer consultancy service to employers, and for this purpose a suitable agency with a headquarters unit at the State Directorate and zonal units will have to be set up.

17.9. The State Occupational Research and Analysis Unit will be expanded so as to include the following additional programmes in its scope : (i) Occupational forecasting ; (ii) Preparation of Occupational specifications and Interview aids ; and (iii) Development of an employers' service cell. The existing programme of preparation of occupational outlook by the State Occupational Research and Analysis Unit will be developed into an occupational forecasting programme which will make reliable forecasts on future occupational patterns and requirements of personnel in specific occupations. The Perspective Plan outlay for the above two schemes will be Rs. 40·00 lakhs.

Implementation of the Compulsory Notification of Vacancies Act

17.10. The implementation of the Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959, is helpful in making accurate studies on manpower. However, even after well over a decade since the passing of the Act, the enforcement side of the Act has not made satisfactory progress and the implementation of the provisions of the Act and the rules has not been effective. Hence, a machinery with a headquarters unit and zonal units will be established to attend to this work. This would involve an outlay of Rs. 30·00 lakhs over the Perspective Plan period.

Man-power Research and Job Profiles

17.11. Man-power research and study has not received the attention it deserves. Because of lack of proper and up-to-date man-power planning, we are left with a paradoxical situation in certain areas where there are " men without jobs and jobs without men". This type of inconvenient shortage and inexpedient surpluses of man-power could be avoided, if there is proper man-power planning and applied man-power research. The State Man-power Research Division will undertake the study and forecasting of man-power supply and demand in respect of all the occupations and the sectors of the economy. Also, this research division will prepare man-power budget on an year-to-year basis.

17.12. For up-to-date job description, specifications and definitions for planning man-power, for recruitment, selections placement and training of labour, wage and personnel administration, education, curricula development, etc., 'Job Profiles' will be useful and hence, a project for the development of Job Profiles in Tamil Nadu will be taken up during the Perspective Plan. The Perspective Plan outlay for the above two schemes will be Rs. 205·00 lakhs.

Placement of the Physically Handicapped

17.13. A workshop for the Blind will be set up to provide employment to the blind who have already received training in some trade or other. Hostels with boarding and lodging facilities and work centres for training, re-training and employing the blind will be provided. The Perspective Plan outlay on this scheme will be Rs. 20·00 lakhs.

17.14. The schemes indicated under the heads ' Craftsmen Training ' and ' Employment Services ' would entail an outlay of Rs. 14·50 crores in all over the Perspective Plan period. This has to be financed by the State out of its resources and Central assistance including receipts from the Union Government under ' Centrally Sponsored Schemes '. An abstract of these outlays is given below. Details of the projects are shown in the Annexure.

Perspective Plan outlays on Craftsmen Training and Employment Services 1974 to 1984.

(Rupees in lakhs)

Serial number and Scheme	*Outlay*
(0)	(1)
I. Improving Craftsmen Training facilities.	875·00
II. Programmes under Employment Services—	
(i) Expansion of Placement services.	201·00
(ii) Vocational Guidance ..	79·00
(iii) Occupational Research and Analysis.	40·00
(iv) Implementation of the provision under the Compulsory Notification of Vacancies Act.	30·00
(v) Man-power Research ..	205·00
(vi) Placement of the Physically handicapped.	20·00
Total	**1,450·00**

ANNEXURE.

Distribution of Outlays on Craftsmen Training and Employment Service Projects 1974 to 1984.

(Rupees in lakh)

Serial number and Project	*Outlay*
(0)	(1)
Man-power and Employment	
A. Craftsmen Training	
1 Industrial skill formation (I.T.Is.).	370·00
2 Construction of Hostels ..	83·00
3 Construction of Staff quarters ..	50·00
4 Strengthening of the State Directorate.	15·00
5 Evaluation, Research and Development.	50·00
6 Diversification of Trades	75·00
7 Replacement and Supply of Epuipment.	100·00
8 Classes for Industrial Workers after shift hours.	2·00
9 New Rural Training Institutes ..	10·00
10 Training of Craft Instructors ..	20·00
11 Apprenticeship Programme ..	100·00
Total (A)	**875·00**
B. Employment Services	
(*a*) *Placement*	
12 Establishment of Sub-employment offices.	94·00
13 Strengthening of District Employment offices.	18·00
14 Strengthening of existing Sub-employment offices.	7·00
15 Establishment of Project Employment office for the proposed Steel Plant at Salem.	4·00
16 Establishment of an Employment Office in Madras City exclusively to deal with technical categories.	2·00
17 Supply of vehicles to Employment Officers.	10·00
18 Appointment of Registration Interviewers.	9·00
19 Upgrading the post of District Employment Officers into that of Assistant Directors.	2·00
20 Assistance to University Employment Bureau.	3·00
21 Creation of a Public Relations and Publicity Unit.	2·00
22 Construction of Building for Employment Exchanges in Madras City and in other towns.	10·00
23 Setting up of Second District Employment Offices in bigger districts.	20·00
23-A Setting up of a Special Cell to identify entrepreneurs.	20·00
Total (*a*)	**201·00**
(b) *Vocational Guidance*	
24 Setting up of Vocational Guidance units in the Employment Exchanges and sub-employment offices.	10·00
25 Strengthening the present staff of vocational guidance units in the districts.	15·00
26 Improving the vocational Guidance and information programmes.	6·00
27 Setting up of State Career Study Centre.	10·00
28 Evaluation and Implementation Cell.	2·00
29 Strengthening the State Vocational Guidance Unit.	1·00
30 Special Vocational Guidance and placement of Scheduled Caste, Scheduled Tribe applicants and Ex-services personnel.	20·00
31 Publications (Printing Press) ..	15·00
Total (b)	**79·00**

(0)	(1)
(c) *Occupational Research and Analysis*	
32 Development of jobs and improved services to industries.	30·00
33 Expansion of Occupational Research and Analysis pro. gramme.	10·00
Total (c)	**40·00**
(d) *Implementation of the Compulsory Notification of Vacancies Act*	
34 Machinery for the enforcement of Employment Exchange (Compulsory Notification of Vacancies) Act, 1959.	30·00
Total (d) ..	**30 00**
(e) *Manpower Research*	
35 State Manpower Division ..	190·00
36 Project for the Development of Job Profiles in Tamil Nadu.	15·00
Total (e)	**205.00**
(f) *Placement of the physically handicapped.*	
37 Setting up of a workshop for the Blind.	20·00
Total (f)	**20.00**
Total (B.)	**575·00**
Grand Total (A+B) ..	**1,450·00**

CHAPTER 18.

Social And Labour Welfare

18·1. The State has a special responsibility, as laid down in the Directive Principles of the Constitution, to promote the educational and economic interests of the weaker sections of the people , and in particular, of the Scheduled Castes, Scheduled Tribes and Backward Classes and to protect them from social injustice and all forms of exploitation. The Social Welfare programmes aim at fulfilling these cherished ideals. Also the economic and social aspects of development programmes are closely inter-connected. This Chapter is intended to elaborate the social aspects of the Perspective Plan. The programme envisaged cover welfare of backward classes including Scheduled Caste and Tribes, women's welfare, child welfare, labour welfare, welfare of physically-handicapped and social defence, etc. The main objective of most of these programmes is to raise the social and economic status of Scheduled Castes, Tribes and Backward Classes to the level of the rest of the community. The scheme proposed under the head ' Social Welfare ' aim at directly helping the vulnerable sections of the society. But apart from these special measures, these economically and socially backward classes will also benefit to a large extent from the different sectoral programmes.

18·2. It may be confidently hoped that the implementation of the various measures listed below in the course of the ten-year period 1974–84 will contribute greatly to the raising of the social and economic status of the backward classes so that they would have a sense of belonging and take an active interest in building up the economy of the State. The programmes fall under six categories:—

(1) Social Welfare measures ;

(2) Correctional Administration ;

(3) Welfare of Scheduled Castes and Tribes ;

(4) Welfare of Backward Classes ;

(5 ' Welfare of Denotified Tribes ; and

(6 ' Industria]Relations and Labour Welfare

SOCIAL WELFARE MEASURES

(i) Womens Welfare

18·3. The basic objectives of the programme for Women's welfare will be the socio-economic rehabilitation of the socially-handicapped women, providing employment opportunities to educated girls who are now unemployed and welfare measures for working women.

18·4. During the Perspective Plan period orientation-*cum*-vocational and training-*cum*-education schemes for the destitutes and economically backward women will be started on a decentralised basis. Grants and interest-free loans to voluntary institutions for implementing socio-economic programmes for socially-handicapped women will be given liberally. Besides the above, service homes to coach the Scheduled Caste and Tribal women coming from backward areas for S.S.L.C. examination and production units where training will be given in making readymade garments, etc. for the economic betterment of the women will be started. Financial assistance to voluntary organisations doing meritorious work in the field of moral and social hygiene will also be given. In order to help the working women coming from poorer classes, more working women's hostels will be constructed.

(ii) Family and Child Welfare

18·5. Family and Child Welfare measures will concentrate on reducing the rate of infant mortality by means of an integrated approach to child welfare. All services and inputs such as nutrition, nutrition education, immunisation, pre-school education, public health and sanitation and other essential services will be provided in a package manner through one institutional agency in every village. In order to implement the welfare programmes on a large scale in the rural areas, it is essential that Maha Mandrams in the rural areas are strengthened.

Integrated nutrition programmes for pre-school children and women will be implemented by the Social Welfare Department. The family planning programmes will largely remain unacceptable to the masses unless the survival rates of infants and children are considerably raised. At present 30 out of every 100 children in Tamil Nadu die before they reach the age of five, and much of this mortality is through malnutrition and infections. The Directorate of Social Welfare may implement a scheme of supplying food for the family of women who undergo tubectomy operation in all the Government Hospitals. This incentive could be, over and above the cash reward now being given to them. This is based upon the view that one of the best ways of ensuring the welfare of women in Tamil Nadu is to see that unwanted pregnancies do not occur and the size of the family is restricted.

(iii) Programmes for the physically handicapped

18·6. The main objective of the programmes under this head will be comprehensive and total rehabilitation of the physically handicapped such as the blind, deaf and dumb, mentally handicapped, mentally retarded and orthopaedically handicapped, etc. This would mean medical rehabilitation including treatment and physiotherapy, education and training with an occupational and functional bias, economic rehabilitation through resettlement in employment and social rehabilitation.

18·7. With a view to achieving the above objectives the following programmes will be implemented during the Perspective Plan. A Research-*cum*-Orientation-*cum*-Training Centre will be started for the staff of the institutions concerned with education and rehabilitation of the physically handicapped persons with headquarters in Madras City. This centre will also initiate research work in several unexplored areas in this long-neglected field. Six special schools for the mentally retarded children of school-going age and vocational-*cum*-rehabilitation centre-*cum*-workshops for the mentally retarded adults, adult deaf and dumb, orthopaedically handicapped adults, and adult blind will be started during the Perspective Plan. Besides the above programme, liberal grants to voluntary institutions for implementing socio-economic programmes for rehabilitation will be given.

18·8. With a view to consolidating and co-ordinating the efforts made by correctional institutions and agencies, a Tamil Nadu Bureau of Correctional Services, will be established. Similarly, a Tamil Nadu Bureau of Social Assistance will be set up to co-ordinate the various assistance programmes for the aged, physically and/or mentally handicapped and destitute women and children.

(iv) Care of the aged

18·9. Programmes for the aged are not so far thought of and hence a beginning will be made in the Perspective Plan. A department will be created for this purpose. In the coming years the expectancy of life would increase appreciaiy in response to general health services and genratric medicine. As the general average move above 50 years, there will be a large number of men and women above 55 years at varying stages of physcial and menta capabilities. It is proposed to undertake studies to find out how best services of persons beyond the age of 55 and 60 may be utilised. Also homes will have to be established for the aged in selected urban centres. The management would vest in voluntry social service bodies which would raise founds and administer the grants given by the Government.

(v) Beggar Rehabilitation Programme

18.10. Measures for the eradication of beggary will comprise of (*a*) comprehensive rehabilitation of all able-bodied beggars and (*b*) total eradication of beggars by the end of the Perspective Plan. Keeping the above objectives in view, the existing Beggar Homes will be strengthened by providing suitable technical staff for giving training to beggars to make them economically independent. Moreover, all the Beggar Homes now being run by the local bodies will be taken over by the Tamil Nadu Bureau of Social Assistance.

(vi) Orientation training to slum dwellers

18.11. Government started a massive programme of slum clearance during the Fourth Plan and the scheme is proposed to be continued during the Perspective Plan also. Before the slum dwellers are accommodated in the new buildings, orientation training will be imparted to them to enable them to take care of their problems of adjustment to the new environment.

(vii) Organisation and Staff

18.12. The present Directorate of Social Welfare does not have the requisite administrative machi-

nery to carry out the development programmes proposed for the Perspective Plan and this calls for the administrative reorganisation of the Directorate. The jurisdiction of the District Women's Welfare Officers will be reduced to that of a Revenue Divisional Officer to facilitate effective supervision of the programme. This would mean that each Revenue Division would have one District Women's Welfare Officer who would be assisted in each Panchayat Union by a Mukhya Sevika to be redesignated as Extension Officer, Social Welfare, so that she may co-ordinate the activities of the Grama-Sevikas whose duties and responsibilities will be recast in a revised set up. At the district level, posts of Assistant Directors of Social Welfare will be created with supporting staff. Besides the above, one post of Joint Director (Nutrition) and two posts of Deputy Directors with supporting staff will be created in the headquarters. Suitable regional staff for doing publicity work and for carrying out other social welfare programmes will be given to the Directorate besides orientation training to the existing staff of the Directorate.

CORRECTIONAL ADMINISTRATION

(i) Juvenile delinquency and Vigilance Services

18.13 The Directorate of Approved Schools and Vigilance Services will be renamed as Directorate of Correctional Administration. This Directorate will take over all the functions now carried out by the Directorate of Approved Schools and Vigilance Services.

18.14 Programmes for the Perspective Plan include the starting of Industrial Units on the pattern of Industrial Training Institute in the Government Approved Schools, modernisation of the Carpentry unit in the Government Senior Approved Schools, opening of Homes for Destitutes and illegitimate children, provincialisation of Private Approved Schools, opening of Junior Approved Schools, provincialisation of the Vigilance Home under Meenakshi Sadanam, Madurai, opening of Government Protective Homes, establishment of a Probation Organisation for Juvenile Delinquents and moral delinquents under suppression of Immoral Traffic in Women and Girls Act, non-institutional services for juvenile delinquents, construction of buildings for Government After-care Homes, and provision of a Statistical Section in the Directorate.

(ii) Social Defence

18.15 The basic operations of Correctional Administration would cover the programmes followed in all the jails of Tamil Nadu. These may be listed as follows : orientation, classification, education, vocational programmes, welfare measures, group therapy, religious discourses, pre-release preparations, custody, discipline and after-care. All the above activities of the Department of Jails will be strengthened during the Perspective Plan.

18.16 In addition, the programmes for the Perspective Plan include the appointment of experts like psychologists, psychiatrists, criminologists and trained social workers ; starting of simple trades and industries such as service station-cum-automobile repairing station, power-driven tailoring industry, electroplating and stainless steel industry in Central Jails ; appointment of District Agricultural Officers, Agricultural Demonstrators in the jails ; purchase of machine power drills for agricultural operations in jails ; starting of open-air jails and off-season industries in the open air jails ; appointment of Special Officers for open-air jails ; starting of regional training schools for jail officers ; construction of after-care shelters and after-care homes ; the setting of a research wing at the Inspectorate ; appointment of Additional Probation officers ; establishment of probation Home and construction of new buildings and improvements to existing buildings.

WELFARE OF THE SCHEDULED CASTES AND SCHEDULED TRIBES

18.17 The scheme proposed for the social integration of the Scheduled Castes and Scheduled Tribes during the Perspective Plan can be broadly classified under four major heads, viz., Research, Education, Employment and Economic Advancement, and Special Health, Housing and other schemes.

(a) Research

18.18 With a view to obtaining reliable information about the socio-economic conditions of the Harijans, District Surveys will be undertaken during the Fifth Plan. An Institute of Tribal Research to do continuous research on various aspects of the socio-economic activities of the tribal areas will be established.

(b) Education

18.19 Under 'Education' the following suggestions are made :—

(1) *Income limit of eligibility for scholarships*

18.20 The present income limit in respect of the residential and non-residential scholarships sanctioned to the Scheduled Castes/Scheduled Tribes is Rs. 3,500 per annum and that in respect of Backward Classes is Rs. 2,000. For the past several years there has been a demand for raising these income limits. Hence the following upward revision is recommended :—

(i) Scheduled Castes/Scheduled Tribes and Denotified Tribes—Rs. 6,000 per annum.

(ii) Backward classes—Rs. 3,600 per annum.

Considering the amount of additional financial burden upon the Government and bearing the objective behind this in mind, some kind of a slab system may be followed. For Scheduled Castes, Scheduled Tribes and Denotified Tribes, the slab could be as follows :—

Rs. 3,600 could be made eligible for full scholarship ; between Rs. 3,600 and Rs. 4,800 half scholarship ; and between Rs. 4,800 and Rs. 6,000 one-third scholarship.

18.21 Similarly, for the Backward Classes, up to Rs. 3,000 the scholarship may be for the full amount, and between Rs. 3,000 and Rs. 3,600 the scholarship may be for half the amount.

(2) *Merit Scholarships*

18.22 It is also necessary to introduce merit scholarships for Scheduled Castes, Scheduled Tribes and Denotified Tribes with incomes above Rs. 6,000 and below Rs. 9,000. Similarly, for the benefit of students of the Backward classes whose parents' annual income is above Rs. 3,600 and below Rs. 6,000 merit scholarships should be introduced.

18.23 The pre-matric scholarships given at present, range from Rs. 4 to Rs. 30 per year from the I standard in the Elementary School up to S.S.L.C. Since the children belonging to these weaker sections drop out of school more frequently than children of other section of population, it is necessary that the rates of these scholarships are doubled.

18.24. As the objective is to give proirity to education and to prevent drop-outs in schools and colleges, both pre-matric and post-matric scholarships will be given to the students belonging to the Schedual Castes and Scheduled Tribes. 395 school buildings (350 for Scheduled Castes and 45 for Scheduled Tribes) will be constructed during the Perspective Plan, besides the opening of 70 residential schools for Scheduled Tribes. The schemes on supply of midday meals and supply of clothing in the Harijan Welfare schools will be expanded. Since the teachers are reluctant to work in tribal areas which are in hilly tracts, 1,330 houses will be constructed for their use in such areas. To bring up the weaker sections to the main stream of general educational as well as professional level, the following special schemes will be implemented during the Perspective Plan :—

(i) a pre-examination training Centre to train up the Scheduled Castes/Scheduled Tribes candidates for appearing for the All India Service Competitive examinations like I.A.S., I.P.S., etc., (ii) special training and counselling to the Scheduled Caste/Scheduled Tribe candidates appearing for Competitive Examinations conducted by the Tamil Nadu Public Service Commission ; (iii) coaching centres for college students to impart tution in the subjects in which the students are generally found to be weak ; (iv) training of Scheduled Caste and Scheduled Tribe candidates in typewriting and shorthand ; and (v) loans to students belonging to Scheduled Caste/Scheduled Tribes for pursuing Arts and Professional courses.

(c) Employment and Economic Advancement

18.25 With a view to generating employment opportunities for the Harijans and thereby advancing their economic status, the following schemes will be implemented during the Perspective Plan :-

Financial assistance by way of subsidy to purchase ploughs, bulls and to construct irrigation wells will be given to 15,000 Scheduled Caste families and 9,000 Scheduled Tribe families besides assistance to 165 Co-operative Milk Supply Societies. More of multi-purpose forest and labour co-operative societies will be started in addition to the existing 20 societies. An integrated production and marketing programme for cottage industries involving establishment of a net work of Industrial Co-operative Societies, Training/Training-*cum*-production centres and work centres will be implemented with a view to enabling the Scheduled Caste and Scheduled Tribe persons to settle themselves in the trades in which they are trained. Besides, in order to enable such persons, who are interested in doing petty trades to carry on their trades independently, subsidy and loans will be given. A Development Corporation for Scheduled Castes and Tribes to deal exclusively with the problems of employment and economic advancement will be established.

(d) Special Health, Housing and other schemes

18.26. Under "housing" the following three schemes are contemplated :

(i) House sites to Harijans (ii) Assistance by way of loan and subsidy to the Scheduled Caste/ Scheduled Tribe persons to construct 36,000 houses, and (iii) Assistance to the sweepers and scavengers to construct 17,500 houses. For this purpose, a separate agency for Housing and Development of Harijans will be set up.* It is proposed to supply sweepers and scavengers with wheel barrows, pans and scrappers, gum-boots, etc. 6,025 drinking-water wells and 1,100 overhead tanks will be provided in Harijan and Tribal colonies. The schemes to provide link roads to all tribal colonies in the tribal areas as well as forming 13 tribal model villages will be implemented. Special attention will be devoted to providing mobile medical service to all the tribal areas so as to bring medical facilities within their easy reach. To enable the Harijans to conduct marriages, religious functions and other meetings, 475 community Halls will be constructed. With a view to creating a castless and classless society, an inter-caste Marriage Advisory Board would be established to give family counselling to inter-caste married couples. As an encouragement, the inter-caste married couples will be given liberal loan facilities to purchase utensils, furniture and other household goods. .

WELFARE OF BACKWARD CLASSES

18·27 The schemes proposed for the socia integration of the Backward classes during the Perspective Plan period are as follows :—

(a) Education

18·28. The Backward Classes are lagging very much behind others in the field of education. Larger assistance in the shape of scholarships (both Residential and non-residential) is necessary to promote their educational standards. In pursuance of the recommendation made by the Backward Classes Commission and with a view to providing assistance to the deserving aspirants for research work in humanities as well as in Science subjects, 336 fellowships will be awarded. 500 hostels will be opened for students of the Backward Classes during the Perspective Plan and the inmates will be supplied with two sets of dresses each in a year. With a view to improve the quality in education, the students who are weak in their studies will be given special tution and for this purpose the following schemes will be implemented :

(i) Appointment of 750 part-time tutors exclusively for coaching the boarders in the Government hostels; and

(ii) Coaching centres for slow learners in colleges and high schools. A special coaching centre to train the candidates appearing for the competitive examinations conducted by the Tamil Nadu Public Service Commission will be started during the Perspective Plan.

(b) Self Employment Schemes

18·29 Barbers and dhobies belonging to "Other Backward Classes" are economically very backward and in order to increase their chances of employment, the scheme of giving subsidised tools and appliances will be continued during the Perspective Plan. Enterprising but, poor, among the Backward Classes will be given loans to enable

*Government of Tamil Nadu have recently set up the Harijan Housing and Development Corporation.

them to start cottage industries and to carry on trades like running a cycle shop, small hotel, automobile workshops, retail shops, etc.

(c) Health, Housing and other Schemes

18·30 Co-operative House Building societies will be formed in each district and liberal loans to 17,500 persons among the Backward Classes will be given on a priority basis to enable them to build houses.

WELFARE OF DENOTIFIED TRIBES

18·31 The schemes for the welfare of the Denotified Tribes come under centrally-sponsored programmes. About one-third of the total Denotified Tribal population of the Nation is from Tamil Nadu and, as such, it would be proper if the allocation of funds for this purpose by the Union Government is made either on the basis of actual demand or on population basis.

18·32 The following are the schemes for implementation during the Perspective Plan:—

(a) Education

18·33 The Denotified Tribes are very backward in the field of education and financially weak. Therefore, both pre-matric and post-matric scholarships will have to be sanctioned to them. With a view to keeping the attendance high in the Denotified Tribal schools, the following schemes will be continued : (i) supply of mid-day meals ; (ii) supply of two sets of dresses to all the children ; and (iii) supply of books and slates to the pupils. Most of the Denotified Tribal Schools are not fully equipped with required furniture and other accessories and therefore, it is necessary to attend to these requirements immediately. Besides, the construction of 240 pucca school buildings is needed. During the Perspective Plan 50 Elementary Schools will be upgraded into Higher Elementary Schools and 35 Higher Elementary Schools into High Schools. It is proposed to open 40 hostels during the Perspective Plan period besides constructing twenty-five pucca buildings to house the hostels. Forty part-time tutors will also be appointed to give special coaching to the inmates. Many of the Denotified Tribal schools are situated in the villages and the teachers working in those schools are finding it very difficult to get accommodation and therefore 350 teachers' quarters will be constructed. Financial assistance will be given to the higher elementary and high schools for the purpose of organising excursions. Even today many families belonging to the Denotified Tribe Community do not evince much interest in sending their young children to schools and hence it is necessary to set up Nursery schools to wean them from the many unhealthy social customs which stand in the way of their educational progress. It is therefore proposed to start 125 Nursery schools during 1974-84.

(b) Employment and Economic Advancement

18·34. Almost all Denotified Tribes are agriculturists. To wean them from their old nomadic habits, it is absolutely necessary to assist them to settle down in life. This is sought to be attained by giving financial assistance to 8,500 families for sinking irrigation wells and to another 8,500 families for purchasing ploughs and bulls. With a view to imparting training to the Denotified Tribes in various trades, nine General Purpose Engineering workshops and fifteen Cottage Industrial Centres will be started. Even after completing the training many of the persons trained would be unable to settle in the trade for want of tools and implements. Hence, 8,000 such persons will be supplied with the necessary tools and implements. In pursuance of the recommendations of the Backward Classes Commission, a reclamation scheme on the lines of the Kallar Reclamation Scheme in Madurai District, will be started in Tirunelveli and Ramanathapuram Districts for Maravars and Valayars during the Fifth Plan. This scheme will be continued during the Sixth Plan also to cover other needy communities.

(c) Housing

18·35. A small number of houses were constructed in the Second and Third Plans for the Denotified Tribes but during the Fourth Plan this scheme could not be carried out because of lack of finance. During the Perspective Plan Rs. 180 lakhs will be spent in the form of subsidy to construct 12,500 houses.

INDUSTRIAL RELATIONS AND LABOUR WELFARE

18·36. An enlightened labour policy should necessarily form an important component of a Development Plan which has, as one of its main objectives, the welfare of the masses. Good industrial relations are a necessary pre-condition for increasing production, productivity and growth rate. Good faith is now universally recognised as one of the key concepts of collective bargaining. This concept will greatly help in settling problems that cannot easily be brought under the legal discipline. It is admitted that in matters concerning labour, no consensus of opinion has evolved as between labour and management.

OUTLOOK FOR PERSPECTIVE PLAN

18·37. Taking into account the recommendations of the National Commission on Labour and the needs of Tamil Nadu, the following programmes are set forth for implementation in the ten year period 1974–84 :—

(i) establishment of a Tamil Nadu Bureau for Labour services and Information ;

(ii) strengthening of the machinery for settlement of disputes ;

(iii) the determination of the representative union ;

(iv) measures concerning unorganised labour ;

(v) labour welfare measures ; and

(vi) introducing the concept of " good faith " as the basis in bargaining.

18·38. The need for upto-date, exhaustive and authentic information on various activities of Government, management, labour unions and other voluntary agencies concerning labour has been keenly felt. With a view to fulfilling this need, a centre for Labour Information will be set up in the office of the Comissioner of Labour.* It will have a well-maintained library with facilities for documentation, references, preparation and mailing of labour bulletins, etc. This Centre will also disseminate labour information through mass media as also through the organisation of seminars and symposia.

18·39. Regarding the machinery for the settlement of disputes, the need is for taking prompt and effective steps as the losses in man-days resulting from industrial disputes affect the economy seriously. The recommendations of the National Commission on Labour have been considered by the Standing Labour Committee and it has been decided that Industrial Relations Commissions will be established both at the Centre and in the States for this work.

18·40. Regarding the determination of the representative unions, it has been observed that many of the industrial disputes which arise in this State as well as the country as a whole, are due to inter-union rivalry. There is general acceptance of the principle of " one union for one industry " or atleast one union for one industrial establishment. The National Commission on Labour has recommended that " it would be desirable to make recognition compulsory under a central law in all undertakings employing 100 or more workers or where the capital invested is above a stipulated size". The Government of Tamil Nadu have drafted a bill to provide for the statutory recognition of representative trade unions for facilitating collective bargaining in certain undertakings and to lay down their rights and obligations and to provide for prevention of certain unfair labour practices.

18.41 As for unorganised labour, there is a feeling that their interests are not propely safeguarded. Some of the unorganised industries in Tamil Nadu are agriculture, handloom weaving, fishing, beedi and cigar rolling, tanning and shops and commercial establishments. The National Commission on Labour have recommended that there should be a better understanding of the problems of the unorganised labour through detailed surveys. They have also recommended a greater role of the State Government in providing legislative protection to unorganised labour. Other procedural reforms have also been recommended. Employment in agriculture, beedi and cigar industry, handloom weaving and tanneries is covered by the Minimum Wages Act of 1948. It is necessary to add employment in shops and commercial establishments to the Schedule to the Minimum Wages Act. A State level committee has already been constituted by Government to study the living conditions of beedi

* This has been recently set up by the Government of Tamil Nadu.

workers and the workers engaged in other unorganised industries and to make suitable proposals for providing them with welfare amenities such as houses, medical facilities and other benefits.

18.42 Concerning Labour Welfare, apart from the statutory welfare amentities, there is a large uncovered area in the life of the workers as well as their families which is outside the scope of statutory welfare. As per the recommendations of the Committee on Labour Welfare, Government of Tamil Nadu have constituted a Labour Welfare Fund with an initial grant of Rs. 5·00 lakhs and also set up a Labour Welfare Board with the Minister for Labour as Chairman. The Government have also enacted the " Tamil Nadu Labour Welfare Funds Act, 1972 " which among other things provides for realisation of contributions from the employers and the employees to the above fund. The Labour Welfare Board has already met and labour welfare centres have been started at Madras, Madurai and Coimbatore. The Scheme to build workers' stadia has also been accepted.

18·43 The concept of " good faith " in bargaining needs to be taken up earnestly and educative measures to propagate the idea among all grades of labour as well as employers have to be initiated. This would contribute substantially to better industrial and labour relations.

PERSPECTIVE PLAN SCHEME

18·44 Among specific labour welfare measures to be adopted in the Perspective Plan period are the following :

(i) Industrial Housing

18·45 With a view to promoting industrial housing, Government of India initiated a subsidised Industrial Housing Scheme to cover workers coming under the purview of the Factories Act, 1948 and workers in mines other than coal, mica and iron-ore. Under this scheme, the Government of India provide financial assistance to the State Government, statutory Housing Boards, employers and co-operative societies of Industrial workers, in the form of loan and subsidy. This scheme however, has not worked satisfactorily and very little progress has been achieved. It has to be revived and extended vigorously.

(ii) Plantation Labour Housing Scheme

18·46 Under the Plantation Labour Housing Scheme, financial assistance to the extent of 50 per cent of the ceiling cost as loan and 37½ per cent as subsidy is given to planters for provision of houses workers. A wider coverage is recommended to their during the Perspective Plan.

(iii) Other Welfare Schemes

18.47 Worker's stadia in places like Tiruvottiyur, Coimbatore, Madurai, etc., will be constructed. Welfare centres in Guindy, Vellore, Tiruchirappalli Rajapalayam, Sivakasi, Tirupur, Kovilpatti or Tuticorin, Dindigul or Madurai, Nagercoil, Salem, etc. will be opened.

18·48 The State outlay on Social Welfare envisaged in the Perspective Plan period is Rs. 38·05 crores. This is exclusive of the allotment of Rs. 77·00 crores and Rs.10·00 crores respectively for Welfare of Backward classes and Hill Areas Development, and Rs. 5·00 crores for Labour Welfare. The details are given below :—

(Rs. in Crores)

Item (0)	*Outlay* (1)
A. Social Welfare	
1. Women and Child Welfare ..	23·00
2. Welfare of the Handicapped ..	1·60
3 Social Defence Programmes ..	6·26
4. Other Social Welfare Programmes	7·19
	38·05
B. Welfare of Backward Classes	
1. Research	2·80
2. Education	46·20
3. Employment and Economic Advancement.	18·00
4. Health and Housing	10·00
	77·00
C. Tribal Areas Development (Hill areas)	
1. Research	1·00
2. Education	2·50
3. Employment and Economic Advancement.	2·50
4. Health	4·00
	10·00
D. Labour Welfare	5·00
Total A .B .C and D.	**130.05**

PART V

Productive Activities

CHAPTER 19

Mineral Development

19.1 There are certain special features of the development of the mineral resources of a state which distinguish it from other programmes of development. Firstly, investment in mineral development is mostly for exploring mineral potentialities. Hence, no cost-and-benefit relationship can be established between the investment made in any one year and the mineral deposits discovered in that year. The existence of valuable minerals may be brought to light in a particular period of time, but this obviously is the result of the large amount of money spent on exploratory work over a number of preceding years. Secondly, it is usual to calculate the contribution of mineral development to national product by taking into account the market value of the mineral output. This again is misleading in so far as mineral resources constitute a stock of wealth exhaustible, but not reproduceable. Hence, economic prudence requires that these resources are not frittered away by being sold in the world's markets at any price which they may fetch, but are conserved and utilized in the country itself to the maximum exent possible. The sale value of the mineral products is far below the extent to which the value of the national product could have increased if these resources had been put into industrial use within the State or Country. Nevertheless, in practice, the value of mineral-production is accepted as an indicator of the progress in mineral development.

Progress of Mineral Development in the State

19.2 What has been achieved in Tamil Nadu in the last few years in mineral development can be examined under two heads :—

(*a*) Exploration of new areas and new minerals.

(*b*) Establishment of new industries made possible by exploitation of mineral resources.

(a) Exploration of new areas and new minerals

19.3 For some years since the inception of the Geology Branch of the Industries Department in 1957, geological work in the State was mostly concentrated on surveys and exploration. These surveys have covered most of the districts of geological importance—Nilgiris, Coimbatore, Salem, North Arcot, Tiruchirappalli, Madurai, Ramanathapuram and Tirunelvei and have helped in making an estimate of the reserves of some important minerals, bauxite, iron ores, limestone, graphite, refractory clay and vermiculite. During the years covered by the Annual plans, 1967-69, several systematic mineral surveys were undertaken in hitherto unsurveyed areas, especially in the hill tracts of Tirunelveli, Madurai and Coimbatore Districts. In the Fourth Plan Period, detailed investigations, including drilling for checking up the earlier reported occurrences of limestone, graphite clays and iron ores were taken up with a view to test the quality and assess the quantity of the reserves. Likewise, the high grade limestone (Crystaline and sedimentary types) occurring in parts of Salem and Tiruchirappalli Districts were reassessed and the deposits were recommended for reservation for the proposed Salem Steel Plant. These investigations over the past fifteen years have resulted in increased exploitation of the mineral wealth. The value of minerals produced in the State was 1·3 per cent of the value of India's mineral production in 1957, but rose to 1·7 per cent in 1961 and 3·1 per cent in 1970.

19.4 An important landmark in the expansion of the geological activities of the State is the commissioning of the Tamil Nadu Mineral Development Project in April 1968 under the auspices of the United Nations Development Programme. According to this programme, experts in the field attached to the United Nations undertook a sophisticated mineral survey including air-borne geophysica lsurvey of selected areas in the State and also of hilly terrain where the usual field investigation poses a problem. The total estimated outlay on the project was Rs. 105·09 lakhs, of which, the State's contribution was fixed at Rs. 34·62 lakhs. An area of about 17,000 sq. kilometres in parts of North Arcot, South Arcot, Dharmapuri and Salem Districts was taken up for extensive and intensive exploration

and as a result, large reserves of iron ores in Kavuthimalai reserve forest in Thiruvannamalai (North Arcot District) estimated at about 140 million tonnes were located. Another important outcome was the location of radioactive and rare mineral deposits of pyrochlore containing uranium, niobium and tantalum elements in Sevathur area in Tirupathur taluk. This has led the way for further intensive exploration for these rare minerals by the Atomic Energy Commission.

19.5 Apart from these valuable findings, costly and sophisticated equipments have been made available to the State under the United Nations Programme and facilities have been provided for the training of counterpart personnel in modern techniques of geological exploration. The project area during the first phase was restricted to a few northern districts in Tamil Nadu. The hilly tracts in Coimbaotre, Salem and Dharmapuri Districts have to be taken up for survey in the second phase. The general objective of the second phase of the project is to conduct an intesive exploration survey for new mineral deposits over an additional area of 13,000 sq. kilometers and to complete the development and economic evaluation of deposits in the present project area.

(b) Establishment of New Industries

19.6 Over the last decade 1961 to 1971, the value of mineral production in Tamil Nadu increased from Rs. 318 lakhs to Rs. 2,397 lakhs—an increase by nearly eight times. But the economic significance of this impressive improvement in production has to be judged with reference to its contribution to industrial development. In this respect the achievement made so far cannot be considered as noteworthy and the new industries that have come up as a result of the increased exploration activity are not many. In the Third Five-Year Plan period detailed examination of the limestone deposits in Ramanathapuram, Madurai and Tiruchirappalli Districts was conducted. As a result of these surveys, the toal limestone reserves suitable for cement manufacture had been estimated at about 200 million tonnes. Following this, three cement plants—two in the private sector and one in the public sector—were set up. In the same period letailed prospecting for deposits of bauxite was undertaken. This resulted in the discovery of bauxite reserves of about 7·5 million tonnes and led to the setting up of an Aluminium Plant at Mettur by Mettur Aluminium Company with a capacity of 10,000 tonnes of aluminium ingots per annum which was subsequently expanded to produce yearly 20,000 tonnes of aluminium ingots. Equally significant was the setting up of the fertilizer plant, briquetting and carbonization plant and the thermal power plant based on the lignite-resources of Neyveli in the early 1960's. Another investigation which has made possible the establishment of a new industry is the one relating to vermiculite occurring near Tirupattur in North Arcot District. Thirty-five trial pits were opened, of which, twenty-five showed vermiculite to a depth ranging from 2 to 4 metres. It is estimated that 1·93 lakh tonnes of vermiculite is likely to be available in this area. Taking advantage of this finding, the State Geology Branch set up a plant in the Fourth Five-Year Plan period in Ambattur for exfoliating the vermiculite mined at Sevathur. At present, the average production of the mine is 30 tonnes per month and the capacity of the plant is 25 tonnes of exfoliated vermiculite per month, but there is scope for expansion.

19.7 Mention should also be made of the detailed investigation of iron ores of Kanjamalai and Godumalai near Salem which has cleared the way for the setting up of the Salem Steel Plant.

19.8 It has, however, to be added that, had greater emphasis been laid on finding out ways and means of utilising the mineral resources for industrial pruposes in the State, a larger number of industries than the few mentioned above could have been established.

PROGRAMMES OF DEVELOPMENT IN THE PERSPECTIVE PLAN PERIOD

19.9 The major objective of mineral development should be to make a detailed investigation of the mineral resources of each district of the State and to exploit in full the scope for the domestice absorption of these materials in industrial use. In fact, this should be the key note of mineral development policy in the Perspective Plan period, for, exploitation of natural resources has no meaning unless it leads to maximum co ntribution to nationa

TAMIL NADU

(MINERALS)

SCALE 1 INCH = 36 MILES

REFERENCE

- State boundary
- Railway line (B. G.)
- Railway line (M. G.)
- River
- Village site

LEGEND

Barytes	Garnet Sands	Magnesite
Bauxite	Graphite	Mica
Beryl	Gypsum	Molybdenite
Celestite	Ilmenite Sands	Monazite
China Clay	Iron Ore	Phosphates (Apatite & Phosphatic Nodules)
Chromite	Lignite	Pyrite & Pyrrhotite
Clay	Limeshell	Quartz
Columbite-Tantalite	Limestone (Coral & Marine)	Salt
Copper, Lead & Zinc	Limestone (Crystalline)	Sillimanite
Corundum	Limestone (Dolomite)	Steatite
Feldspar	Limestone (Kankary & Tufaceous)	Vermiculite
Gold		

or or State output. And it is needless to mention the obobvious fact that the value added to output as a resresult of the processing of the minerals and putting thehem to industrial use will be a multiple of their valvalue in their crude form. The increased employmenent potentialities and the forward linkage effects of of such usage are also equally clear.

1 19.10 Accordingly, the programmes of developmenent in the ten year period, 1974—75 to 1983—84, wilvill comprise of—

A. Industrial use of certain available minerals.

B. Further exploration of mineral deposits.

C. Conservation of rare minerals.

D. Administrative and Organizational changes.

E. Research and Development Proposals.

A. INDUSTRIAL USE OF AVAILABLE MINERALS

(i) i) Expansion of existing vermiculite Mine and Exfoliation Plant and setting up of ancillary industries

19.11 A beginning has been made in the matter of of processing of vermiculite and increasing its proroduction on a commercial scale. There appears to o be a growing demand for this material and a nunumber of trade enquiries have been received foror the crude and exfoliated vermiculite. It is proroposed to double the production of exfoliated vevermiculite and set up ancillary industries utilising thihis as raw materials for the production of partition boboards, insulation material, etc. The scheme enmvisages production of 70 tonnes of crude vermicululite from the mines and about 50 tonnes of exfoliatated vermiculite per year.

(ii)ii) Mining and beneficiation of graphite occuring near Sivaganga in Ramanathapuram District

19.12 There is an increasing demand for graphite anand graphite products, particularly for graphite crucrucibles in the country. Since domestic production is s not adequate to meet the entire demand, abiabout 2,000 to 3,000 tonnes of graphite is imported amnnually. Considering its strategic value, the GGovernment of India have accorded top priority for thehe exploitation of graphite deposits in the cocountry. Sizable deposits of graphite recently discovered near Sivaganga, in Ramanathapuram District, afford excellent possibilities for the development of the graphite crucible industry and for making industrial graphite powder. The detailed tests conducted by the Government Graphite Crucible Centre at Rajahmundry and at Patna State Grahite Mining Co., Titlagarh, Orissa State, have shown that the graphite of Sivaganga are of the flaky type and can be profitably used for the manufacture of crucibles. The present scheme envisages mining of about 20 to 25 tonnes of crude ore which can be processed to obtain 2 to 3 tonnes of graphite concentrates per day.

(iii) Granite Cutting and Polishing Industry

19.13 Polished stone industry has been in existence for several years on a small scale in the States of Andhra Pradesh, Karnataka and Tamil Nadu. In recent years there has been a great demand for black granite in countries like Japan, United Kingdom and West Germany. In Tamil Nadu, there are a number of varieties of granite that are suitable for polishing. The long ridges of granite, syenites and dyke rocks that stretch over North Arcot, Dharmapuri and South Arcot Districts are eminently suitable for this type of industry.

19.14 There are, at present, a number of stone polishing units in Kuppam in Chittoor District (Andhra Pradesh) which use the black granites of Tamil Nadu. These granites have great export demand because of their pleasing colour, uniformity of grain size, compactness and equal granular texture. There is thus, great scope for the establishment of an industrial unit equipped with modern tools and accessories for cutting and polishing the stones on a scale large enough to meet internal as well as export demands. Besides dolerite, pink granites and green quartzite are other rock types that take good polish and for which also there is likely to be great demand. The scheme envisages the production of cut and dressed rock, dressed and polished stones, polished flooring tiles and ornamental facings of different sizes.

19.15 The above-mentioned three projects may be taken up in the Fifth Plan Period. Proposals to be included in the mineral development programme of the Sixth Five-Year Plan are the following :

(iv) Exploitation of Thiruvannamalai iron-ore deposits

19·16 In the course of the invstigations carried out by the Tamil Nadu Mineral Development Project with aid from the U.N. Development programme, a fairly large deposit of magnetic iron ore was located in three or four hills around Thiruvannamalai. Based on information from surface studies and availabe bore hole data, it is expected that the reserves of iron ore in the area may be about 140 million tonnes of which about 116 million tonnes will be in the two hills of Kavuthimalai and Vediappanmalai, about 8 Kms. to the west and northwest of Thiruvannamalai. Field investigations such as drilling, trenching, trial pitting and detailed geological mapping are being continued in these regions and it is expected that the U.N. Development Programme would be able to produce a feasibility report on the Thiruvannamalai iron ores by the end of 1974.

19.17 Of late, some European countries and Japan have shown a preference for 'prepared' or beneficiated ores in the form of magnetite pellets in the place of crude iron ores which they have been importing for some years. Magnetite concentrates and pellets can also be advantageously used in the Salem Steel Plant. It may, therefore, be expected that there would be large demand for magnetic concentrates within Tamil Nadu as well as for exports to foreign countries like Japan and Germany. With all the infrastructure and other facilities available such as easy accessibility to the ports of Madras and Cuddalore, the iorn ore deposits of Thiruvannamalai are well suited for exploitation. Hence, it is proposed that a projeet may be initiated early in the Sixth Five-Year Plan period to produce about one million tonnes of magnetite pellets near Thiruvannamalai. Though the actual establishment of the plant comes under the 'Large Industries' sector, the preliminary work of investigation involving technical studies falls within the purview of mineral development. A token provision has been made for this project in the Fifth Plan Period but the major part of the scheme has to be executed only in the latter years of the Perspective Plan period. Also, in view of the increasing preference for the use of concentrated magnetite ores in the form of sinters, pellets, or other form of beneficiated agglommates in iron and steel making it necessary to conduct feasibility studies on important exposures in Tamil Nadu.

(v) Magnesium Metal Project

19.18 Magnesium metal finds use in the preparation of magnesiumbase alloys, particularly with zinc, aluminium zirconium and manganese. With rapid progress of industrialisation, the probable demand in India for magnesium metal would be roughly about 1,000 tonnes per annum.

19.19 Under a pilot project jointly financed by the Tamil Nadu Government and the Council of Scientific and Industrial Research, the Electro Chemical Research Institute at Karaikudi have set up a producing unit which turns out about 250 Kgs. of magnesium metal per day by electrolytic method. The magnesite is treated with hydrochloric acid to produce magnesium chloride. The magnesium chloride is then spray dried to remove water and then electrolysed. Since the pilot test studies on this project have proved highly successful, an industrial unit can be established for producing magnesium metal in Salem District in the Sixth Plan utilising the low grade magnesites and probably chlorine gas from Mettur Chemicals Ltd.

(vi) Manufacture of high temperature refractories

19.20 The three new steel plants to be set up at Salem, Visakhapatnam and Hospet will require considerable quantities of refractories made with magnesite. A rough estimate is that more than 300,000 tonnes of additional magnesite of refractory grade would have to be produced to meet this need. A large integrated refractory brick plant has to be set up at Salem to produce magnesite, chromite, fire clay and silicon bricks. In the light of Tatas research on feasibility of using low grade chrome ores, the ores of Tamil Nadu appear highly suited, and since large reserves of dunite and magnesite are available , pilot testing can be undertaken for the manufacturing of chrome-magnesia-forsterite bricks on the lines of Tatas.

(vii) Separation plant for the heavy mineral sands of the Coastal and Delta regions of Tamil Nadu

19·21. Vaippar Kallar Delta in Tirunelveli district may be considered for locating a plant

for separating the constituent minerals like ilmenite, monozite and garnet from the sands of the area. The advantages of this location are close proximity to a major port viz., Tuticorin, availability of extensive Government waste lands and the ready availability of high voltage electricity. The resources in this area are estimated to support independently a separation plant for processing of ilmenite and other heavy minerals with a rated capacity of 50,000 to 70,000 tonnes.

(viii) Vitreous Glazed Mosaic Tiles Industry

19·22. Tamil Nadu has deposits of clay of good quality and other materials like felspar and quartz suitable for the manufacture of ceramic products. The Vitreous Glazed Mosaic Tiles which can be manufactured out of these materials will have an edge over the conventional glazed tiles because of their superior quality and attractive colourful designs. By being fully vitreous, these tiles do not require frequent replacements as in the case of conventional glazed tiles. The proposed factory will be capable of manufacturing 300,000 square feet monthly, of which, 50 per cent will be glazed and 50 per cent unglazed.

19·23. In all, the eight projects proposed for the processing and industrial use of a few important minerals would involve an outlay of Rs. 3·10 crores. Of this, Rs. 0·95 crore may be allocated to the Fifth Five-Year Plan and the balance Rs. 2·15 crores to the Sixth Plan.

B. Further Exploration of Mineral Deposits

19·24 So far, many of the districts of the State have been surveyed ; and a few still remain to be covered. But, what is more important than geographical coverage is the need for scientific investigation using up-to-date techniques as has been done under the United Nations Development Programme. Accordingly, a resurvey of some of the districts would become necessary.

(i) Exploration and assessment of the clay deposits in the State

19·25. Clay deposits occur in several localities of Tamil Nadu. There is an urgent need to undertake a thorough scientific survey of these deposits. Correct estimation of these reserves is at present lacking. It is important that the quality of the clay deposits in each region where they occur is fixed up by subjecting these samples to various physical, chemical and special tests including X-ray and differential thermal analysis. When the quality is fixed, it would be easy to sort out and grade the clays according to the specifications required by different consumers.

(ii) Air-borne Magnetic Survey

19·26 It is suggested that by the end of the Perspective Plan period, the entire State should have been covered by a thorough scientific mineral survey using modern techniques. There should be a preliminary survey followed and supplemented by continued exploration by means of air-borne electro-magnetic surveys. Such surveys are costly—Rs. 230 per line mile against Rs. 120 per line mile for ordinary magnetic surveys. Nevertheless, this additional cost is worth incurring in view of the large potential benefits. Further, a beginning has already been made in this direction by the United Nations Development Programme team which has covered an area of about 17,000 sq. Kms After the cessation of the U.N.D.P. scheme, the proposed Department of Geology should be able to take up this work independently. But it should be noted that the mapping and explorative work is being done concurrently by the Geological Survey of India along with the State and care has to be taken to avoid any overlapping of work. A prerequisite for the satisfactory performance of this work is the establishment of a Geophysical Wing of the Geology Department furnished with modern equipments.

C. Conservation of Rare Minerals

Production of alumina from sources other than bauxite

19·27 As at present, the problem of conservation is of particular significance with regard to bauxite. Tamil Nadu has roughly 13·5 million tonnes of bauxite, leaving out of account very low grade ores. If grading is done according to the specification laid down for the aluminium industry, the metallurgical grade bauxite reserves of the State should be considered meagre. There is no export of bauxite from Tamil Nadu as the entire

quantity produced is consumed locally. On the other hand, since the bauxite of Shevroy hills does not come up to the required grade specifications, bauxite is procured from Saurashtra for blending with and upgrading the locally available ore. The reserves of bauxite in Tamil Nadu are just sufficient to meet the needs of the only existing aluminium plant in the State and as such, there is no possibility of expansion of the aluminium industry. But, scarcity of aluminium is a problem concerning not only the State, but the whole country. India's reserves of high grade bauxite are estimated at 62 million tonnes. The National Council of Applied Economic Research (New Delhi) has calculated that by 1981 aluminium production in India would have to be of the order of 1·2 million tonnes. At this level of production, the present known reserves of high grade bauxite will last only for 12 years. The requirements of aluminium are rapidly growing in the economy not only because of its mcreased utilisation in various industries but also because of its use as a good substitute for other non-ferrous metals like copper and zinc in which India is very much deficient. In these circumstances, attention will have to be paid to safeguarding and augmenting the reserve position. For this purpose, the following recommendations are made:

(*a*) Beneficiation of low grade bauxite—such an attempt has already been made by the Directorate of Mines, Orissa.

(*b*) Further prospecting for bauxite—this requires intensive survey covering plains also.

(*c*) Efforts may be taken to locate substitutes for bauxite.

19·28 Aluminous clays, nepheline syenite and coal ash are the chief products substituted successfully for bauxite in aluminium production. In Tamil Nadu, nepheline syenite is found in the neighbourhood of Sivanmalai in Coimbatore district ; and in Sittampundi (Thiruchengode taluk of Salem district) big bodies of anorthosites occur as hillocks which can be used as substitute for bauxite. Hence, pilot testing is to be taken up in the Sixth Plan period for finding out ways of utilising these alternate sources as well as for working out efficient processes of utilisation. An outlay of Rs. 20 lakhs is envisaged for this scheme.

D. Administrative and Organisational Changes

(i) State Geology Branch to be strengthened

19·29 The State Geology Branch of the Industries Department was set up in December 1957 and its activities have been expanding steadily in the last fifteen years. The participation of the United Nations specialists under the United Nations Development Programme in the geological activities of the States has benefited the Geology Branch by raising the level of competence and training of the technical personnel as well as by widening their knowledge and experience in modern techniques of geological survey. With the experience gained in the specialised fields and with a number of senior officers trainedl in the different fields of Geology, it should be possible to raise the entire Geology Unit to the status of a Department with separate wings such as Geophysics, Geochemistry, Petrology and Mines Inspection. During the earlier plan periods, the activities of the Geological unit were confined to mineral exploration. Now that some progress has been made in the direction of assessing the mineral potentialities of the State, it is necessary to embark on commercial exploitation of minerals of economic importance and to promote mineral development activity. Additional equipment and laboratories are required for this purpose.

19·30 Besides exploitation, the Department will have to concern itself with the problem of conservation of mineral deposits and the processing of applications for certificates of approval and mineral concessions. The need for conservation arises because of the fact that minerals are irreplaceable wasting assets and the significance of this has been illustrated earlier with reference to bauxite. In order to ensure that mining is done along scientific lines and wastage avoided, and also to prevent leakage of revenue arising from illicit mining, a vigilance cell has to be formed immediately. For the purpose of strengthening and toning up the administrative side, an allotment of Rs. 35.00 lakhs is made in the Perspective Plan.

(ii Establishment of a State Mineral Development Corporation

19·31 As stated earlier, mineral development should increasingly encompass activities concerned with the utilisation of minerals for industrial development in the State. The successful implementation of some of the big industrial projects now envisaged depends on the extent to which these programmes are backed up by organised mining activity. In order to link up mining activity with industrial development it is necessary to have a corporate organisation which can function effectively as an autonomous body along commercial lines. Such an organisation will be capable of taking quick and independent policy decisions with regard to mineral development and will not be bogged down by rigid bureaucratic formalities. Towards this end, a Mineral Development Corporation should be set up in Tamil Nadu as an undertaking of the Government during the Sixth Five-Year Plan period.

19·32 The functions of the Corporation would be to ensure the supply of mineral products to existing industries and also to take up the ownership of export-oriented mines and develop them ; for example, export of black granites and materials for the production of refractories and ceramic wares. For discharging its functions satisfactorily, the Corporation should have the assistance of a band of technical personnel such as Mining Geologists, Mining and Drilling Engineers, Assay Chemists and supporting staff. The outlay on the establishment of the Corporation is tentatively fixed at Rs. 50 lakhs.

E. RESEARCH AND DEVELOPMENT PROPOSALS FOR MINERAL DEVELOPMENT

19·33 Among the various ores occurring in the State, apatite, bauxite, chromite and magnesite are of low grade quality. Nevertheless, the recent technological innovations in ore-beneficiation have proved the possibility of using these low grade ores for metal extraction. But the processes of utilising these ores and extracting the required metal have to be modified to suit local factors. This can be achieved only by proper research and pilot testing. Similarly, ore reserves of bauxite are getting depleted day by day and hence, research is needed to fix up the alternative sources for extracting alumina as has been done in the advanced countries. Taking into account all these factors, the following Research and Development proposals are suggested for the Perspective Plan period :—

1. To study the possibility of upgrading the various low grade ores.

2 To fix up alternative sources for alumina.

3. To study the ultrabasic formations for precious metals like platinum.

4. Extraction of sodium dichromate from the low grade ores of chromite.

5. To study the possibility of setting up additional plants for extracting calcium carbide from the existing limestone deposits.

6. To study the minor and trace elements in some of the deposits.

7. Research on building materials.

8. Feasibility studies on the iron ores of Tamil Nadu. The cost of these projects is included in the outlays envisaged under the various development programmes.

(A) Summary of the Achievements Expected the Perspective Plan Period

19·34 In brief, the implementation of the various schemes mentioned above during the last year covered by the Perspective Plan will achieve the following :—

(1) By the end of the Perspective Plan period i.e. by 1984 the entire State would have been systematically covered by scientific geological surveys.

(2) Workable reserves of the various mineral deposits of commercial importance will be located.

(3) The possibility of utilising the low grade ores will be explored by research and pilot testing.

(4) The policy of conservation and proper utilisation of mineral reserves will be implemented.

(5) These activities would facilitate and lead to the establishment of mineral, metal and chemical-based industries, which in turn, will contribute to the overall expansion of the industrial sector of the State

FINANCIAL IMPLICATIONS OF THE MINERAL DEVELOPMENT SCHEMES

19·35 The total investment outlay on the projects mentioned in the preceding pages would be Rs. 6 crores over the ten year period 1974-75 to 1983-84. Of this, Rs. 2 crores will be spent on the schemes to be included in the Fifth Five-Year Plan and Rs. 4 crores in the Sixth Five-Year Plan period. Details of the Projects which may be taken up in the two Five-Year Plans with their estimated costs are given below :—

TABLE 19-1

Mineral Development Projects and estimated outlays in the Perspective Plan period 1974-75 to 1983-84

(Rs. in lakhs)

Period	*Project*	*Outlay*
(0)	(1)	(2)
	(*a*) *Spillover Projects*	
I. 1974-75 to 1978-79.	1 Tamil Nadu Mineral Development Project—United Nations Development Programme	11·12
	2 Mineral Treatment Laboratory for Pilot Tests	23·65
	Total—Spillover Scheme	**34·77**
	(*b*) *New Projects*	
	1 Expansion of existing Vermiculite Mine and Exfoliation Plant and setting up of ancillary industries	22·50
	2 A scheme for Mining and beneficiation of Graphite occurring near Sivaganga, Ramanathapuram district	50·40
	3 Scheme for cutting and polishing granites	22·00
	4 Streamlining and Strengthening of State Geology Branch ..	35·00
	5 Mineral Exploitation Scheme	35·00
	Total—New Schemes	**164·90**
	Total—Fifth Five-Year Plan	199·67

(Approximately Rs. 2·00 crores.)

(RUPEES IN LAKHS)

(0)	(1)	(2)
1979-80 to 1983-84 ..	1 Air-Borne Magnetic Survey	65·00
	2 Production of Alumina from the alternative sources other than Bauxite	20·00
	3 Project for exploitation of Tiruvannamalai iron ore deposits ..	50·00
	4 Feasibility studies on various important iron ores of Tamil Nadu (excluding Kanjamalai and Tiruvannamalai)	30·00
	5 Magnesium Metal Project	40·00
	6 Project for manufacturing high temperature refractories ..	50·00
	7 Exploration, Mining and Exploitation of Clay Deposits of Tamil Nadu	20·00
	8 Separation Plant for the Heavy Mineral Sands of the Coastal and Delta Regions of Tamil Nadu	25·00
	9 Ceramic Unit	50·00
	10 Establishment of a State owned Mineral Development Corporation	50·00
	Total—Sixth Five-Year Plan	**400.00**
	Fifth Five-Year Plan	**199.67**
	Sixth Five-Year Plan	**400·00**
	GRAND TOTAL	**599.67**

(Approximately Rs. 6·00 crores.)

19·36 The major part of the outlay will have to be met out of the State's own financial resources. However, there is scope for getting assistance from outside agencies. It may be hoped that assistance for the financing of schemes pertaining to Research and Development and Pilot Testing may be forthcoming from organizations like the C.S.I.R. and the Government of India. Similarly, explorative projects can be executed with the assistance of Central organizations like the Geological Survey of India, Atomic Energy Commission, etc. It is also likely that some of the commercial projects would have foreign collaboration. However, it is prudent to entertain foreign collaboration only for meeting a critical gap and on condition that it does not adversely affect the maximum utilisation of domestic know-how and services. The terms and conditions under which foreign collaboration are accepted may be in conformity with the guidance indicated by the Foreign Investment Board set up by the Government of India.

CHAPTER 20

Large and Medium Industries

I. PROGRESS OVER THE FOUR PLAN PERIODS

20.1 Effective Industrial Planning in Tamil Nadu virtually started with the Techno-Economic survey conducted by the National Council of Applied Economic Research, New Delhi, during 1958, although a beginning was made earlier with the commencement of National Planning.

20.2 The development of the industrial base of the State's economy has been proceeding along systematic lines. The pragmatic approach by the Central and State Governments in creating the necessary infrastructure and climate for an orderly growth has been greatly responsible for this growth. Till about the end of the First Plan, the State could boast of only the Textile and a few Engineering industries. But over the two decades—1950-70, industrial licences were issued to over 230 engineering industries, 106 units of Fertilisers and Chemicals, 100 Agro-based and 226 different other industries like Paper, Soap, Cement, Timber Products, Foundry, etc. The number of new company registrations which stood at 586 with a paid-up capital of Rs. 1,273 lakhs in the first year of the Plan rose to over 900 with a paid-up capital of as much as Rs. 11,655 lakhs at the end of Third Plan. This period recorded an impressive growth in the production of Cement, Sugar, Motor Cycles, Commercial vehicles, Bicycles, Automobile Tyres, Tractors, Heavy Castings, Heavy Forgings, Pipes, Insulators and Lightning arresters, Power and Distribution Transformers, Electrical switchgear and controls, Meters, Aluminium, Machine Tools, Electric Motors and Fertilisers. The overall growth of industrial production increased from Rs. 75 crores in 1951 to Rs. 250 crores in 1971 recording a growth rate of 6·2 per cent per year. This made Tamil Nadu go up from the eighth place to the third place in the country in the matter of Industrialisation.

20.3 The development of Textile, Electrical Motors and Pumpsets industry in Coimbatore and the Automobile industry in and around Madras requires a special mentioning. Over 40 percent of the total production of Electric Motors and Pumpsets in the country are accounted for by Coimbatore. Over 70 per cent of the production of ancillaries and spares for automobiles in the country come from Madras, making it the 'Detroit' of the South. Except for a few parts like spark plugs, all the components for automobiles, from the smallest fastener to the engine are being produced in and around Madras. The systematic building up of appropriate infrastructure like Industrial Estates and Developed Plots Programmes, planned setting up of Polytechnics, Industrial Training Institutes and other higher technological institutions to meet the man power needs, enlarging and liberalising of credit facilities have also helped to bring about an integrated growth.

20.4 This period also witnessed substantial investments in the State by the Centre through the Public Sector undertakings. By 1969-70, an investment of Rs. 400 crores with an annual turnover of Rs. 90 crores had been made in this State providing employment to over 50,000 persons. The Public Sector undertakings of the Centre set up in the State during this period are :

1. Neyveli Lignite Corporation, Neyveli.
2. Integral Coach Factory, Perambur, Madras
3. Hindustan Teleprinters Limited Madras.
4. Hindustan Photofilms Mfg. Co., Ootacamund.
5. High Pressure Boiler Plant, Heavy Electricals Limited Tiruchirappalli.
6. Surgical Instruments Plant, Nandambakkam, Madras.
7. Lube Blending Plant, Manali, Madras.
8. Madras Refineries Limited Manali, Madras.
9. Madras Fertilisers, Limited Manali, Madras.

10. Heavy Vehicles Factory, Avadi, Madras.
11. Small Arms Factory, Tiruchirappalli.
12. Modern Bakeries Limited Adyar, Madras.
13. Indian Rare Earths, Manavalakurichi.

20.5 The Third and Fourth Plans saw a new strategy in the State's participation in industrial development. Besides expansion in the field of providing infrastructure facilities, it played a catalytic role through the new State-level corporate agencies.

ROLE OF STATE INDUSTRIAL CORPORATIONS

20.6 The State Industrial Corporations like the State Industries Promotion Corporation of Tamil Nadu (SIPCOT), Tamil Nadu Industrial Development Corporation (TIDCO) and the Tamil Nadu Industrial Investment Corporation (TIIC) are playing a very important role in the industrialisation of Tamil Nadu. While the SIPCOT provides incentives for the backward areas, the TIDCO encourages the development of the joint ventures in the State. The TIIC provides direct and indirect financial assistance to the private sector units.

STATE INDUSTRIES PROMOTION CORPORATION OF TAMIL NADU (SIPCOT)

20.7 The principal objective of SIPCOT is to accelerate the development of industries in Tamil Nadu, particularly in the backward areas of the State in partnership with the progressive entrepreneurs through such measures as :

(1) provision of ' balancing finance ' or ' supplemental finance ' on liberal terms to medium and major industries ;

(2) offering of locational guidance for setting up new industrial units ;

(3) undertaking feasibility studies to identify profitable projects and offer such feasibility reports to the prospective entrepreneurs ;

(4) development of infrastructural facilities for industries in the potential growth centres ; and

(5) adoption of a package scheme of incentives to the new industries as the agent of the State Government.

20.8 The SIPCOT commissions feasibility studies either on its own or at the request of the entrepreneurs on selected profitable projects. These studies are made available to prospective entrepreneurs at subsidised cost—the subsidy tapering off from 100 percent tto 75 per cent.

Term Loans and underwritings

20.9 SIPCOT provides the balancing finanace, i.e., finance not normally available form the State and Central financial institutions for setting up new major and medium industrial undertakings or for expansion or diversification of the existing ones. A concessional rate of 9 per cent is charged for loans to industries to be set up in backward areas and they are given a moratorium of four years to start repayment of principal as against the rate of interest of 10 percent and the moratorium of two years in the case of loans to industries in developed areas. SIPCOT also underwrites capital issues of projects to be set up in the 8 backward districts of the State. Under their consortium aid scheme medium industries are financed in collaboration with the Commercial Banks and TIIC., while major industries are financed in collaboration with all-India financial institutions. SIPCOT also issues gurantees on behalf of the State Government to commercial banks in respect of term loans granted by them. Term-loans to the tune of Rs.269·59 lakhs for over 25 medium and major industries have already been sanctioned up to 28th February 1974. Most of these industries are in backward areas.

Sales Tax Relief

20.10 This scheme, implemented on behalf of the State Government, is for giving interest-free sales tax loans repayable after 18 years to medium and major industries to be set up in any part of the eight backward districts of the State.

Subsidy on Fixed Assets

20.11 Under the Government of India's outright grant or subsidy scheme, new industrial units as well as expansion of the existing units to be set up in any of the 27 backward taluks notified by the Government of India will be given an outright grant or subsidy equivalent to 15 per cent

of fixed assets subject to a maxium of Rs. 15 lakhs. SIPCOT has been appointed as the agent to implement the scheme in Tamil Nadu. Subsidy to the tune of Rs. 132.14 lakhs for 124 units has already been sanctioned.

Development of Growth Centres in Backward Areas

20.12 The first significant step in this direction was taken by SIPCOT during 1973-74. An area of 712 acres has been acquired at Ranipet in Wallajah taluk, North Arcot District, which has been declared by the Government of India as one of the taluks eligible for outright grant.

20.13 SIPCOT commenced work on the development of the Ranipet Industrial Complex just three months ago and already work on various items of infrastructure is nearing completion. Preliminary work to develop the next Complex at Hosur in Dharmapuri District has already been taken up.

20.14 The SIPCOT will be playing a very dynamic role in the Perspective Plan period. A number of medium and large industries will be coming up in the backward areas of the State. The incentives and assistance provided by it will go a long way to acheive rapid industrialisation of the economically backward areas. It is in view of this, that substantial provision has been made for SIPCOT in the State Sector of the Perspective Plan. It has been roughly estimated that the requirment of SIPCOT in the next ten years will be of the order of Rs. 50 crores.

TAMIL NADU INDUSTRIAL DEVELOPMENT CORPORATION LIMITED (TIDCO)

20.15 TIDCO, a wholly State owned undertaking of the Government of Tamil Nadu, was set up in 1965 for the development of major industries in the State. In the short span of seven years, it has undertaken activities of a diverse nature and has set up new industries in the public sector, promoted joint ventures in association with private entre prenuers, assisted exeiting units which were facing difficulturies and provided financial assistance to many industrial concerns.

20.16 Up to 1969, TIDCO'S activities were largely confined to the setting up of a cement unit at Alangulam in Ramanathapuram District and a Continuous Steel Casting Plant at Arkonam in North Arcot District. Both are public sector projects, now in successful operation. Since 1969, TIDCO has applied for and obtained over 20 letters of Intent from the Government of India for various industrial ventures. Most of these projects are being implemented by TIDCO in the joint sector, a concept which has been put to effective use to activise a crash programme of industrial development in the State and in particular backward areas.

20.17 Apart from the Corporation's committed investment in Tamil Nadu Cements and Continuous Steel Casting Plant amounting to Rs. 677 lakhs and Rs. 807 lakhs respectively, it has invested Rs. 350 lakhs in the form of share capital contribution to one of the major joint sector projects viz., the Southern Petro Chemcial Industries Corporation Limited.

20.18 The Tamil Nadu Cements, the first unit of the Corporation, commenced production in February 1970 and the Continuous Steel Casting Plant commenced commercial production in July 1972. These two units will be coming up for expansion in the Fifth Plan.

20.19 TIDCO has so far received 24 Letters of Intent out of which two have alreaey been implemented in public sector viz., Tamil Nadu Cements, Alangulam, and Continous Steel Casting Plant, Arkonam. The Sponge Iron Project will be taken up in the public sector as part of the Steel Complex at Arkonam. The Letter of Intent for Nylon Filament Yarn Project is being implemented by a public limited company viz., Tamil Nadu Synthetic Fibres Ltd., at a cost of Rs. 12 crores in which TIDCO'S investment will be 49 per cent of the equity, the balance being contributed by the co-operative and handloom sector and the public. All other projects are being implemented in the joint sector by companies formed for the purpose. According to joint sector pattern, TIDCO will contribute 26 per cent of equity in the projects.

20.20 The TIDCO is expected to play a very important role in the Perspective Plan period and a number of joint sector projects are expected to be

taken up and completed in the period 1974–84. Hence, a liberal provision of Rs. 130 crores has been made in the Fifth and Sixth Plan periods for TIDCO projects in the State Sector of the Perspective Plan.

Tamil Nadu Industrial Investment Corporation (TIIC)

20·21 Set up in 1949, this was the earliest State Financial Institution in the whole country for giving long and medium term loans to industrial units in Tamil Nadu and Pondicherry. Further it guarantees loans raised by industrial concerns through the commercial banks. Besides, it guarantees the deferred payment contracts entered into by the entrepreneurs for the purchase of machinery, etc.

20·22 The number of small scale units that are being helped by the TIIC is increasing. It has been offering special concessions to the small scale industries. The TIIC has recently introduced certain special schemes for assisting Technocrats and Rural Medical Practitioners. Also, it has offered special concession to industrialists for setting up units in industrially backward areas in collaboration with SIPCOT. Recently, it has opened two branches, one at Madurai and another at Coimbatore to enable the industrialists to obtain assistance without any delay.

20·23 The TIIC stands almost next to the Maharashtra State Financial Corporation with reference to the amount sanctioned and first with reference to the amount disbursed. It is hoped that with the assistance provided by it, a number of industrial units will come up in the private sector during the Perspective Plan period.

Plan Outlay on Large and Medium Industries

20·24 The outlay of the State Government on Industry and Mining inclusive of those on Large, Medium, Small and Village Industries during the First Three Plans aggregated to Rs. 39·34 crores. Though the Fourth Plan provision for Large and Medium Industries was of the order of Rs. 32 crores, the actual expenditure came to only Rs. 15 crores.

II. The Outdoor for the Future

20·25. As regards the broad pattern of industrial development in the Perspective Plan period the emphasis will have to be on the expansion of existing and promotion of agro-based and processing industries. This is because the scope for extension of irrigation facilities is limited. There may even have to be a change in the pattern of agricultural production with a view to increasing the yield of commercial crops and enabling a faster growth of agro-based industries. The accent will of course have to be mainly on the establishment of processing industries and also on such of those mineral-based industries as can function successfully with intensive exploitation of available mineral resources. It will also be necessary to have a systematic programme of replacing of denuded areas in the forest regions besides systematic afforestation. Apart from the agro-based industries, there is bound to be faster growth of bigger industries like sugar, textiles, paper and cellulosic and mineral-based fibre industries. As a result, the State's industrial sector will become more broad-based and integrated with the new industries such as the petro-chemical industries. The mechanical engineering industries, particularly, will gain special momentum with the completion of the Salem Steel Plant by the end of the Fifth Plan. Also, there is greater scope for the growth of electrical and electronic equipment industries and chemical industries. The output of fertilizers too will be increased substantially with the expansion of the capacity of the two existing big units and the establishment of a third large-sized coast-based unit.

20·26 With the Central Sector assuming a bigger role following the advent of the Salem Steel Plant and the State Government implementing its own expansion schemes and joint sector projects, many new industrial complexes will spring up in the different parts of the State with some of the existing complexes requiring greater importance. The Salem Steel Plant, by itself, will have a catalytic effect on the development of the mechanical engineering industries while the expansion of the High Pressure Boiler Plant at Tiruchirappalli should lead to the promotion of many ancillary industries. In view of the fact that its capacity will be more than trebled in the two Plan periods, a large steamless Pipe Plant will have to be erected also in the Central

Sector, either in Tiruchirappalli or in Salem. The setting up of Central Sector units for the manufacture of tele-communication equipment, electronic components, special cables and other items is also suggested.

20·27 The State Sector will be increasing its output of billets, sponge iron, cement, fertiliser and other items besides contributing substantially to the development of joint sector projects through the Tamil Nadu Industrial Development Corporation (TIDCO) and the State Industries Promotion Corporation of Tamil Nadu (SIPCOT). The Tamil Nadu Industrial Investment Corporation (TIIC) may be expected to extend liberal help to the existing and new industries in the private sector. The modernisation and expansion of mills taken over by the Government will be the responsibility of the Textile Corporation.

AN ESTIMATE OF INVESTMENT REQUIREMENTS

20·28 The development envisaged in the State, Central, Joint, Private and Co-operative Sectors will call for heavy investments in many spheres. Out of the total outlay of Rs. 2,206 crores in the Perspective Plan period, a sum of Rs. 680 crores will have to be spent during the Fifth Plan period in all the three sectors and the balance of Rs. 1,526 crores in the Sixth Plan period.

20·29 Of the sum of Rs. 680 crores provided for the five year period ending 1978-79, Rs. 60 crores will constitute the State Government's allocation for the projects of the State Sector inclusive of its share in Joint Sector projects, Rs. 375 crores for the Central Sector projects and Rs. 245 crores for the Private Sector.

20·30 The State Government's allocation of Rs. 60 crores will be on the following projects :

1. Sponge Iron Plant.
2. Concart Plant expansion.
3. Tamil Nadu Cement Expansion.
4. Share capital assistance to Textile Corporation.
5. Industries in Co-operative Sector.
6. Salt-based industries.
7. Assistance to SIPCOT.
8. TIDCO projects.

20·31 As regards the Central Sector, the outlay of Rs. 375 crores, will comprise of the following projects :—

1. Salem Steel Plant—I Stage.
2. Second Mine cut at Neyveli (Industrial portion).
3. Expansion of existing Central Sector Projects.
4. Copper Smelter Project.
5. Heavy Water Plant.
6. Seamless Steel Pipes.

20·32 The private sector investment will be in such areas as automobiles and allied industries, metal-based industries, agro-industries such as sugar, textiles, paper and allied products, cement and allied products, electrical and electronics, and chemicals and allied industries.

20·33 In the latter part of the Perspective Plan period the State Sector investment will be of the order of Rs. 186 crores on the following projects :—

1. TIDCO projects—New and Expansion Schemes.
2. Assistance to SIPCOT.
3. Industries in the Co-operative Sector.
4. Share capital assistance to Textile Corporation.

20·34 The Central Sector investment will be Rs. 630 crores and will include :

1. Salem Steel Plant-II stage and ancillaries.
2. Expansion of existing Central Sector undertakings.
3. Fertilizer Plant.
4. Desalination Plant.

5. Electronics.
6. Paper and allied industries.
7. Electrical Industries.
8. Naphtha Cracker.

20·35 The anticipated outlay by the private sector in the Sixth Plan will be Rs. 710 crores covering a wide variety of items such as automobiles and allied industries, metal-based industries, agro-based industries, cement and allied products, electricals and electronics, and chemicals and allied units.

20·36 It is roughly calculated that the investment of more than Rs. 2,000 crores envisaged for the development of industries will provide an aggregate additional employment of 27·5 lakh persons.

RESOURCE MOBILISATION

20·37 There may not be any serious difficulty in regard to the mobilisation of resources for financing such a large capital outlay. The Central Sector Schemes for Rs. 1,005 crores will be implemented with funds completely provided by the Central Government. The State Government's responsibility will comprise of, in addition to its own projects, assistance by way of subsidies, loans and direct participation in equity and preference capital of the joint sector projects. These will add up to Rs. 246 crores. The balance of Rs. 955 crores will have to be found by the promoters in the private, co-operative and joint sectors. The new entrepreneurs themselves may provide about Rs. 150 crores while internal resources of the existing undertakings can easily account for Rs. 200 crores including regular provision towards depreciation charges. About Rs. 600 crores will have to be mobilised from the investing public by way of issues of equity and preference shares, loans and other forms of assistance from the term-lending institutions, the LIC and the banking system.

III. PROFILES OF SELECTED INDUSTRIES.*

1. Steel and Steel-based Industries

20·38. Tamil Nadu can set up industries for the production of semi-finished steel products as it has the necessary technical know-how and skill to develop such industries. Taking the basic value of steel at about Rs. 1,100 per tonne, semi-finished steel products may be valued at anything between Rs. 2,000 to 5,000 or an average price of Rs. 3,500 per tonne. Thus, the added value per tonne of steel will be about Rs. 2,400 per tonne. The output required for the State as well as for supply to her neighbours will be about 1·5 million tonnes. Production of semi-finished raw materials such as cold rolled strips, bright bars, and metal sections, pipes and tubes, wire and wire products, could be organised in medium sized units ranging from 5,000 to 30,000 tonnes capacity for which the bulk of machinery could be manufactured in India. These industries enjoy a large turn-over. The setting up of units for an output of one million tonnes annually, will call for an investment of Rs. 42 crores in fixed assets and Rs. 54 crores as working capital. Rerolling mills for bars and sections, if established with a fixed capital of Rs. 24 crores, inclusive of working capital, will give a turnover of Rs. 50 crores.

20·39. Grey Iron Castings and Spun Pipes are complementary industries. Tamil Nadu has scope for the production of 110,000 tonnes of pipes a year. Hence, the present pipe capacity has to be increased from 50,000 tonnes to 110,000 tonnes. The expected value of output is indicated below :—

	(Rupees in crores).
Increase of pipes by 60,000 tonnes at Rs. 1,250 per tonne	7·5
Additional Grey Iron and Special Grade Castings including Machine Tool Grade Castings 60,000 tonnes at Rs. 2,000 per tonne	12·0
	19·5

For this output the investment would be as follows :—

	(Rupees in crores).
Fixed assets	6·5
Working Capital	6·5
	13·0

* The Cost and value estimates in this section are at 1970-71 prices except where stated otherwise.

2. Copper

20.40 The expected all-India consumption of copper by 1975-76 will be around 3,30,000 tonnes. The rate of consumption of this metal in Tamil Nadu will go up to 30,000 tonnes annually in the next ten years. At the price of Rs. 15,000 per tonne, the total value will be Rs. 45 crores. This, together with other alloying elements such as tin, zinc, aluminium, etc., would make for a total output of the value of about Rs. 60 crores. To achieve this target, an investment of Rs. 10 crores in fixed assets and Rs. 30 crores as working capital is called for.

20.41 The feasibility of establishing smelters, based on imported concentrates will also have to be examined. A smelter with a capacity of 50,000 tonnes annually may cost about Rs. 20 crores.

3. Aluminium

20.42 The All-India production of aluminium is expected to be of the order of 330,000 tonnes by 1975-76 and will touch about 500,000 tonnes in 1983-84. The production of basic aluminium in the only plant in Tamil Nadu is presently about 12,500 tonnes per annum and this may be shortly increased to 25,000 tonnes. An increase of production from the present figure to 75,000 tonnes per annum valued at Rs. 6,000 per tonne or Rs. 45 crores for the total output will call for an investment of Rs. 20 crores as fixed assets and Rs. 15 crores as working capital. The value of output of the semi-finished raw materials excluding the value of basic metal will be another Rs. 25 crores.

20.43 The State has already got the industry and the additional output envisaged is Rs. 70 crores for which the investment required will be Rs. 30 crores as fixed assets and Rs. 30 crores as working capital.

4. Machine Making Industries

20.44 Tamil Nadu can concentrate on machine making industries and the Perspective Plan envisages the manufacture of the following items of machinery :—

1. Textile Machinery ;
2. Cement Machinery ;
3. Sugar Machinery ;
4. Paper Machinery ;
5. Steel processing machinery for medium size industry and also aluminium and copper processing industry ; and
6. Steel machinery and parts for major steel plants.

20.45 An investment of Rs. 15 crores as fixed assets and Rs. 15 crores as working capital on all these items will give an output of Rs. 45 crores.

5. Machine Tools

20.46 Tamil Nadu has not fared well in the production of Machine Tools compared with other industrialised States. The items that are manufactured consist mostly of simple lathes, shaping machines, grinding machines, centreless grinders, wood working machines, etc. However, the growth of machine tool industry in India, as a whole, has been spectacular and the production value of this industry reached a record figure of Rs. 35·5 crores per annum in 1965-66 compared to hardly Rs. 8 crores in 1960-61. The projections for 1980-81 puts it at Rs. 115 crores. Tamil Nadu can establish a good base for this industry. The output of this sector could be increased to Rs. 10 crores in the next ten years for which, an investment of Rs. 3 crores as fixed assets and Rs. 4·5 crores as working capital is called for.

6. Chemical Industries

20.47 There are two outstanding producers of Caustic Soda, Chlorine and Chlorine Chemicals and pesticides. Dhrangadra Chemical Works Limited, Sahupuram, has expanded its activities considerably over the past few years and has now a capacity of producing 140 tonnes of caustic soda daily along with 60 tonnes of liquid chlorine, 130 tonnes of hydrochloric acid, 15 tonnes of trichlore ethylene, 15 tonnes of pechlore ethylene and 100 tonnes of beneficated ethylene. There is a proposal for expanding the capacity of caustic soda plant to 180 tonnes which will result in a corresponding increase in the availability of chlorine and allied products. For ensuring better utilisation of chlorine, a sister unit for manufacturing P.V.C., based on Naphtha, has already

been started with Japanese collaboration. This unit of Plastics, Resins and Chemicals Limited, which started functioning in the middle of 1972, has an annual capacity of 12,000 tonnes of poly-vinyl chloride.

20.48 The other important producers of Caustic Soda, the older entrant in the field, is the Mettur Chemicals and Industries Corporation Limited. There are two units for producing Caustic Soda in Mettur, one exclusively for rayon grade caustic soda. The capacity of these two units is 120 tonnes daily. There is also a large-sized plant for manufacturing Chloromethane. Surplus quantities of chlorine are being supplied to the adjacently located plant of Chemicals and Plastics India Limited, which is producing P.V.C. based on alcohol. The capacity of this unit has recently been expanded to 12,000 tonnes annually. There is also another unit in the same area for producing Benzene hexochloride. The capacity of the caustic soda plant is being increased by 20 tonnes at Mettur and there is a proposal for expanding it further by 40 tonnes.

20.49 The only unit now in existence for manufacturing Calcium Carbide is in Sankarnagar in Tirunelveli District producing 10,000 units annually.

7. Petro-Chemicals

20.50 Impressive progress has been made in the development of a Petro-Chemical Complex in the Manali area with the establishment of an Oil Refinery having a capacity of 2·5 million tonnes of crude per year with plans to produce various grades of fuels and lubricants. In order to process the base stocks of the oil refinery, a Lube Blending Plant of Indian Oil Corporation is functioning in the complex. While Nagpal Petrochem Refining has its unit for producing transformer oil and speciality products with U.S. Technical collaboration, a new unit for manufacturing Polyster Fibre was completed in the third quarter of 1972 with U.S. Technical collaboration. The scheme for manufacturing Carbon Black by Kamanis with the help of feed-stock from oil refinery is in the blue print stage.

20.51 Another Petro-Chemical Complex is coming up in the Tuticorin area and the big fertilizer plant of Southern Petro-Chemical Industries Corporation is under construction. The capacity of Ammonia Plant will be 1,100 tonnes daily and the main units are expected to be ready by the end of 1974. Many allied and downstream units for producing heavy-water, Caustic Soda, Ammonium Chloride and other items will also come into being in the next five years.

20.52 The scope for the development of Chemical Industries in Tamil Nadu appears to be very bright. The Imperial Chemical Industries have proposed production of half a million tonne of Naphtha Cracker and also plan to produce ethylene, poly-propylene and Butadiene near the Madras Refinery. The scheme has left the door open for the addition of more downstream units.

20.53 The Engineers India Limited have submitted a report proposing four alternative schemes with different Naphtha Cracker capacities. The first scheme is for 212,000 tonnes a year at an estimated cost of Rs. 55·5 crores. The second scheme envisaged a capacity of 353,000 tonnes at a cost of Rs. 96·65 crores ; the third scheme, 420,000 tonnes at a cost of Rs. 117·38 crores and the fourth, 60,000 tonnes involving an outlay of Rs. 21·63 crores. The downstream units which have been suggested to use the petro-chemicals will produce L.D. Polythene, P.V.C., Polystyrene ethylene glycol and S.B. Rubber.

20.54 On the basis of these recommendations, the Tamil Nadu Government is contemplating to set up a Naphtha Cracker Plant at Manali at an outlay of Rs. 90 crores to produce 20,000 tonnes of Butadiene, 90,000 tonnes of Casolene, 150,000 tonnes of Ethylene, 140,000 tonnes of L.D. Polythene and 40,000 tonnes of Polypropylene.

20.55 The Nylon Tyre Cord Unit of D.C.M. with a proposal to produce 4,500 tonnes of Nylon Tyre Yarn is the third private sector unit expected to function in the Manali Complex.

20.56 The Tamil Nadu Industrial Development Corporation has received a Letter of Intent for a Nylon Textile Filament Yarn Unit to be set up in Madurai District under the State Sector. The sanctioned plant is for manufacturing 2,100

tonnes per annum of Nylon Textile filament. The capital cost of the project will be around Rs. 10 crores.

20.57 In the Tuticorin Petro-Chemical Complex there is a scheme for locating an oil refinery with a large annual output of 5 million tonnes. If this project fructifies, it will be possible to meet the needs of Naphtha for the Fertilizer Plant besides helping also the formation of many downstream units.

8. Fertilisers

20.58 In the field of chemical fertilisers, the first large sized unit for manufacturing urea based on lignite, commenced working in Neyveli in 1965 with a capacity of 500 tonnes per day. Parry and Company, who have been marketing fertilizers for over 60 years, put up a plant in 1962 at Ennore for the manufacture of Ammonium Phosphate/Sulphate. This plant had an original capacity of 51,000 tonnes per year of phosphate/sulphate and has recently been expanded in order to produce an additional 38,000 tonnes per annum of ammonium sulphate, using the waste gypsum available from the phosphoric acid plant as the raw material. The Neyveli and Ennore Plants are comparatively small. The present trend is to set up fertiliser plants to manufacture as much as 1,000 tonnes per day of ammonia in a single stream. Hence, the Government of India set up a giant plant at Madras adjacent to the Oil Refinery at Manali. The Madras Fertilizers Limited, is a Public Sector Project in which the Central Government has an interest of 51 per cent and the American Oil Company and the Iranian Oil Company control the remaining 49 per cent of the share capital. The rated capacity of the plant is 750 tonnes of Ammonia, 885 tonnes of urea, and 1,300 tonnes of complex fertilisers (N.P.K.) per day.

20.59 The Plant has so far achieved a production of 73 per cent of the total capacity. This unit has proposals for expansion in the Fifth Plan period.

20.60 It may appear that the Fertilizer industry has grown to the required stature and there is no immediate need for fresh capacity in this direction. But, with the new demands and better lift irrigation facilities, the consumption of fertilizers may increase to such an extent that the picture may change and the creation of new capacity, either in the existing units. or by promoting new units may have to be contemplated. One coast-based unit in Cuddalore at a cost of Rs. 74 crores may be contemplated as a TIDCO project or as a Central Sector Unit.

9. Pharmaceuticals

20.61 There has been no worthwhile progress in the manufacture of pharmaceutical products. A scheme for turning out special drugs by Alkali and Chemicals Corporation, an associate of Imperial Chemicals Industries of U.K., in the Manali Complex is yet to take shape. The unit of the Indian Pharmaceuticals and Chemicals in the Central Sector has been manufacturing surgical instruments with Russian collaboration at Nandambakkam in Madras. A unit in the joint sector called The Tamil Nadu Dadha Pharmaceuticals is included as a TIDCO project in the Fifth Plan.

10. Textile and Fibre Industries

20.62 By 1984, cloth consumption per year in Tamil Nadu will be about 959 million metres. Existing production from the Mill Sector and decentralised sector is 743 million metres. Therefore provision for increase in cloth production of about 216 million metres has to be made. For this purpose, an additional 8,640 power or automatic looms will be required.

20.63 Tamil Nadu is having 24 per cent of the total spinning capacity of the country , as a whole. Every effort should be made to maintain this position. There may of course be competing demands for installing new capacity from other states, and only with intelligent planning and some effort, a share of atleast 20 per cent of the expanded spinning capacity can be ensured for Tamil Nadu in 1983-84. Allowing for technological improvements, there will have to be an increase of atleast 75 per cent in the spindleage for the whole country in the next ten years. Hence, an additional 13·5 million spindles will have to be installed taking the total to nearly 32 million spindles at the end of the Sixth Plan period.

About one-fifth of this capacity is to be located in Tamil Nadu and the spindleage will have to be increased to 6·4 millions from the present level of 4·1 millions. There will, thus, have to be a growth in the capacity by 50 per cent in the ten year period 1974–1984. One-half of the additional capacity can be brought into being through expansion schemes while about 30 to 40 new units may have to be started in Tamil Nadu for achieving the balance of capacity of 1·3 million spindles. The Textile Industry will, therefore, play an even more important role in the coming years.

20·64 Cotton requirements would naturally increase to over 15 lakh bales of 180 kgs. each for feeding a larger manufacturing capacity. As there is a deficit of 7 lakh bales at present and it is desirable to increase availability of the natural fibre within the region, every attempt should be made to double the production of cotton and reduce the deficit to 3 lakh bales. There would be more than proportionate increase in the consumption of polyster fibre and filament yarn and their availability will have to be increased to 10,000 tonnes and 6,000 tonnes respectively by 1984. The total cost of installation of looms and setting up of finishing plants will be Rs. 75 crores.

20·65 Additions to spinning capacity will require an outlay of nearly Rs. 100 crores. The spinning, weaving and finishing departments will, thus, involve fresh expenditure of Rs. 175 crores apart from any outlay that may have to be incurred for modernising and rehabilitating existing machinery. This itself may call for fresh capital expenditure of about Rs. 120 crores taking the total of all investment in this major industry to nearly Rs. 295 crores.

20·66 With regard to the manufacture of man-made fibre, Tamil Nadu has just made a beginning; a rayon factory of South India Viscose was set up in 1961 at Sirumugai in Mettupalayam for the manufacture of 4,000 tonnes of staple fibre and 4,000 tonnes of rayon per year based on imported wood-pulp. This unit has also started a new pulp plant with a capacity of 21,000 tonnes per year with plans to go up to 30,000 tonnes annually. Further expansion is contemplated for staple fibre.

11. Automobile Industry

20·67 The investment envisaged in the Perspective Plan period 1974—84 for Automobile Industry is of the order of Rs. 150 crores which is to be distributed as follows :

Outlay proposed for the Perspective Plan period

(Rs. in Crores).

Item	*Outlay*
(0)	(1)
Cars	20
Commercial Vehicles	40
Tractors	20
Ancillaries	20
Motor Cycles and scooters ..	10
Tyres	30
	140
Regarding bicycles, the anticipated investment outlay is as follows :	
Bicycles (major manufacture) ..	5
Bicycles (Ancillary units) ..	5
	10

(a) *Commercial Vehicles*

20·68 The present share of Tamil Nadu in All-India production is 12·4 per cent in respect of medium sized commercial vehicles. In anticipation of the growth of demand and the need to create fresh capacity, new facilities will have to be made available for enabling production of 25,000 units by 1983–84 compared with 5,722 units in 1971.

20·69. Ashok Leyland is expected to increase its capacity to 15,000 comet units, if not more. The output of light commercial vehicles, will have to be raised six-fold, at least to 6,000 units by the end of the Sixth Plan. The capital outlay on the

expansion of existing plants and new schemes may be roughly Rs. 40 crores.

(b) *Cars*

20·70 The average annual production of cars in the last ten years in Tamil Nadu works out to 2,894. The present share of the State to the All-India production is 11 per cent. The objective should be to reach 15 per cent at the end of the Perspective Plan period. The All-India demand for cars in 1983–84 may be of the order of 150,000 units. Hence, Tamil Nadu will have to increase its production to 22,500 units . This can be achieved by (i) allowing Standard-Motors to expand their capacity to 10,000 units and (ii) creating a new unit in Tiruvallur with a capacity of 10,000 cars in the existing Earth Moving Machinery Complex with provision for further expansion.

(c) *Bicycles*

20·71 The maximum annual production so far recorded in the only manufacturing unit of the State is about 4 lakhs as against the sanctioned capacity of 7 lakhs. On the basis of an estimated All-India demand of 50 lakhs in 1983–84, Tamil Nadu's share, if fixed at 20 per cent, will work out to 10 lakhs. This industry must be given all incentive, first to achieve fuller utilisation of existing capacity and then to expand its capacity in the Fifth Plan.

(d) *Tractors*

20·72 The Union Planning Commission estimated that in the last year of the Fourth Five-Year Plan, the country would need 90,000 tractors. There are at present six manufacturers, with an installed capacity of 36,000 but in 1970, they produced only 19,890 units. Out of the above, three major manufacturers started manufacturing the item only in 1964–65. The Government of India have issued licences for six more units with a capacity of 35,000 tractors and also Letter of Intent to another 15 manufacturers for a capacity of 120,000 units. Tamil Nadu's present share of All-India production is 28·5 per cent and it is difficult for the State to maintain this share especially because of the sanctioning of new units and the issue of Letters of Intent for additional units to be set up in other States. Tamil Nadu could aim at a 15 to 20 per cent share of the All-India production in 1983–84 which may work out to abou 30,000 units against a total demand of 1·5 lakh units for the whole country.

(e) *Motor Cycle*

20·73 The average annual production of motor cycles and scooters in the last 10 years has been estimated at 6,940 units and current production is about 10,500 units and the present share of Tamil Nadu in the All-India output comes to about 13·7 per cent. To maintain the same share, the output will have to be 90,000 units in 1983–84. While the existing unit can expand still further, it is desirable to consider establishment of new units also in order to meet the anticipated demand in 1983–84.

(f) *Auto Ancillaries*

20·74 The average annual value of production of the auto ancillary industries in the last 10 years was of the order of Rs. 35·4 crores. The present share of Tamil Nadu in the All-India output is about 30 per cent. Considering the scope for increasing Tamil Nadu's share in the production of cars, commercial vehicles, motor cycles and scooters, it can be reasonably assessed that the output of the auto ancillaries will have to be around Rs. 125 crores, by 1983–84.

(g) *Tyres*

20·75 In regard to tyres, it can be said that if existing capacity is fully utilised, Tamil Nadu will be able to account for over 16 per cent of All-India production. This share may not be maintained in the coming years if other States in the country put up their own units. But, the demand in the country is likely to increase to 15 million sets in 1983–84 and Tamil Nadu can hope to have atleast a share of 12½ per cent in an expanded volume. This will involve a doubling of the output of the State to 2 million sets. While the new unit contemplated in Ramanathapuram in the joint sector may have a capacity of 5 lakh sets in ten years,- the balance of 15 lakh sets can be met through the expansion of capacity of the existing units.

12. Cement

20·76. The production capacity of this industry in India as on 31st August 1970 stood at 19·55 million tonnes annually. The present production

capacities of the various factories in Tamil Nadu are as under :—

TABLE 20-1.

Production Capacity of Cement factories in Tamil Nadu.

(In lakhs tonnes.)

Name of the Company	*Location*	*Capacity*
(0)	(1)	(2)
The India Cements Limited.	Sankar Nagar (Talaiyuthu) ..	9·13
	Sankaridrug ..	6·00
A.C.C.	Madukkarai ..	3·84
Tamil Nadu Cements. ..	Alangulam ..	4·00
Dalmia Cements ..	Dalmiapuram ..	5·25
Chettinad Cements.	Karur	4·00
Madras Cements ..	Tulukkapatti ..	1·90
		34·12

20.77 In the year 1970, the production of cement in Tamil Nadu was 23·88 lakh tonnes contributing to about 45 per cent of the production in the Southern Region and about 17 per cent of the total production in the country. Against this, the total consumption of cement in the State during 1970 amounted to only 12·15 lakh tonnes, the net per capita consumption being 30·71 kgs. as against a per capita consumption of 48·03 kgs. in Gujarat, 43·88 kgs. in Punjab and 42·28 kgs. in Haryana and an All-India average of 24·61 kgs. Thus, it would seem that there is great scope for improvement in the per capita consumption of cement in a developed State like Tamil Nadu.

20.78 Although present output in the State is in excess of regional consumption, the scale of production is to be improved in view of the fact that the surplus will be required by deficit States in the country. There has, therefore, to be a conscious effort to create additional capacity by implementing the remaining schemes of the existing producers and, if necessary, by establishing new units.

13. Salt-glazed stoneware pipes

20.79 Salt-glazed stoneware pipes are ideal for disposal of sewage. With increase in constructional activity in the State, the demand for these pipes has been steadily going up. The Water Supply and Drainage Board has estimated its requirements of stoneware pipes at about 10,046 tonnes per annum.

20.80 There are only three factories in Tamil Nadu manufacturing stoneware pipes. Their total capacity is about 22,000 tonnes per annum. Demand in the State as well as in the country is sure to increase sharply and there is a case for setting up more units in Tamil Nadu for the manufacture of Salt-Glazed Stoneware Pipes.

20.81 Out of the three units, only one is capable of making pipes up to 375 mm. However, for major drainage works, the demand will be more for larger diameter pipes, i.e., 300 mm., 450 mm., 600 mm., etc. Pipes in these diametres have at present to be obtained from North India at high prices and incurring heavy transport charges. Such purchases also result in substantial loss to the consuming departments due to heavy damages in transit. It is therefore, advisable to put up plants capable of producing pipes of larger diameter.

14. Refractories

20.82. At present, there are four large magnesite industries producing about 100,000 tonnes of dead burnt magnesite and basic refractories and four large/medium/small-scale units accounting for the production of about 30,000 tonnes of fire bricks of various heat ranges besides insulating, sillimanite and kynaite qualities. A Survey made in 1968 indicated the following All-India and Tamil Nadu capacities for various types of refractories.

TABLE 20.2

Installed capacity of types of refractories

(In '000Tonnes.)

Type of refractory	*Installed capacity*		
	All India	*Tamil Nadu*	
(0)	(1)	(2)	
Fire bricks	943		
Silica	98		
Basic	118		30
High Alumina	20		
Insulating	16		
Fire Cements and Mortar ..	63		
	1,258		
Dead Burnt Magnesite	98	..	78*
	1,356		

*(Estimated capacity of 3 units only.)

20.83 At the rate of industrial growth envisaged in the Perspective Plan, industrial output will increase by about 50 per cent over the ten-year period compared with the present position. Hence, the demand for refractories also will go up correspondingly. Taking into account the constructional demands and the requirements of Steel Plants, the demand by about 1984 may be expected to be double the present. This requirement can be met by expanding the capacity of the existing units as well as by establishing new units.

15. Electrical Industry

20.84 As regards the Electrical Industry, there is now large capacity only for manufacturing power and distribution transformers, house service meters and insulators. There may not be any immediate need for expanding capacity in these industries but in the Sixth Plan period, there will have to be even a doubling of capacity in order to meet not only large replacement demand but also additional demand for various items. The manufacture of fans of different types has to be undertaken in a big way by the promotion of one or two units. Table fans and ceiling fans will be in great demand and consumption might increase more than four-fold in the next decade. The annual output of ceiling fans alone may have to be 5 lakh units. A large unit for incandescent lamps, fluorescent tubes and miniature and decorative lamps will have to be established. At present, there is only one unit for manufacturing cables. There is no unit now for producing underground power cables and cables of special types. Hence, one large unit for producing special cables will have to be established. The aggregate investments in all sections of the electrical industry will be about Rs. 30 crores in the Fifth Plan period and Rs. 50 crores subsequently.

20.85 Import of essential raw materials for electrical capacitor industry has to be permitted in a liberal manner.

20.86 The State Electricity Board should get all its requirements of Transformers from the Transformer manufacturers in Tamil Nadu on a preferential basis.

20.87 The Central Electrical Testing Laboratory at Kakkalur should also have facilities for L.T. Short Circuit Tests and for testing switchfuse Units of ratings above 60 amps.

20.88 The State Government may consider developing another Ceramics Complex near Omalur, Salem District, for producing Ceramic bases for Electrical Industry.

20.89 Electrical Insulation-papers have to be produced in the State and one unit may be assigned exclusively for this purpose, or one of the existing units could be allowed to expand to meet the need.

20.90 Two more units for producing miniature lamps may be set up early.

20.91 A fully-equipped Tower-testing yard may be constructed by the State Government for testing Transmission Towers and Railway Electrification Towers.

20.92 The figures in the following Table give an idea of the growing requirements of the Tamil Nadu Electricity Board.

TABLE 20-3.

Requirements of the Tamil Nadu Electricity Board

Details	*Existing ; March* 1972	*Anticipated*			
		1975	1978	1981	1984
(0)	(1)	(2)	(3)	(4)	(5)
1. Requirements of—					
(i) Power transformer in MVA. ..	4,572	6,070	7,570	9,070	10,880
(ii) Distribution transformer in MVA.	2,314	3,050	3,800	4,550	5,450
2. Demand for switch gear per year—					
(i) LHT (Breakers) in Nos. ..	Not available	40	40	45	45
(ii) HT (Breakers) in Nos.	..	100	120	130	130

NOTE : Demand for Switchgear relates to the breakers only Associated Switchgear and Cut outs will be required in proportionate number.

16. Electronics

20.93 The Electronics Industry has a great future and in the next two Plan periods, high priority will have to be accorded to the development of industrial units which will not only manufacture radio receivers and transistors, television sets, record players, tape-recorders and various other items needed by individual consumers but also tele-communication equipment, transmission equipment, computers and electronic gadgets required by industries, the defence services, Government and other institutions.

20.94 The Indian Telephone Industries, Bangalore has expanded fast but even with a rapid growth in production and diversification of the manufacturing lines, the Posts and Telegraph Department does not feel that the factory can catch up with the demands of telephone subscribers even by the end of this decade. In the country, as a whole, there was only one telephone for every 2 lakhs of the population at the beginning of the Plan era ; now there are nearly 11 lakh telephones or one telephone for every 50,000 of the population. The increase is at the rate of one lakh telephones annually and it is expected that it will have to be increased to 2 lakhs by 1978-79. A conservative estimate places the aggregate requirements by 1983-84 at over 12 million telephones. In regard to radio receivers and transistors, annual production is around 2·5 million sets while the total of licences issued is over 13 millions. This increase in production may have to be nearly doubled in a short period and by the end of the Fifth Plan, the rate of production may be in the region of 5 million radio receivers and transistors annually and by 1983-84 one and a half times this figure, or 7·5 million units.

20.95 Increase in demand of this magnitude amply justifies the expansion of the industry. It is suggested that Tamil Nadu should have a new unit in the Central Sector for telephone receivers and for the manufacture of components for radio receivers and transistors. There will also have to be a big plant in the private sector for manufacturing radio receivers and transistors and electronic equipment for television transmission and reception. Tamil Nadu is ideally suited for this purpose because of the availability of skilled manpower. Already, some units in the private sector, have started the manufacture of electronic components for polyphadic meters, radio receivers and transistors and some work is being done also

for the defence service. Research facilities are also available but the development of the industry is far behind that of many other states and in view of the vast potentiality that exists, the State Government should see to it that new Central Sector Projects are located in Tamil Nadu and special incentives also are provided for the development of these industries in the private and joint sectors. A special cell in the development directorate will have to be created for co-ordinating the activities of the different sectors and for maintaining liaison with industries in other States and the development wing of the Central Government.

20.96. A minimum investment of Rs. 50 crores may be required in the Fifth Plan period alone and another Rs. 100 crores in the Sixth Plan.

17. **Sugar Industry**

20.97 At the all-India level, this industry will have to plan vigorously for increasing production to 65 lakh tonnes by 1978-79 and to 90 lakh tonnes by 1983-84. The target of annual production in Tamil Nadu will be 8 lakh tonnes in the Fifth Plan and 11 lakh tonnes in the Sixth Plan. As there will have to be a virtual doubling of capacity in 1978-79, at least 12 more factories with a capacity of 1,500 to 2,000 tonnes daily per unit will have to be established in Tamil Nadu. Of these, six factories will have to be set up in the first five years of the Perspective Plan preferably in Thanjavur District which is ideally suited for the cultivation of cane. This, however, requires adoption of a suitable water management policy. The remaining six factories can be located in Madurai, Tirunelveli, North Arcot and South Arcot districts.

18. **Paper**

20.98 Currently, Tamil Nadu is producing about 42,000 tonnes per annum of finished paper and the industrial units that are contributing to this output are the following :—

(In tonnes)

Name of unit	*Output*
(0)	(1)
(i) Seshasayee Paper and Boards Limited Pallipalayam.	33,000 (Including 7,000 to 10,000 of Duplex Board.)
(ii) Sun Paper Mills Limited Tirunelveli.	5,000
(iii) Venkateswara Paper Mills, Udumalpet.	4,000
Total ..	**42,000**

20.99 It is estimated that the present consumtion of paper and paper boards is as follows :—

	TONNES.
(i) Writing and Printing Paper (including special varieties).	30,000
(ii) Packing and Wrapping paper.	10,000
(iii) Paper Boards (Duplex, Triplex, and Pulp Boards).	10,000
Total ..	**50,000**

20.100 In view of the increase in population and rise in the standards of literacy, the demand for different varieties of paper and paper products in the State is sure to go up fast. The likely patterns of demand in the final year of the Perspective Plan period is shown below :—

(In tonnes)

Item	*Demand (consumption) in* 1983–84.
(0)	(1)
Printing and Writing Paper ..	80,000
Packing and Wrapping Paper ..	40,000
Paper Boards (Duplex, Triplex and Pulp Boards).	45,000
Total ..	**165,000**

This will necessitate additional output of 54,000 tonnes of printing and writing paper, 39,000 tonnes packing and wrapping paper and 30,000 tonnes of paper boards.

20.101 Considering the long-term nature of the present Plan, it will be safe to provide for a 5 per cent margin in production capacity so that actual production may result in achieving an additional quantity of 130,000 tonnes which is necessary if the State is to reach self-sufficiency in the matter of paper and paper boards by 1983–84.

20.102 Total requirements of the different raw materials would be in the order of 382,000 tonnes (air dry) or roughly 400,000 tonnes per annum.

19 Alcohol Industry

20.103 The capacity for producing alcohol in the middle of 1972 was 283 lakh litres annually contributed by two big sized and two medium sized distilleries. Trichy Distilleries and Chemicals has a capacity of 135 lakh litres, Sakthi Sugars 90 lakh litres, E.I.D. Parry 45 lakh litres and Arvind Distilleries 30 lakh litres giving an output of nearly 6 million gallons annually. The consumption of alcohol for industrial and potable purposes in 1972–73 is about 9 million gallons. With 3 small sized distilleries capable of producing 27 lakh litres, the availability will increase to 14·2 million gallons. If an operating ratio of 80 per cent is assumed, the actual production may be 11·3 million gallons. However, it will be necessary to have a capacity of 18 million gallons for meeting the anticipated demand of around 15 million gallons by 1983–84 and 3 or 4 new units will have to be started, apart from the expansion of the few small units.

20.104 There will be no problem of availability of molasses as sugar production is expected to reach 1·1 million tonnes by the end of the Sixth Plan, which would be accompanied by an output of molasses of nearly 5 lakh tonnes. With this quantity, 20 million gallons of alcohol can be easily produced and even 25 million gallons, if there could be better storage facility for molasses and more efficient distillation. The outlay involved in the creation of three new distilleries and the expansion of smaller units may not be more than Rs. 5 crores.

20. Vanaspathy Industry

20.105 The All-India production of Vanaspathi as well as production in the South zone separately is given below :

(In tonnes.)

	Production		
Zone	*Bulk.*	*Small.*	*Total.*
(0)	(1)	(2)	(3)
All-India ..	482,431	92,304	574,735
South Zone Total	46,776	6,187	52,963

It is seen that the South Zone total production is less than 10 per cent of the all-India figure. Licensed capacity is around 18 lakh tonnes but production is only 1/3 of this amount. In short, the capacity of the Vanaspathi industry is far in excess of the present requirements. In view of the unsatisfied demand for edible oil and a high rate of consumption, the unused capacity of the industry may be fully utilised in the next 7 years. Thereafter, it would be necessary for Tamil Nadu to install additional capacity for vanaspathi and export it after utilising its surplus in groundnut oil. There may also be larger consumption within the region iteself and if there is a doubling of the standard of living as is now envisaged, there is likely to be a four-fold or five-fold increase in the demand for edible oils.

Constraints and Problems

20.106 The creation of suitable infrastructure facilities for systematic industria development involves certain constraints and problems which may assume serious proportions, if suitable measures are not taken to resolve them.

20.107 Two of the most serious problems facing industrial development are that of adequate power supply and continuous flow of raw materials. The State being not very rich in the matter of critical raw materials, the industry is forced to face frequent shortages of raw materials in all sectors. The shortage of raw materials is attributable to very many reasons, more important among them being

bottle-necks created in movement (particularly on the railway), abour unrest and other causes like floods, drough , etc.

Power

20.108 The production of adequate power is a major constrai it to industrial development. Every industry would require sufficient and continuous power to maint ain the level of production and any fall in the sup ply of power will result in a fall in industrial production. This will be very much prounced in power-intensive industries like caustic soda, aluminium, fertilisers, cement, calcium carbide and other electro-chemicals where power is one of the main raw materials. Even at present, the State is not able to meet the requirements of power fully and has had to resort to power-cuts every year. The requirements of power in the Perspective Plan are indicated in Chapter-9. It is absolutely necessary that power generation is given the highest priority to sustain industrial growth.

Raw Material

20.109 The position in regard to agricultural and industrial raw materials may get complicated during the ten-year period since new and larger demands will arise as industrialisation gathers momentum. There will have to be a systematic approach to the question of augmenting supplies of sugarcane for a near trebling of sugar production apart from meeting any increase in demand for Gur and Khandasari that may take place.

20·110 As regards raw cotton, there is already a deficiency of over 4 lakh bales and this deficit may increase to atleast 7 lakh bales in the next 10 years with an expansion of spinning capacity of the textile industry. There will, thus, have to be a trebling of the output of cotton to one million bales.

20.111 There will, however, be shortages of wood pulp, staple fibre, rayon yarn and nylon filament yarn As the efforts for producing rayon-grade pulp have been very successful, it is necessary to initiate a programme of plantation of soft-wood trees for providing the required raw materials. The forest areas in the State are not abundant but the existing land can be suitably exploited with the formulation of a new policy with long-term objectives. Research work also has to be undertaken for determining the suitability of bagasse for manufacture of cellulosic film or other products, with the pulp that could be secured from these raw materials. There will be technological problems but these will not be insuperable. If there is shortage of cellulosic fibre, which is likely, pulp may be got from outside sources ; but the processing plants should be located in the region. Polyster fibre may not be in shortage, but there will have to be a large-sized unit for nylon filament yarn in the petro-chemical complex. Pending local manufacture, supplies will have to be secured from other States or imported. The paper industry will, have to depend more on bagasse.

20.112 There is a serious shortage of steel, non-ferrous metals, coal, coke, ferro-manganese and other items. Even with the coming up of the Salem Steel Plant, which will not be before 1978–79, there will be shortage of mild steel. No precise quantification of requirements of steel is possible but having regard to the All-India consumption of 25 million tonnes of finished steel in 1983–84, Tamil Nadu alone may need over 2 million tonnes (1983–84) annually for feeding the metal-based industries and meeting the requirements for residential construction, irrigation, power-projects, etc. Dependence in this regard on other States seems necessary ; but with the coming into operation of the Visakhapatinam and Vijayanagar projects, the position may ease in the Sixth Plan.

20.113 For the Fifth Plan, the State Government will have to make arrangements with the Centre for securing a sizeable quota of steel, besides making its own arrangements for maintaining stocks in raw material banks established in strategic locations. There will be no problem in regard to the availability of iron-castings but additional facilities will have to be created for the steel and non-ferrous castings. A Coke oven battery may be established in Madras for meeting the requirements of foundries and others. Coal will have to be brought regularly from West Bengal and Orissa and with the coming into existence of the Salem Steel Plant, its consumption may increase to over 3 million tonnes by 1978–79 and 5 million tonnes

by 1983—84. Inspite of dieselisation and electrification of railways, it may be worthwhile to employ a regular fleet of colliers for transporting these quantities so that the strain on the railway systems may be reduced. The shortage of non-ferrous metals can be overcome to a certain extent with the establishment of smelters based on imported concentrates; but the requirements will have to be secured through official agencies on a well-defined basis. As regards cement, adequate limestone deposits exist and there may be a shortage, if at all, only in respect of gypsum. In regard to salt, the supply will be abundant and the scope for the development of salt-based chemicals near the coastal areas is considerable. Packing materials also will have to be secured from outside sources. However, the feasibility of establishing processing units using imported jute cloth may be examined.

20.114 A new dimension has been added to the shortage of raw materials through the present oil crisis, which has affected not only industries but also the movement of raw materials. As a chain reaction to the world-wide oil shortage, the basic raw material for plastic industry has become very scarce and costly, resulting in grave problems to the packaging industry, in particular. The shortage of furnace oil has created problems in the continuous working of plants depending upon oil. This is a field where some long term solutions have to be found. R and D efforts on the feasibility of adaption from oil burning to coal burning will help in keeping the industries going on a continuous basis. Likewise, dependence on oil could be cut down if the R and D efforts yield a substitute by way of reliable battery driven vehicles which incidentally will promote battery manufacturing also.

Water

20.115 The supply of water for industrial purposes has not so far presented any serious problem because of the utilisation of waters from rivers and from wells, sunk river beds. But the requirements in the coming years will be so large that the tapping of underground water resources has to be attempted. On a rough estimate, 150 million gallons daily may be required for the new industries in Salem, Tuticorin, Coimbatore, Tiruchirapalli, Madras and other industrial complexes. The existing cement units may have to change over to the dry process wherever possible. Efforts should also be made to secure supplies from adjoining areas. Kerala can help Coimbatore not only for supplying water for drinking purposes but also for industrial purposes. Similar arrangements with Andhra Pradesh, for meeting the needs of industries in and around Madras, North Arcot and Chingleput Districts can be made. A scientific approach in this matter is necessary. Otherwise, there will be a water famine in the Sixth Plan when the requirements will be 250 million gallons daily for industrial purposes alone.

20.116 Sea water cooling will have to be attempted wherever possible, as it is proposed to be done at Kalpakkam; also, with further research work on desalination, suitable water for industrial purposes would be available.

Finance.

20.117 The past two decades and a-half witnessed the evolution of a number of institutional financing agencies such as IFCI, ICICI, IDBI* and the state financial corporations including the Tamil Nadu Industrial Investment Corporation. In addition, the two investment institutions, Life Insurance Corporation of India (LIC), and the Uni-Trust of India (UTI) lend financial support to industrial units.

20.118 The new agencies, the Tamil Nadu Industrial Development Corporation Limited (TIDCO) and the State Industries Promotion Corporation of Tamil Nadu (SIPCOT) have been established in the Fourth Plan Period for more effective pormotion of industries and acceleration of industrialisation of the bakward areas of the State. Apart from the above financial institutions, commercial banks have also extended financial help to industrial concerns in Tamil Nadu.

20.119 Out of a total of Rs. 1,576 cores provided by the financial institutions up to 1969-70 for the whole country, †the share of Tamil Nadu amounted to Rs. 186.48 crores or 12.8 per cent of the aggregate. Taking into account further assistance in subsequent

* Industrial Finance Corporation of India, Industrial Credit and Investment Corporation of India, Industrial Development Bank of India.

† Industrial growth in Tamil Nadu—Industrial Finance, a Review 1971-1972. Government of Tamil Nadu, 1972.

periods, institutional finance now available in various forms is roughly Rs. 225 corres. This may constitute about 20 per cent of aggregate fresh investment in the past decade and a-half. While it can be expected that assured suppport will be forthcoming from these institutions for implementation of expansion and new schemes in the private and joint sectors, it will be necessary to obtain larger support for all ventures in the public, co-operative, joint and private sectors in the next ten years covered by the Perspective Plan as the outlay on industrial projects may be over Rs. 1,750 crores in all sectors. If the proportion of institutional finance to fresh investment can be raised at least to 40 per cent (Rs. 700 crores) of the total and direct loan also can be secured from LIC and the banking system in a big way, the problem of mobilisation of resources can be eased considerably. It will be relatively easy to start new enterprises in the private and joint sectors if the initial contribution of promoters is fixed at, say, 10 per cent of the fixed assets or better still, 10 percent of equity capital. Also, it is necessary to have Regional Boards of LIC with powers to sanction loans upto specified limits and a State Investment Trust to mobilise resources for investment purposes on lines similar to the Uni-Trust of India.

RESEARCH AND DEVELOPMENT SCHEMES

20.120 In order to ensure a rapid, orderly and balanced development of industries in the State, special attention has to be devoted to Research and Development. It is essential to set up a few centres of R and D activity and also vitalise some of the existing institutions which possesss the basic infrastructure facilities required for research work.

20.121 To start with, the following projects will have to be taken up in the Perspective Plan period:—

1. Research pertaining to the Sugar Industry;
2. An Institute for Research on Edible Oil;
3. An Institute for Cement Technology; and
4. Research Centres for Standard Cloth.

20.122 The details of these projects are given in the following paragraph :—

1. Sugar Research Institute

20.123 The proposed Institute will be called "The Tamil Nadu Institute of Sugar Technology and Research" and will have the following as its objectives :—

(i) To undertake research on problems pertaining to sugar technology, sugar and sugarcane chemistry and sugar engineering and also utilisation of by-products in sugar industry ;

(ii) To provide technical training in all branches of sugar chemistry, sugar technology and sugar engineering besides training in research ; and

(iii) To provide advisory, extension and survey and information services to the sugar factories in the State.

20.124 Tiruchirappalli district will form an ideal location for the Sugar Research Institute. This Institute will be financed by the Sugar Industry with a subsidy from the State.

20.125 The total outlay will be Rs. 170 lakhs in the Perspective Plan period.

2. Research in Edible Oil

20.126 An Institute to be called "The Tamil Nadu Institute of Research on Edible Oil" will be set up with the following objectives :—

(i) Undertaking research on the production of edible oil from existing sources of oil-seeds with reference to their oil content and evolution of new variety of seeds ;

(ii) Development of Research on seed production technology and quality seed production in respect of all oil seeds particularly ground-nut and coconut ;

(iii) Undertaking Research on new sources of oil seeds such as cotton seed, sun flower, saf flower, rice bran, niger and castor with reference to their oil content and also evolution of new varieties in these items ;

(iv) Undertaking research on the cost of production of edible oil in different areas ;

(v) Quality control in respect of the available edible oil as well as newer sources ;

(vi) Promoting research on the existing storage capacity and improving them as well as undertaking study of the preservative aspects of edible oil ;

(vii) Initiating research on production on a commercial basis particularly for human consumption ;

(viii) Investigating the scope for the utilisation of by-products of edible oil ;

(ix) Research for finding out the possibilities of the industrial use of edible oil ;

(x) To provide the necessary technical training in research on oil seed cultivation and production of edible oil ; and

(xi) To provide advisory extension and survey information services to the oil mills in order to improve their efficiency and to help them in solving their problems.

20.127 This project will have to be located either at Pollachi in Coimbatore district where there is a groundnut belt or at Villupuram in South Arcot district where also there is groundnut cultivation on a large scale. The total cost of the project will be about Rs. one crore. This will have to be completed before the end of the second year of the Fifth Plan.

3. Tamil Nadu Institute of Cement Technology

20.128 This Institute involving a cost of about one crore of rupees will be set up at the commencement of the Perspective Plan and will have the following objectives :—

(i) To undertake research on—

(*a*) production and marketing of cement ;

(*b*) under-utilisation of capacity in the industry ; and

(*c*) quality control ;

ii) To undertake studies on—

(*a*) in-put—out-put analysis and production in relation to fuel consumption ;

(*b*) to undertake studies on new sources of cement ;

(*c*) to undertake studies on problems relating to the movement of out-put ; and

(*d*) to carry out Operations Research in regard to cement production and distribution ;

(iii) Investigation into improved processes of manufacture ;

(iv) To determine the scale of production and use of various grades of cement ; and

(v) To conduct studies on the economic use of cement in building and construction activities.

20·129 The implementation of the Project will have to be the responsibility of the State Government.

4. Standard Cloth

20·130 For the Textile Industry, it is proposed that Powerloom Service Centres may be established in important centres of Tamil Nadu. The main objective of the project will be to improve productivity and quality of powerloom fabrics by offering technical advice and services. The project will be implemented by SITRA with the financial assistance from Tamil Nadu Government. The former will be responsible for the organisation and running of these centres and will extend technical advice and expertise.

20·131 The proposed service centres will be located at areas where there is good concentration of powerlooms, and one centre can normally service 2,000 to 3,000 powerlooms within a radius of 20 Kms. This will be a continuous project and will be taken up in the Fifth Plan. The capital expenditure for establishing 10 such centres will be about Rs. 6 lakhs and recurring expenditure will be Rs. 5 lakhs per year for the rest of the years of the Fifth Plan.

GENERAL RECOMMENDATIONS

20·132 There has to be bolder planning for the further development of agro-based industries. The sugar industry, particularly has to be developed in an integrated manner and production will have to be increased by about four times by the end of the Perspective Plan period. A large complex can be established in Thanjavur district for producing sizeable quantities of sugar, alcohol

and paper. The use of bagasse, as raw material for paper, should be encouraged.

20·133 Special facilities will have to be provided for textile units for implementing the modernisation programmes and for improving their position so as to enable them to retain their share of the All-India out-put.

20·134 Special attention is to be devoted to the setting up of suitable industries in the backward pockets in all districts especially Ramanathapuram, Thanjavur, Kanyakumari, Tirunelveli, Dharmapuri, North Arcot and South Arcot.

20·135 The existing bigger industrial units which already possess the technical know-how may be required to provide the necessary technical assistance to new units on a reasonable basis.

20·136 Creation of an industrial managerial cadre will go a long way towards ensuring an adequate supply of competent managers for the industries that are likely to be set up. The State Government will have to be associated with the management of Central Sector projects as it would contribute to the better understanding of regional and special problems and to reducing delay in execution.

20·137 Contracting corporations for power development, irrigation and for setting up of industries like cement, sugar and textiles will have to be encouraged. The State Government should provide special assistance to the entrepreneurs or the experts concerned for carrying out negotiations and preliminary surveys.

20·138 Effective arrangements should be made for carrying out a regular census of production pertaining to large and medium industries. There should be a special cell in the Directorate of Industries and Commerce for evaluating the progress of industries in the different sectors. Commodity surveys and market studies will have to be frequently undertaken under the direct supervision of the special cell proposed.

20·139 With the increase in the volume of goods and services, it is essential to think of a distributive mechanism in the shape of Joint Stock companies which will buy raw materials, stock them and supply them to the industries and buy the finished products from them after giving them a processing charge for being distributed to bulk consumers and general consumers. The objective of the system will be to reduce intermediaries and maintain stability in prices of essential commodities.

20·140 Early measures have to be taken to develop the packaging industries in a big way so that the distribution of goods is not affected for want of packaging materials.

20·141 The scope for establishing jute mills in Tamil Nadu for meeting the needs of packaging and other materials of indutrial consumers and the agricultural sector should be exploited. Initially, the jute mills may obtain their requirements from sources outside the State but the feasibility of cultivating jute in Thanjavur District and other areas where steeping water is available should be examined and sizeable acreage brought under the crop over a period.

20·142 Special emphasis should be laid on Research and Development and the State should help a pooling of research facilities on an industry-wise basis by establishing special units with contribution from industries and the State and Central Government. An industrial research and development committee will have to be set up at the beginning of the Perspective Plan Period.

TABLE 20-4.

An abstract of investment envisaged in the Period 1974-84

(Rs. in Crores)

Period	State	Central Direct	Total public	Private	Total
(0)	(1)	(2)	(3)	(4)	(5)
1974—79 .	60	375	435	245	680
1979—84 .	186	630	816	710	~~1,626~~ 1,526.
Total for Perspective Plan	246	1,005	1,251	955	2,206

TABLE 20-5

Projects to be taken up in 1974—79

(*a*) *State Sector Projects* (*Rs. 60 crores*).

Serial Number	*Name of the Project*
1	Sponge Iron Plant.
2	Concast Plan—Extension.
3	Tamil Nadu Cement—Expansion.
4	Share capital assistance to Textile Corporation.

5 Industries in the Co-operative Sector inclusive of sugar units.

6 Salt-based industries.

7 Share capital Assistance to State Industries Promotion Corporation of Tamil Nadu.

8 Tamil Nadu Industrial Development Corporation—New Projects and Expansion.

9 Research and Development.

(*b*) *Direct Central Sector Projects* (*Rs.* 375 *Crores*).

1 Salem Steel Plant—I Stage.

2 Second Mine Cut at Neyveli.

3 Expansion of existing Central Sector Undertakings.

4 Copper Smelter Plant.

5 Heavy Water Plant.

6 Seamless Steel Tubes.

7 Research and Development.

(*c*) *Private Sector Projects*

The anticipated investment in the private sector will be of the order of Rs. 245 crores in the following industries.

Serial Number	*Name of the Industries*
1	*Automobile and Allied Industries.*
	(*a*) Cars.
	(*b*) Commercial Vehicles.
	(*c*) Auto-Ancillaries.
	(*d*) Automobile Tyres.
2	*Metal-based Industries*
	(*a*) Steel tubes and Pipes, Alloy Steel, Grey Iron Castings, etc.
	(*b*) Copper.
	(*c*) Machinery.
	(*d*) Machine Tools.
	(*e*) Other non-ferrous metals.
3	Sugar Industries.
4	Cement, Ceramic, Glass and other Products.
5	Paper and Allied Products.
6	Textile Industry.
7	Electrical and Electronics Industries.
8	Chemicals and Allied Industries.
9	Research and Development.

TABLE 20 - 6

Projects to be taken up in 1979—84.

(*a*) *State Sector Projects* (*Rs.* 186 *Crores*).

Serial Number	*Name of the Project*
1	Tamil Nadu Industrial Development Corporation—
	(*a*) New Projects.
	(*b*) Expansion of Fifth Plan Projects.
2	Share capital and assistance to State Industries Promotion Corporation of Tamil Nadu.
3	Industries in the Co-operative Sector, Paper, Sugar etc.
4	Share capital Assistance to Textile Corporation.
5	Research and Development.

(*b*) *Direct Central Sector Projects* (*Rs.* 630 *Crores*)

1 Salem Steel Plant—II Stage and its Ancillaries.

2 Expansion of existing central sector undertakings.

3 Fertilizer Plant.

4 Desalination Plant.

5 Electronics.

6 Paper and Allied Industries.

7 Electrical Industries.

8 Naphtha Cracker.

9 Research and Development.

(c) *Private Sector Projects*

The anticipated investment in the Private Sector will be of the order of Rs. 710 crores in the following industries.

1. *Automobile and Allied Industries—*
   (a) Cars.
   (b) Motor Cycles—Scooters.
   (c) Commercial Vehicles.
   (d) Cycles.
   (e) Tractors.
   (f) Auto-Ancillaries and Automobile Tyres.
2. *Metal-based Industries—*
   (a) Steel.
   (b) Copper.
   (c) Aluminium.
   (d) Machinery.
   (e) Machine Tools and
   (f) Non-ferrous metals.
3. Cement, Ceramic, Glass and other products.
4. Paper and its allied products.
5. Sugar and Ancillary products.
6. Textile Industry.
7. Electrical and Electronic Industries.
8. Chemicals and Allied industries.
9. Other industries—Alcohol, Vanaspathi, fruit processing and rice mill industry.
10. Research and Development.

TABLE 20-7

Large and Medium Industries

SCHEMES CONTEMPLATED BY TAMIL NADU INDUSTRIAL DEVELOPMENT CORPORATION (TIDCO)

1. (a) Southern Petro-Chemical Industries Corporation Limited.
   (b) Expansion programme of SPIC
2. Tamil Nadu Chemical Products Limited.
3. Tuticorin Alkali Chemicals Limited.
4. Tamil Nadu Rubber Limited.
5. Tamil Nadu Chromates and Chemicals Limited.
6. Cigarette.
7. Potasium Chlorate.
8. Borax and Boric.
9. Steering Gear Project.
10. Cigarette Tissue Paper.
11. Nylon—6 Filament Yarn.
12. Precision Measuring Instrument.
13. Aluminium Fluoride.
14. Biaxially Oriented Polystyrene Film.
15. Ball Bearings.
16. Television.
17. Marine Diesel Engine.
18. Sponge Iron.
19. Calcined Petroleum Coke.
20. Refractories.
21. Tamil Nadu Dadha Pharmaceutical Limited.
22. Expansion of Tamil Nadu Cements.
23. Expansion of Continuos Steel Casting Plant, Arkonam.
24. Acetylene Gas Cylinders and Air Separation Plant.
25. Dyes and Naphthal ASG.
26. Graphite Electrodes.
27. Arkonam Casting.
28. Continuous Steel Rolling Mill.
29. Scooters.
30. Industrial Refinery.
31. Briquetting.
32. Wire Road Mill.
33. RBS Resins.
34. Salt.

CHAPTER-21.

Small Enterprises

I. HANDLOOMS

21·1 There are about 5·56 lakh handlooms in the State with nearly 20 lakhs of people depending on them. With an annual production potential of the value of Rs. 50 crores, this industry occupies an important place in the economy of Tamil Nadu.

21·2 The expenditure of the Government by way of loans and subsidies to the handloom industry under the Five-Year Plans is shown below :—

(Rs. in Lakhs.)

Plan Period	*Expenditure*
(0)	(1)
Second Five-Year Plan 1956–57 to 1960–61.	713·00
Third Five Year Plan 1961–62 to 1965–66.	750·30
1966–67	183·45
1967–68	118·00
1968–69	130·69
1969–70	145·06
1970–71	197·06
1971–72	239·31
1972–73	229·67
1973–74 (Estimated)	202·11

21·3 An outlay of Rs. 10·60 crores was assigned in the Fourth Plan for the development of the Handloom Industry. This amount was intended to cover the following schemes :—

(*a*) Share capital assistance to Handloom Weavers Co-operatives;

(*b*) Research and improvement of techniques;

(*c*) Rebate, marketing and publicity;

(*d*) Financial assistance to Industrial Weaver's Co-operative Societies, Silk and Art Silk Societies;

(*e*) Subsidy for Managerial staff; and interest paid to Co-operative banks; and

(*f*) Participation in the share capital of Primary, Weavers Co-operatives and Welfare measures such as housing and contributory Thrift Fund Schemes. Besides, provision was also made for other items such as collection of Statistics, award of cash prizes organisational expenses and training for staff, etc.

Production and Sales

21·4 The handloom industry is producing fabrics of different varieties such as sarees, dhoties, towels, bed-sheets, furnishing fabrics, shirting, lungies, etc., according to the requirements of the people in this State and also in other States. It provides varieties of fabrics for export to other countries also. The phenomenal progress made in the matter of production and sale of handloom cloth in the Co-operative Sector in the Plan periods is brought out by the following figures :—

Plan Period	*Production (In million Yards)*	*Sales (Rs. in Crores)*
(0)	(1)	(2)
First Plan (31st March 1956).	73·34	5·91
Second Plan (31st March 1961).	97·89	9·84
Third Plan (31st March 1966.)	115·00	12·50
1966-67	80·00	10·50
1967–68	83·94	10·74
1968–69	77·72	11·01
1969–70	67·74	10·85
1970–71	67·27	15·00
1971–72	68·61	16·80
1972–73	72·90	19·07
1973–74 (Estimated).	75·00	23·00

General

Loan to Weavers affected by scarcity of yarn

21·5 As a measure of relief to the weavers who were affected by scarcity of yarn due to power cut, Government sanctioned loans to an extent of Rs. 87·14 lakhs, at the rate of Rs. 100 per loom during the year 1973–74. Government have since decided to write off the entire loan sanctioned.

Service Cooperatives

21·6 In order to have smooth distribution arrangement of cotton yarn, staple fibre and art-silk yarn to all the weavers outside the Co-operative fold, measures have been proposed to organise service cooperatives all over the State.

Co-operative Spinning Mills

21·7 There are 12 Co-operative Spinning Mills in this State. With a view to ensure timely and adequate supply of quality yarn at reasonable prices to the weavers in the Co-operative fold, one Spinning Mill in each district was started during the Third Five-Year Plan except in the Districts of Madras, Nilgiris, Dharmapuri and Pudukottai. There is one Spinning mill in each district; but in Tirunelveli District, there are two Spinning Mills, one at Nazereth and another at Pettai. All the 12 Co-operative Spinning Mills put together had an installed capacity of 1·98 lakh spindles as on 31st December 1973. The Co-operative Spinning Mills have embarked upon a massive programme of expansion at an estimated value of Rs. 10 crores to increase the spindleage almost by 100 per cent. Civil works are in progress and supply of machinery also is expected shortly to all these mills.

21·8 The following statement will show the investment, production, turnover, etc., for all the 12 Co-operative Spinning Mills during the period 1971–73. The overall performance of the Spinning Mills has been satisfactory as enumerated below :

(Rs. in Lakhs.)

Item.	*1971*	*1972*	*1973*
(0)	(1)	(2)	(3)
Producing of yarn by 12 Co-operative Spinning Mills (in lakh Kgs.,)	114.35	104.05	85.90
Sales turnover	1,285.49	1,401.40	1,086.00
Total cotton consumed (in bales of 180 Kgs.)	79,410.00	72,257.00	59 653.00
Total nvestment by Govt. at the end of the year.	199.46	199.46	202.46
Govt. guarantees outstanding at the end of the year.	718.63	1,005.53	1045.89
Total net profit earned by all CSMs put together.	9.99	90.55	79.76
Total spindleage installed in lakhs.	1.95	1.98	1.98

Powerlooms

21·9 The Government of India allotted 12,500 powerlooms for introduction in Tamil Nadu during Fourth Five-Year Plan period. The Government of Tamil Nadu took a decision to introduce the powerlooms on a phased programme among the Weavers Co-operative Societies and individual weavers. During 1970-71 to 1972–73, 1,236 powerlooms were allotted to 73 Weavers Co-operative Societies and 4,886 powerlooms were allotted to individual weavers. So far as co-operative societies are concerned, Government financial assistance at the rate of Rs. 1,700 per powerloom by way of loan has been provided towards the cost of electric motors and powerloom accessories. Centralised arrangements have also been made for supply of the allotted looms under deferred payment system on Government Guarantee, under which the societies are required to pay 10 per cent of the cost of the looms and the balance is paid by them, in 10 half-yearly instalments. Wherever necessary, financial assistance at the rate of Rs. 1,000 per loom was also provided to the societies for construction of powerloom sheds. So far, Government loan was sanctioned to the extent of Rs. 1·83 lakhs towards the cost of powerlooms accessories to 73 Weavers Co-operative Societies, and Rs. 21·57 lakhs were sanctioned for the repayment of the instalments of cost of powerlooms supplied to the Weavers Co-operative Societies under deferred payment system during 1970–71, 1971–72 and 1972–73.

21,10 To have a regulated supply of sized beams to the Weavers Co-operative Societies, a sizing plant is being set up by the Salem Co-operative Spinning Mills for which financial assistance to the extent of Rs. 1·00 lakh has been provided to the Spinning Mills.

21,11 As there are a large number of powerlooms set up unauthorisedly without valid permits already functioning in this State, the Tamil Nadu Government have represented to the Government of India for an allotment of 10,000 additional powerlooms to regularise these unauthorised powerlooms. Vigorous steps have been taken to prevent further growth of unauthorised powerlooms.

Handloom Industry in the Perspective Plan

21,12 A sum of Rs. 60 crores has been recommended for the Perspective Plan period to be spent

on such items as share capital assistance, (Admission of Cotton Weavers into Co-operative fold), subsidy towards interest on working capital loan State participation in the share capital of Primary Weavers Co-operative Societies, Research and Technique, Rebate, Marketing and Publicity, Co-operative Spinning Mills, Industrial Weaver's Co-operative Societies, Contributory Thrift Fund, Silk and Art Silk Industry Training Subsidy to Co-operative Central Banks towards the loss sustained in the issue of working capital loans, subsidy for Managerial staff, share capital to Apex Society, Organisation Expenses, subsidy to Co-operative Central Banks towards the cost of special staff employed for the maintenance of C.T.F. account, Handloom Finance Coporation, Collection of Statistics, Subsidy to Co-operative Central Banks towards 7/8 of the cost of the employment of staff supervision of V.C.S. financed with Reserve Bank of India funds and Powerlooms and processing centres.

RECOMMENDATIONS FOR THE DEVELOPMENT OF THE INDUSTRY

21·13 In view of the stress which the Perspective Plan lays on the need for encouraging labour-intensive industries, the Handloom Sector which has both an economic and sociological importance will have to be developed in a big way. For an investment of Rs. 500, it is possible to employ on an average two persons and on this basis, if the assistance to the tune of Rs. 10 crores is given, it will become possible to provide employment for about 20 lakhs of persons for a period of five years.

21·14 In this connection it is relevant to consider the feasibility of a policy by which future domestic needs of cloth may be made to depend completely on the decentralised sector, while the mill sector may concentrate exclusively on exports. It can be prescribed that the mill sector should export 1/3 of its production and if they are not able to do so, they will have to reduce their output by 1/3. Any reduction in the output of the mill sector resulting in this manner will have to be offset by a corresponding increase in the output of handlooms which, in turn, would contribute to increased employment in the rural areas.

21·15 An organisation for the purpose of buying yarn from the mills on the basis of processing charges and distributing the same to handlooms and powerlooms and also for purchasing the finished output of the decentralised sector for marketing them to consumers will have to be set up.

21·16 Arrangements will have to be made to enable the primary societies to get their entire requirements of cotton yarns of various counts from the co-operative spinning mills through the apex society.

21·17 In regard to the marketing of cloth, the following measures are suggested :

(*a*) Encouragement for the opening of inter-state depots.

(*b*) Credit purchase now available to State Government Servants be extended to Central Government Servants also.

(*c*) Directives to Administrative Departments to place orders with the Tamil Nadu Weavers Co-operative Society to meet atleast 50 per cent of their requirements.

(*d*) The Central Government to issue directions to their departments, both civil and military, to purchase a portion of their requirements from handlooms.

(*e*) Dhotis and sarees to be exclusively reserved for the decentralised sector.

(*f*) Conduct of market studies in important towns and villages on fashion trends, price structure and on fluctuations of demand and supply in respect of various fabrics.

(*g*) Collection of statistics covering all aspects of handlooms on a scientific basis.

(*h*) Special exhibitions to be held at various State Capitals to popularise use of handloom products.

(*i*) A separate propaganda and publicity wing to be created in the Directorate of Handloom and Textiles for organising publicity for handloom products on modern lines both inside and outside the country.

(*j*) The credit limit for working capital accommodation to be liberalised.

(*k*) A 10% rebate on functions may be allowed during normal days and 5% extra be given during special seasons.

(*l*) The apex society to be encouraged to adopt sophisticated techniques of production and engage experts to help in their projects.

(*m*) The disparities in the Excise Duty between the powerloom and mill cloth to be removed.

(*n*) Abolition of sales tax on all kinds of yarns consumed by the handlooms.

(*o*) Export incentives offered by the State Government to be made available to exports by our State exporters through any sea-port or airport in India.

(*p*) Quality control to be enforced through the establishment of Quality Control Centres in selected handloom areas of the State.

(*q*) Processing of handloom cloth to be explored to meet various types of consumer preferences.

(*r*) Measures to be taken to expand the capacity of the mercerising and sanforising plants of the Tamil Nadu Handloom Weavers' Society.

(*s*) All India Handloom Board will have to establish more service centres for providing facilities for designing and dyeing in important centres like Salem, Coimbatore and Madurai.

(*t*) More powerlooms to be sanctioned in the Co-operative sector.

(*u*) Rules relating to the Contributory Thrift Fund Scheme to be relaxed and made broad-based in such a way that it benefits all the weavers.

II. Small Scale Industries

Progress in the previous Plan peridos

21·18 The Second Five-Year Plan laid emphasis on the strengthening of the Small Industries in the State. As one of the means to achieve this end, a programme of setting up industrial estates in developed plots was initiated. This was followed up in the Third Plan period during which liberal financial assistance, by way of fixed and working capital, was given to small enterprises through State Departments and State financial institutions. The Commercial Banks also provided liberal working finances to this Sector.

21·19 The Annual Plan Periods (1966-69) witnessed the intensification of assistance to Small Scale Units and creation of development agencies for participation in their equity and share capital as well as for rendering assistance in marketing and purchasing of raw materials. Concessional financial aid, through Nationalised and Commercial Banks, was also made available.

21·20 The Fourth Plan concentrated on assistance in various forms to entrepreneurs who came forward to start new industries or proposed expansion of existing ones. The related programme to acquire and develop land for industrial plots for direct investment by the State was confined mainly to the establishment of units having a demonstration effect. Also, the Plan facilitated the starting of a few model units to disseminate technical know-how.

21·21 Regarding Village and Small Industries, the Fourth Five-Year Plan set the following objectives :

(*a*) to improve production techniques of small industries :

(*b*) to promote agro-based industries ;

(*c*) to provide incentives like credit, technical advice, supply of raw materials, etc.

(*d*) to assist the small scale industries to grow into larger units ; and

(*e*) to encourage co-operative form of organisation, wherever feasible.

21·22. The outlay on Village and Small Industries sector during the past Plan periods was as given below :—

(Rs. in Lakhs.)

Plan period	*Outlay*
(0)	(1)
First Five Year Plan	155
Second Five-Year Plan	1,408
Third Five-Year Plan	2,213
Fourth Five-Year Plan—Proposed ..	3,100
—Likely expenditure ..	1,921

The following figures* relating to the registration of the units with the Directorate of Industries in Tamil Nadu give an idea of the progress of this sector in the past few years. It should be noted that apart from the registered units, there will be an equal number of unregistered units.

TABLE 21-1

Registered Village and Small Industries Unit in Tamil Nadu, 1966-73

Year	Number of Units	Increase
(0)	(1)	(2)
1966	10,784	..
1967	11,813	1,029
1968	14,125	2,312
1969	19,748	5,623
1970	22,231	2,483
1971	25,486	3,255
1972	21,874	—3,612
1973	40,218	18,344

**Source* : Directorate of Industries and Commerce.

21·23. The Small Enterprises Sector, which accounted for 6·2 per cent of the State Income in 1960-61, increased its share to 8·9 per cent in 1970-71 (at 1960-61 prices). During the decade 1960-70, the Small Enterprises Sector registered an average annual growth rate of 6·4 per cent as against the 3·5 per cent growth rate for the economy as a whole.

INDUSTRIAL ESTATES

21·24 Industrial estates and common service centres were set up during Second Plan to provide the necessary infrastructure for the development of small industries. While the industrial estates were continued and diversified as Functional, Ancillary and developed Plots to meet the specialised needs of particulars types of industries, the common service facilities like common lease shops, tool rooms, etc., get gradually out of the picture since, they had served their purpose in the initial stages of formation. These were replaced by a number of Testing Laboratories and Quality Control Units run by both the State and Central Governments so as to assist in the production of quality goods.

21·25 The Industrial Estates at Guindy and Ambattur set up during the Second and Third Plans respectively have been hailed as outstanding in their planning and service to the industry. Besides producing quality consumer goods, the units in these estates produce a variety of ancillary items to Automobile Engineering, Electrical, Electronic, Defence and other industries in the medium and large scale sectors. A new dimension has been given to this concept through the establishment of Functional industrial estates for leather, ceramics, electrical goods, electronics and instruments. Units in these estates produce components and sub-assemblies required by major industries in the Public and Private sectors besides producing certain end products of high quality like Fuse Units, Process controls, car-radio, T.V. Receivers, Eletcrical wiring accessories and industrial thermometres. The Testing and Quality Control needs for these units are also being met through a chain of Testing Laboratories. The facilities available in the higher technological institutions like College of Engineering and I.I.T. are also utilized for supplementing these.

21·26 The establishment of functional industrial estates has provided a boost to the development of small scale industries especially those sponsored by technically trained persons. The setting up of the 'Technical Personnel Assistance Cell (TEPA)' is yet another activity of the State Government in bringing in qualified entrepreneurs to take to self-employment and produce quality goods.

21·27 The ancillary section of the Small Enterprises Sector, which is mainly service oriented, has developed fast it Tamil Nadu. With an estimated investment of Rs. 300 crores and employing over one lakh persons, this sector, particularly the engineering units, has accounted for about 50 per cent of the total small scale industries production. The value of orders secured by the small scale ancillary units between 1961 and 1971 has been estimated at Rs. 3,447 lakhs. In 1970-71 the value of services rendered was about Rs. 9 crores.

21·28 The ancillary units are catering to the needs of small, medium and large scale industries in the private sector as also the State, Centre and Public sector undertakings. An ancillary estate to meet the needs of the High Pressure Boiler Plant was set up during 1966 and on its successful working, it is now being expanded to have 18 more special units. The Hindustan Teleprinters Limited

and the Automobile industry have been procuring over 60 per cent of their needs from the Small Scale ancillary units in the State.

21·29 Another indicator of the progress of the Small Industries sector is the increase in the number of units which has been started since the Second Plan period. These units, which numbered about 3,000 in 1961 and 10,000 in 1966, have now risen to over 30,000. The investment, output and employment in this Sector during the last one decade are given below :

Year	*Number of Units*	*Assumed investment*	*Assumed Production*	*Labour-Employment*
			(Rs. IN CRORES.)	
(0)	(1)	(2)	(3)	(4)
1960-61 ..	3,000	20	75	80,000
1966-67 ..	10,000	65	250	2,00,000
1971-72 ..	26,000	100	400	4,00,000

ROLE OF STATE INDUSTRIAL CORPORATIONS

21·30. State Industrial Corporations like Small Industries Development Corporation (SIDCO) Tamil Nadu Small Industries Corporation (TANSI) and Tamil Nadu Industrial Investment Corporation (TIIC) have been playing a very important role in the development of small scale industries in Tamil Nadu. These Corporations are expected to expand their activities in their respective fields on a large scale during the Perspective Plan to accelerate the process of industrialisation in the State.

Small Industries Development Corporation (SIDO).

21·31 The SIDCO was set up in 1970 with the principal objective of rendering active assistance to the growth of small scale industries in Tamil Nadu. The Corporation provides financial assistance, distributes essential raw materials required by small industrialists, supplies machinery on hire purchase basis, provides industrial sheds on hire purchase, and also helps small industrialists in marketing their finished products. Since its inception, the Corporation has sanctioned loans to the extent of Rs. 4·21 crores (as on January 1974) benefiting 1,009 Small Industrialists. During the three years of its service to the small entrepreneurs, the SIDCO has distributed iron and steel materials orh Rs. 12·67 crores.

21·32 Under workshed schemes, SIDCO constructs worksheds tailored to the special needs of entrepreneurs and makes them available on easy instalments. So far, the Corporation has constructed more than 330 sheds at Ambattur, Tiruverambur, Kurichi and Ranipet, besides sanctioning loan to the value of Rs. 75·50 lakhs to small industrialists for construction of worksheds on their own land. The Corporation has proposed to establish industrial estates at Vellore, Ranipet, Tiruvarur, Dharmapuri and Dharapuram.

Tamil Nadu Small Industries Corporation (TANSI)

21·33 During the successive Plans, the Government have set up a number of training-*cum*-service centres (departmentally) to serve as infrastructure for the growth of industries. These centres, with their general and special purpose machines, made a significant contribution to the growth of small industries in the State. These were later converted into commercially viable units and were taken over by TANSI which was formed in 1965. Over the years, the Corporation has diversified its activities and introduced new lines of production. Now TANSI provides a wide range of services and products to public and private sectors. These include casting, electroplating, structurals, furniture, crockery, sanitaryware, finished leather and leather products. During the Perspective Plan, TANSI will expand and diversify its activities. Also TANSI will be the agency through which the State will establish small scale industries in the public sector. Some of the important schemes that the Corporation will be implementing during the Perspective Plan are modernisation of Tool Rooms and Engineering workshops, exapnsion of TANSI Tannery at Vinnamangalam and manufacture of plastic moulds. light and industrial leather, electronic components, cycle tyres and aluminium gravity die castings, In addition, a factory for manufacture of mopeds will be set up in the SIPCOT industrial complex at Ranipet.

Tamil Nadu Industrial Investment Corporation

21·34. The TIIC is also offering special concessions to small scale industries from 1970. Textile industries, basic metal industries and machinery manufacturing units in the small scale sector have benefited by the Corporation's special concessions.

OBJECTIVES OF THE PERSPECTIVE PLAN

21.35 The objectives of the Perspective Plan with regard to Small Enterprises is to achieve at least a doubling of their present number in five years i.e. to 50,000 by the mid-years of the Perspective Plan and to about 75,000 units by 1984. The new entrants in the field will be manufacturing more sophisticated products as, with a general rise in the standards of living and a faster phase of industrial development in Tamil Nadu and other regions, there will be growing demand for these items. Quite a large number of industrial units will be engaged in the manufactur of end-products, while raw materials and other requisites may be derived from the large scale sector. Conversely, there will be many ancillary units in the engineering and electronic fields which will be acting as feeders to large scale industrial producers. For bringing about this desirable development, encouragement is to be given by providing the required long-term and short-term credit facilities and also firm and ample infrastrtucture facilities.

21.36 The Plan also aims at further intensification of this labour-oriented sector during the latter half of the Plan period. The increase in the aggregate capital investment will be about Rs. 300 crores by 1984, required not only by the new units, but also for the expansion of a number of existing units.

21.37 The aggregate outlay of Rs. 280 crores for the Perspective Plan period comprises of Rs. 143 crores from the State, Rs. 10 crores from the Union Government and the rest from corporate and private sources including increased institutional finance to meet working capital requirements. The outlay of the State Government will mostly be on the promotion of functional industrial estates, provision of work facilities, implements and guidance for artisans in semi-urban areas as well as on the promotion of labour-intensive schemes which will be helpful in producing larger quantities of varied commodities like leather products, furniture, house building materials, plastic items, footwear and other consumer items. Also, there will be a host of small units for manufacturing accessories for the mechanical engineering industries, electrical items for the automobile and electrical equipment industries,and chemical units for processing numerous by-products. The sericulture industry has to be developed intensively. A new field is opening up in producing and assembling electronic components, radio receivers, transistors and domestic electrical appliances. Besides, service institutes catering to the requirements of farmers and others for providing assistance for repair and maintenance of equipment, will have to be thought of.

21.38 One important aspect of development which calls for special attention is the co-ordination of the activities of the large and small scale units and a constant supervision with a view to ensuring a smooth flow of raw materials and components and speedy execution of orders. In general, the benefits arising out of the progress of Small Enterprises are :—

(*a*) additional employment to roughly 2 to 3 lakh persons ;

(*b*) increased returns as taxes from the units newly established ; and

(*c*) opening up of new self-employment opportunities.

MEASURES TO PROMOTE SMALL SCALE INDUSTRIES IN THE PERSPECTIVE PLAN PERIOD

Small Scale Industries Registration and Finance

21.39 The registration of units with the State Directorate of Industries and Commerce, being 'voluntary', gives little scope for assessing the facilities required in respect of raw materials, finance and marketing of products. Hence, statutory provision has to be made for compulsory registration of all the Small Scale Units. The Tamil Nadu Industrial Investment Corporation can help these entrepreneurs by financing the entire capital requirements or by providing only the required margin money with which the entrepreneurs can get further assistance from Commercial and the Nationalised Banks. These financial facilities have to be treated as 'second charge' for the purpose of recovery. Similarly, engineers and technicians, already employed in private or public sector, who desire to start new industries may be encouraged by giving them a year's leave and the entire capital required by them on the basis of their solvency.

21.40 A 'Technical Consultancy Cell under the Nationalised Banks, to give advice on the projects put forward by the entrepreneurs before financing,

is needed. Tamil Nadu Government, as a gesture of its interest in promoting industries in backward areas, can grant an interest subsidy of one per cent to the State financing institutions.

Special Finance Facilities for the Low-Income Artisans

21.41 In spite of liberal finance made available to the Small Scale Sector in the past, the skilled artisan did not benefit much. Hence, further assistance to experienced self-employed artisans is necessary. Workers like the barber, dhobi, tea shop owner, ice cream vendor, aerated water producer, cool drinks manufacturer, machine operators, mechanics, smiths, carpenters, welders, etc., having an experience of atleast 10 years have to be assisted to modernise their work. Such emphasis may be recognised as running businesses eligible for concessional credit from State Institutions or Commercial Banks for their requirements of fixed and working capital.

21.42 Secondly, loans may be provided to artisans on their own solvency to a limited extent. A limit of Rupees one lakh may be fixed for the purpose. No margin need be insisted on for loans below Rs. 10,000. The State Financial Institutions can, however, come forward to give necessary guarantee for the margin money on behalf of the applicant for higher values of loan. Entrepreneurs may be given the facility to repay the interest and principal in weekly/fortnightly/monthly instalments. A grace period of two years can be allowed for repayment of loans, wherever necessary In order to safeguard the interest of the Financing Institutions, it is suggested, that they provide the services of a trained, qualified and paid accountant to groups of borrowers of specific areas as part of the loan agreement.

21.43 Similarly, clinics, laboratories and X-ray/cardiograph institutes, and hotels– single or two star, can be treated on a par with small scale enterprises making them eligible for concessional credit facilities up to a maximum limit of Rs. 2 lakhs to enable modernisation of their equipment. This Scheme may be initially tried in municipalities and urban and major panchayat areas and could be later on extended to the villages.

Supply of raw materials

21.44. The available raw materials have to be properly utilised and the State has to assess the requirements of the scarce materials for securing reasonable allocation from Government of India, wherever necessary. The Department of Industries may conduct periodical surveys to assess the requirements of all scarce items.

21.45 Supply of scarce raw materials, particularly ferrous and non-ferrous, will have to be arranged through a ' Raw Materials Bank ' which will stock essential raw materials, secured through special imports, and release the same for urgent uses, with arrangement to take back the finished products, for marketing them.

21.46 The licensing procedure has to be simplified and the State will have to take greater responsibility for the distribution of the materials. The following additional recommendations are made :—

(1) Allocation of foreign exchange by the Union Government for imports and the items o canalised imports should be intimated to the State, well on time, to facilitate a reasonable distribution ;

(2) The canalising agencies have to import materials in the region on the basis of the assessment made at State-level and when imported, the distri bution has to be vested in the State Department for achieving their quick release to genuine users ;

(3) The prices of the canalised items have to be fixed on par with the price charged to large scale industries for similar items ;

(4) The quarterly allocations of iron and steel have to be intimated to the State, well in advance, and the indigenous producers have to fulfil the despatch of allocations to Governments in full ;

(5) High priority has to be given by the Railways for transporting materials in wagon loads to Southern States ;

(6) Scarce items like ferrous/non-ferrous items should not be generally allotted to traders;

(7) Scarcity is continuously felt for coke and coal in the Southern Region and coal dumps should be estabilished in the port cities of Tamil Nadu to move and stock these materials in bulk ;

(8) Import licences of small value issued to the actual users have to be processed by SIDCO for arranging bulk imports, so that the licences may not become ineffective ; and

(9) The State should appoint competent officers at Delhi and Calcutta to establish close liaison with the licensing Office and departments of Government of India.

Infrastructural facilities

21.47 The pioneering action of the Department of Industries and Small Industries Development Corporation (SIDCO) in providing infrastructural facilities, has to be further intensified. The Land Acquisition Act requires simplification to enable any individual to acquire sites in a reasonable period for industrial purposes. The panchayats and municipalities should immediately arrange to demarcate the 'industrial area' in their jurisdiction to have an 'industrial base'. The applications for new H.T. and L.T. power connections for industrial units should be promptly processed. Regional Officers may be given more powers to scrutinise and approve estimates to enable effective and quicker power installations. The present practice of licensing of power installation by local boards in addition to Government departments has to be abolished. The duplicating of functions of the Health Department and Factories Department, in licensing the new units and controlling the existing units, needs to be revised. This can be by the following measures :—

(*a*) Health Department can be called upon tolook after the cases of the non-engineering units upto an installed load of 5 H.P., and

(*b*) Factories Department to attend to all other cases of non-engineering, and the entire engineering units.

21.48 The industrial units should be permitted to use their discretion in rearranging the lay out of the machines within the permitted load. A specific time of 30 days should be fixed for all the concerned departments to process the application of a new enterpreneur and to give clearance for establishing new units promptly. Any difficulty in licensing the proposed industry should be brough to the notice of the District Industries Committee within 30 days for urgent disposal.

Ancillary development

21.49. The Public Sector undertakings like Integral Coach Factory, Bharat Heavy Electricals Surgical Plant, Neyveli Lignite Corporation, etc have acted as catalysts for the development of ancillary industries. Certain difficulties were faced by the large scale units in regard to sub-contracting arrangements with the ancillaries. They are :

(*a*) When there is any difficulty in developing any component at the initial stage, some of the sub contractors are reluctant to take sustained efforts, but tend to switch over to other customers hoping to find other easy work. Sub-contractors often do not realise the importance of making deliveries on time;

(*b*) Sub-contractors, who are not quality conscious, often return rejected components along with fresh supplies; and

(*c*) Many of the sub-contractors do not acquaint themselves with basic details like functional use of the components, etc., which will help them to plan for attaining the requisite quality standards.

21·50 Secondly, special efforts are required to encourage the ancillaries to manufacture complex and sophisticated industrial products. Testing facilities available in the public institutions have to be made accessible to the ancillaries. The Government laboratories have to be equipped with competent staff not only for testing and certification, but also for counselling in 'product development'. Ancillaries should be financially assisted to equip themselves with the minimum testing instruments so that they may take the full responsibility for satisfying their customers in respect of quality of the components and service.

21·51 A Central Standardisation and Research Cell located near the ancillary units to guide them in standardisation of products as well as to disseminate technological information from time to time may be set up. Special foreign exchange provisions are necessary for the ancillary sector. The powers to register ancillaries should be vested with the State Directorate of Industries, as it will help to deal with the problems of ancilliaries in a more effective way. A 'census of production' is necessary for studying the various facets of ancillary development so that furture development can be

quantitatively projected and qualitatively determined. Wide publicity should be given to the various facilities and assistance made available by State/Central Institutions to the Small Scale Industries.

Marketing and Quality Control

21·52 Small Industries Service Institute helped the creation of a sub-contract exchange in Tamil Nadu and this has played a significant role in widening the scope for marketing. Government purchase programmes extended certain benefits to Small Scale Industries by reserving exclusive right to develop certain specific items. Unfortunately, there is no endeavour from the sector to make the corresponding contribution to the export market even though one-third of the total industrial production in this country is accounted for by the Small Scale Industries. This lacuna has to be removed. For this purpose, participation of small industries in foreign fairs is essential.

21·53 The quality control arrangements for the small industries have to be expanded to enable proper testing of the products.

21·54 The price preference concessions of Government for Small Scale Industries products should be strictly applied, subject to the condition that the items conform to national standards. Periodical publications indicating the details of the tenders released by Director General of Supplies and Disposals, Railways, Defence and State Government have to be arranged for enabling competent units to participate in the tenders. Market Research Cells have to be set up to facilitate improvement in designs, specifications, size, kind or type, so as to make the reoriented needs of the consumers and to disseminate the knowledge pertaining to technological advancement. Government laboratories have to be adequately equipped with proper testing facilities so that they may do a wide range of testing at concessional rates. A State " Central Purchasing Organisation " has to be set up and entrusted with the responsibility of meeting the needs of the State Departments from competent units.

SOME SMALL INDUSTRIES DESERVING ENCOURAGEMENT SERICULTURE

21·55. The industry has so far developed only at high altitudes with suitable climatic conditions. The changing agronomical practices have now proved that mulberry could grow even in hot climate at lower elevation with certain special efforts; but the rearing of cocoons has to be done only in specific climatic conditions. The industry lacked facilities of ' design centers' to promote the weaving group and also a ' marketing organisation' to stock and supply the raw silk, as and when needed. The State is unable to meet present demand of ·raw silk ' of nearly three lakh kilogrammes in a year and has to depend on adjoining States. As part of the programme to rehabilitate the hill tribes, the suitability of sericulture industry in hill areas may be examined.

21·56 Special measures are to be taken to expand the sericulture industry in districts like North Arcot, South Arcot, Tirunelveli, Madurai, Salem and Coimbatore which are suited for mulberry cultivation. The Small farmers agency of the districts may be used as a medium for the introduction of sericulture. Pilot-*cum*-Extension centres may be opened with nurseries in each district to find out suitable areas for the expansion of the Industry. Publicity programmes through exhibitions and films have also to be arranged. Dharmapuri district which has vast potentialities may be considered for a crash programme during the Perpsective Plan Period.

Leather and Leather Products

Hides and Skins

21·57 Mechanised slaughter houses and large scale cattle, goat and sheep farms, with facilities for training unskilled flayers will have to be established. A detailed survey is needed to assess the availability of raw hides and skins in Tamil Nadu.

East Indian (E.I.) and Wet Blue Tanning

21·58 The E.I. and wet blue tanning industries will have to be mechanised to enable them to manufacture finished leather of good quality which will have demand in foreign markets. Suitable legislation to regulate the use of myrabolam for the benefit of the tanning units is necessary.

Finished Leather and Leather goods

21·59 The finishing units have to concentrate on one or two items of finished leather. A " Commodity Survey" of important segments of finished leather is to be undertaken early. Leather goods,

since most of them are fashion items, have to be produced by using modern foreign techniques. Sophisticated metal or plastic fitting have to be imported initially but can be later on substituted by indigenous production. A " Central Marketing Organisation" for leather goods will have to be established to cover both internal and export market. Mechanised footwear units have to be established to cater to export markets. A precision shoe lace factory can be set up in Tamil Nadu.

Industrial Leather and Sports Goods

21·60 Industrial leather goods like pickers, picking bands, ginning washers and industrial beltings are to be developed. A well-organised production unit for sports goods like foot balls, sports shoes, and hockey gloves has to be set up with facilities for training artisans.

Village Leather Industry

21·61 In order to help local tanners, the establishment of service co-operatives is necessary with "apex" organisation to take up retaning and finishing works. Facilities to procure modern tools, raw-materials and grinderies have to be extended.

By-products

21·62 There is a scope for starting large scale Felt Manufacturing unit and also a unit to produce ready-to-wet hygienic sausage casings.

21·63 The target for export of various finished leather and leather products in the Perspective Plan Period is given below:

(Rs. In Crores).

Items	1983–84 (*All-India*).	*Targets* (*Tamil Nadu*).	*Percentage.* (2) *to* (1).
(0)	(1)	(2)	(3)
1. E.I. Tanned leather.	30·00	24·00	80
2 Pickled leather.	..	..	..
3 Wet Blue ..	15·00	9·00	60
4 Finished leather.	50·00	25·00	50
5 Footwear	45·00	15·00	33·33
6 Leather Goods.	5·00	1·25	25
7 Reptile skins.	2·00	1·50	75
8 Bristles and goat hair	3·00	0·25	8·33
Total ..	150·00	76·00	50·66

RESEARCH AND DEVELOPMENT PROGRAMMES FOR SMALL INDUSTRIES

21·64 The following Research and Development Programmes are suggested:

1. Quality Development and Preservation of the materials in the Handicrafts field; improving the preservation methods for the raw materials and finished products, standardisation and quality development, design development and improvement of packing system;

2. A study of the present uses of, and substitutes for ferrous and non-ferrous metals—to assess the demands of the scarce items and to find suitable substitutes of equal strength and quality, wherever possible;

3. To consider suitable techniques in providing required infrastructure facilities with refrence to the type and location of the Industrial Estate, and also to standardise the design of Industrial Sheds;

4. Research in Leather Technology and Trade to find out better curing and preservation methods for hides and skins; development, designing and fabrication of tanning machines: techno-economic survey to assess the scope of the leather industry particularly in respect of the foreign market;

5. A project study for setting up of Central Standardisation and Research Cell to advise the improvement of standards of the products for domestic and foreign market; a study of product development activities including a "Census of Production";

6. Technical Consultancy Cell to advise the State Financing Institutions on the viability of the schemes put forth by the entrepreneurs and also to advise the new entrepreneurs on the prospects and scope for new industries in Tamil Nadu; and

7. Extension Centres for the development of sericulture activities in lower altitudes and also to study the changing agronomical conditions of mulberry cultivation in the plains.

21·65 The cost of these seven Research and Development Projects is estimated to be about Rs. 1·43 crores. Of this, Rs. 81 lakhs may be allocated for the First Five-Year period and the balance for the latter years of the Perspective Plan.

FINANCIAL OUTLAY

21·66 An abstract of the outlays for the development of Small Enterprises—Small Enterprises comprising of (*a*) Small Scale Industries (*b*) Handlooms and (*c*) Village Industries—in the Perspective Plan period is given below:—

TABLE 21-2.

Outlay of the State, Centre and Private Investment in the Small Enterprises.

(Rs. In Crores)

Period	*State*	*Centre*	*Private*	*Total*
(0)	(1)	(2)	(3)	(4)
1974—79 ..	43	5	67	115
1979—84 ..	100	5	60	165
1974—84 ..	143	10	127	280

TABLE 21-3.

Allocation of the State Outlay for Small Enterprises

(Rs. In Crores)

Small Enterprises	1974—79	1979—84	*Total for the Perspective Plan Period*
(0)	(1)	(2)	(3)
(*a*) Small Scale Industries.	21	55	76
(*b*) Village Industries.	2	3	5
(*c*) Handlooms	20	42	62
Total ..	43	100	143

CHAPTER 22

Agriculture

OBJECTIVES

22·1 The objectives of the Perspective Plan relating to agriculture are :—

Provision of balanced diet to the population

22·2. Tamil Nadu produces enough cereals to meet the requirement of its population. But with regard to pulses, oils and fats, fruits and vege tables, the production falls far short of the require ment. Provision of these protective foods on the scale prescribed by nutritional experts is an urgent need.

Ensuring an adequate supply of raw materials to Agro-based Industries

22·3 The supply of adequate raw materials to the agro-based industries should be ensured for economic progress. Though Tamil Nadu has a well developed textile industry consuming 11·4 lakh bales of cotton per annum only 3·6 lakh bales of cotton are produced in the State. The sugar factories in the State are working only for short periods in the year. To meet the demands of the agro-based industries, it is essential to step up the production of cotton, sugarcane and oil-seeds, fruits, vegetables and foodgrains.

Raising the Standard of living of the rural population depending mainly on agriculture

22·4 Agriculture supports 73·37 per cent of the rural population . The standard of living of the rural population is low as compared with other countries or with the urban population in the State. The standard of living of the rural population can be raised only by stepping up agricultural productivity and production. A rise in the income of the agricultural sector and the consequent development of the processing industries is an essential to achieve this objective.

Earning and Saving of Foreign Exchange

22·5 Tami Nadu has great potentialities for the production of export-oriented crops like tea, coffee, oilseeds, maize, spices, fruits and fruit products resulting in valuable foreign exchange earnings. Further, by stepping up agricultural production of commodities like rubber and cotton, sizable savings could be effected in foreign exchange.

Providing additional Employment opportunities

22·6 Agriculture still continues to be a seasona operation in large parts of our State. The introduc tion of High Yielding Variety Programme, Multiple Cropping Programme and installation of tube wells and filter points have created additional employment opportunities. Extension of these programmes and adoption of improved techniques in dry farming would keep the agriculturists engaged for longer periods than at present.

Income generated in the Sector

22·7 Agricultural Sector is pivotal to the economy of the State. It is the largest single source of State Income. Its contribution has increased from Rs. 771 crores in 1960–61 to Rs. 921 crores in 1970–71.

TABLE 22-1

Contribution of Agriculture to State Income

(*Rs. in Crores at* 1970–71 *prices*).

Year	*Total State Income*	*Contribution from agricultural sector*	*Percentage*
(0)	(1)	(2)	(3)
1960–61	1,935·76	771·01	39·83
1961–62	2,002·35	788·03	38·37
1962–63	2,056·92	789·21	38·37
1963–64 ..	2,122·15	800·28	37·71
1964–65 ..	2,185·75	797·59	36·49
1965–66 ..	2,180·29	735·19	33·72
1966–67 ..	2,272·19	752·42	33·11
1967–68 ..	2,358·20	774·29	32·83
1968–69	2,397·57	766·52	31·97
1969–70	2,573·50	884·69	34·38
1970–71 ..	2,686·66	921·02	34·28

Source : Directorate of Statistics, Govrnment of Tamil Nadu, Madras.

PROGRESS DURING THE PLANS

22·8 During twenty-year period from 1950–51 to 1970–71, rice production increased from the base level of 19·5 to 53·03 lakh tonnes. Oilseeds registered a considerable increase during the Second and Third Plans but showed a declining trend there after. Production of sugarcane, after the initial set back during the First Plan period, registered a steady increase reaching 11·48 lakh tonnes in terms of gur in 1970–71. Cotton production, although fluctuating from year to year, showed a general upward trend.

22·9 The second half of the last decade witnessed the transformation of agriculture in Tamil Nadu from a state of stagnancy to one of the rapid growth. Considering the high rate of growth of population on the one hand, and limited resources on the other, the results achieved are indeed striking. But there is still a wide gap between the supply and demand for pulses and industrial raw materials like cotton. With regard to fats and oils-vegetables and fruits also, requirements based on the nutritional standards outstrip supply.

CONSTRAINTS TO AGRICULTURAL PRODUCTION

22·10 Inputs like seed, fertiliser, plant protection chemicals and farm equipment are either not available in adequate quantities and at proper time, or the farmer does not have the resources to purchase these. Supply of adequate credit, maintenance of the supply line of inputs and emphasis on extention, research and training, therefore, assume added importance.

22·11 Another major constraint is water scarcity. Agricultural production over large tracts of Tamil Nadu is susceptible to wide fluctuations on account of poor and variable rainfall. While 42 per cent of the net sown area is irrigated (25·92 lakh hectares), 58 per cent still depends on rainfall for successful agricultural operations. Agricultural technology has not made serious impact on the problems of dry land cultivation. There are eleven lakhs wells in Tamil Nadu of which 5,29,932 have been energised*. Failure of monsoons adversely affects the supply in the wells and also the supply of electricity to run the pumpsets. In many areas the water table recedes in periods of drought.

* As on 31st March 1971.

STRATEGY

22·12 The strategy for future development of agriculture should aim at removing these constraints and extend the application of Science and Technology to agriculture to maximise production from unit area.

The strategy consists of—

(1) Water Management ;

(2) Integrated dry land development ;

(3) Increasing inputs supply ;

(4) Research and Extension ;

(5) Price Policy ;

(6) Changing the Cropping Pattern ;

WATER MANAGEMENT

22·13 Irrigation has been extended to about 2·2 lakh hectares in the first, second and third Plan periods, through major schemes. Another 0·65 lakh hectares will be brought under irrigation through major schemes by 1974. The surface water resources in Tamil Nadu are being almost fully utilised. The surface flow in the whole state including the flows from catchments into the tanks is estimated at 34 thousand million cubic metres. The cropped area irrigated (wet) is about 2·4 million hectares which works out to 784 hectares per cumec, on a weighted average of 140 days. With regard to ground water in the State, annual recharge is estimated to be 1·44 million hectare metres (11·5 million acre feet), and the present exploitation is of the order of 1·06 million hectare metres (8·5 million acre feet) †. There is, thus, need to economise in the use of water through better water management techniques. This is the key to the strategy of increased agricultural production in the State in the next ten years.

Modernisation of canals

22·14 Most of the canals draw more water than required and as most of them do not have proper regulatory arrangements at the irigation outlets, there is much wastage. By the provision of proper regulatory arrangements at the outlets, it is possible to work the channels at an average head duty of about 770 hectares per cumec (55 acres/cusec) at the outlets. In addition, if losses are

† Source : Directorate of Ground Water, Government of Tamil Nadu, Madras.

minimised by lining the channels, the duty at the head of the channel can be improved to about 900 hectares/cumec (65 acres/cusec). It is proposed to re-model all important channels in the State at a cost of Rs. 38 crores during the Perspective Plan period. This would provide new irrigation to 1·53 lakh hectares and stabilise 7·32 lakh hectares. If lining of channels is also undertaken at a cost of another Rs. 80 crores, it would result in new irrigation of 1·96 lakh hectares (Details furnished in Annexure 1).

Tank Efficiency Improvement

22·15 There are about 37,000 tanks scattered throughout the state. As most of the tanks are old, capacities of many of them have become reduced due to silting. It is proposed to restore lost capacities partially, by raising the F.T.L. and preventing any resulting increased submersion of the foreshore lands. With the earth excavated from the tank bed this level would be raised to the extent necessary. This Tank Efficiency Improvement programme would be taken up with an investment of Rs. 6 crores per annum in the next ten year period. This investment is calculated to stabilise and to some extent add new irrigation to 1·2 lakh hectares.

Major and Medium Irrigation Projects

22·16 Surface flow utilisation is already more than 95 per cent. Further extension of irrigation on a large scale would require diversion of water from catchments now draining into other States. For the present, only medium projects based on the principal of better water management in the existing irrigation works are suggested. 24 schemes estimated to cost Rs. 17·5 crores and to benefit 21,500 hectares, are under detailed investigation. Another 35 schemes estimated to cost Rs. 40 crores and to benefit 40,000 hectares are under preliminary examination. These should be taken up in the next ten years. (Details furnished in Annexures 2, 3, and 4.)

Ground Water Exploitation

22·17 The Perspective Plan aims at the utilisation of the remaining ground water potential (0·38 million hectare metres) through 125,000 new wells including bore wells and filter points. Of these, 25,000 would be located in alluvial areas to serve as supplementary sources. The remaining one lakh wells would be dug or bored in crystalline areas. The total area that would be irrigated through the exploitation of Ground Water would be 3·5 lakh hectares.

DRY FARMING

22·18 The next important plan in our strategy is the application of science and technology to dry land farming. The break-through in agriculture has so far been achieved in irrigated areas through the introduction of High Yielding Varieties and use of fertilisers and pesticides, etc. The dry areas have not been able to derive much benefit from these modern techniques. Hence, the approach to agricultural development in these areas would be : (1) Intensive research for evolving techniques for maximising agricultural production in dry land areas ; (2) practical application of these results, through integrated dry land development projects on an extensive scale in all the dry tracts. This will include cultivation of drought-tolerant, short duration photo insensitive varieties of crops, as also adoption of new techniques of fertilisation and plant production ; (3) extensive soil and moisture conservation measures are also proposed in addition to reclamation of ravines and construction of percolation ponds.

INPUTS

22·19 Increasing the input supply is a vital part of the strategy for stepping up agricultural production. Inputs like seeds, fertilisers, plant protection chemicals and farm equipments are not available in adequate quantities and at the proper time; and farmers do not always have the resourses to purchase these even when they are available.

Improved Seeds

22·20 The State Seed Farms should be streng thened to meet the entire requirement of foundation seed for the State. The setting up of a State Seed Corporation to produce and market certified seeds is therefore called for. The Department of Agriculture could confine to a coverage of 5 per cent of the total area under each crop with certified seed. Other agencies, viz. (1) Co-operatives, (2) private

seed growers and (3) Agro-Industries Corporation may also be encouraged to supplement the efforts of the above agencies. This will require strengthening of the Certification Agency to ensure that only quality seed, conforming to standrds laid down, reaches the farmers.

Manures and Fertilisers

22·21 At present two corporations, 80 municipalities and 450 town panchayats in Tamil Nadu are involved in the production of urban compost. By providing suitable incentives, it should be possible to step up the production of urban compost to atleast double the present level during the next 10 years. A larger number of the bigger Panchayats should take up the preparation of night soil compost as this would provide valuable manure to the farm lands and also eliminate a source of health hazard. Another avenue for augmenting the organic resource is the utilisation of sewage in towns and cities. So far, the two corporations, 12 municipalities and one township have taken up sewage utilisation scheme. It should be possible to extend this scheme to 48 local bodies in the next decade.

Chemical Fertilisers

22·22 Scarcity of fertilisers, especially the popular varieties as and when they are wanted by farmers, has been one of the main constraints to increased crop production. If this persists, the good that has been done by way of application of science and technology to agriculture may receive a set back, for Tamil Nadu has already made phenomenal progress in the use of chemical fertilisers. Starting with 9,700 tonnes of N and 3,000 tonnes of $P_2 O_5$ in 1960-61, the consumption of chemical fertilisers increased to 1,73,000 tonnes of N, 72,000 tonnes of $P_2 O_5$ and 51,000 tonnes of potash in the year 1970-71. The installed production capacity of fertilisers in Tamil Nadu in 1970-71 was 2,53,790 tonnes of N and 1,43,470 tonnes of $P_2 O_5$. The Southern Petro-Chemical Industries Limited, Tuticorin, is expected to go on stream in the near future, stepping up the installed capacity to 5,16,590 tonnes of N and 2,12,470 tonnes of P_2O_5 Another plant is envisaged at Cuddalore during the Perspective Plan period. Balanced application of fertilizers at optimum levels should continue to be our strategy in this regard. Quality control should be strictly ensured. Steps should be taken for the popularisation of balanced application of fertilizers, foliar spray and application of fertilizers to rainfed agriculture. The soil testing laboratories should be strengthened and micro-nutrient study should be taken up. The reclamation of alkaline and acid soils should be encouraged by providing technical advice and suitable incentives in obtaining the soil ameliorants.

Plant Protection

22·23 The distribution of pesticides from the departmental depots exceeded Rs. 5 crores in 1971-72 and 1972-73. It is estimated that an euqal quantity of plant protection chemicals is distributed through trade channels. The distribution of pesticides from departmental depots should be continued to meet the gorwing demand, and in addition, the State should actively encourage the setting up of sale points by private agencies. There will have to be an intensification of plant protection measures. The coverage with prohphylactic measures in endemic areas will be doubled, from 48 to 96 lakh hectares. In addition, concerted efforts will have to be taken to eradicate rat damage to crops. Weed control by chemical measures should be encouraged by the provision of approriate incentives and through large scale pilot demonstrations. In view of the great demand for sprayers and dusters, suitable incentives would be given to individual farmers and institutions to own these equipment and to go in for custom service. The department of Agriculture should make annual addition of 1,000 power sprayers to the pool to put through the plant protection programmes, both during emergency situations as well as in normal conditions. This should particularly benefit the small farmers. Sufficient number of mobile work shop units as also permanent work shop units should be set up to take up the servicing and repairing of these sprayers. With declining interest in aerial spraying, greater attention should be paid to mass ground spraying operations during the Perspective Plan period.

PROBLEMS OF FINANCE

22·24 Agriculture is becoming increasingly modernised and remunerative and getting transformed from a way of living into a form of business

over a large area. This transformation involves greater outlays in inputs and improved agricultural practices and use of improved tools and equipment. The base of agricultural production is being broadened and strengthened through investments on minor irrigation, digging of wells, installation of pumpsets, reclamation of lands and on modern agricultural technology. Assuming that the average production outlay per hectare in respect of irrigated area is Rs. 500 and that in respect of rainfed areas is Rs. 190, on a very conservative estimate, the total current production oulay works out to Rs. 244 crores. It is estimated that, by and large, the cultivators meet about, on an average, a third of their total production outlays out of their own funds. Assuming that about two thirds of production outlays are financed by borrowing , the total current short term credit requirement works out to Rs. 163 crores. As against this, the supply of finance by Co-operatives which was about Rs. 8 crores at the beginning of the Second Plan, was increased to Rs. 26 crores at the end of the Second Plan and to about Rs. 70 crores at the end of the Fourth Plan. The Nationalised Banks have just entered the field and their impact is yet to be felt.

Short term credit

22·25 Apart from these, the far-reaching changes in the cropping pattern and the new techniques of dry farming envisaged elsewhere, will require additional short term credit resources. Taking these developments into account, the total production financial outlay by the end of 1983-84 is estimated at Rs. 540 crores*. Since with an increase in production and consequent increase in income the resources of the farmers will also increase, it is assumed that they will have to borrow only to the extent of fifty per cent of the total financial outlay. If so, the short term credit requirements at the terminal year of the Perspective Plan will work out to Rs. 270 crores.

22·26 The medium term credit requirement for replacement or maintenance of farm assets and for minor investments and farm developments, is estimated to rise progressively to Rs. 90 crores in 983-84.

*** Total Production financial outlay in 1983-84.**

(RS. OUTLAY IN CRORES).

Item	*outlay*
(0)	(1)
(1) For high-yielding varieties and package programmes for food and commercial crops at Rs. 1,000 per hectare on an average.	380·00
(2) For raising crops in rain-fed tracts at Rs. 375 per hectare on an average taking into account prospects of break-through in dry farming technology.	160·50
	540·00

Long term Credit

22·27 In the sphere of long term credit, finanee is required for eight major types of investments:

(1) sinking and deepening of wells, (2) rural electrification, (3) Conservation programmes, (4) water management schemes, (5) purchase of tractors and other machinery and implements, (6) development of orchards and plantations, (7) area development programmes, and (8) purchase of land bits for consolidation of holdings. The requirements during the next 10 years for investment credit of long-term nature are likely to be of the order of Rs. 580 crores.**

To energise the three lakh wells at present, to be energised and 1·25 lakh new wells programmed to be dug, the estimated cost will be Rs· 357·50 crores.

Soil conservation and water management practices like the water saving floors, sprinkler irrigation, etc., would require another Rs. 15 crores.

The requirements of the River pumping Irrigation Co-operative Societies would be Rs. 30 crores. Provision of re-charge ponds to arrest the rapidly receding water table would be Rs. 30 crores.

The long term credit required to provide 300 tractors and equipment each year is estimated at Rs. 10·3 crores

Schemes for development of orchards and tea, coffee, rubber and other plantations, area development programmes and others call for heavy invest

**The Perspective Plan envisages the digging and/or boring of 1,25,000 wells, and deepending many of the existing wells. It is estimated that Rs. 100 crores would be required on this account

nents. The credit requirements to implement these schemes are given below:

Coconut plantations—Rs. 6 crores.

Tea and plantations like coffee, cocoa—Rs. 12 crores.

Reclamation of lands, etc.,—Rs. 6 crores and construction of godowns—Rs. 12 crores.

22·28 In the interest of effective planning and proper financial support to agricultural development, it is desirable to see that the entire credit requirements are met by institutional credit agencies. Naturally therefore co-operatives should receive primary attention. They should be reorganised and strengthened to play a dynamic role in financing agricultural production and development. If that is done, the co-operatives could be expected to supply about Rs. 216 crores (Rs. 162 crores short-term and Rs. 54 crores medium-term) i.e., 60 per cent of the total short and medium term credit needs by 1983-84. For the remaining 40 per cent of credit requirements (i.e.) Rs. 144 crores, we should look up to the nationalised banks. These banks have to strengthen their administrative machinery and open rural branches on a larger scale for meeting this demand.

22·29 The land development banking structure may be expected to provide about Rs. 400 crores during the Perspective Plan period (of which about one fourth, i.e., Rs. 100 crores will be under Agricultural Refinance Corporation Schemes). This would leave a gap of Rs. 180 crores which can also be met by nationalised banks through loans for periods ranging from 5 to 7 years. This would mean that Government will not provide directly any production or investment credit to farmers in normal years.

Research and Extension

22·30 The objective of the Perspective Plan is doubling the per capita income in the next ten years. In view of this, Research and Extension assume importance. Further intensive research is needed to improve the yield per hectare of paddy and cereals, to evolve short-duration, better and high yileding pulse crops capable of being cultivated in winter season, and shorter-duration cotton varieties, etc., Water conservation and management also call for earnest research efforts in the Perspective Plan period. In this connection the Tamil Nadu Agricultural University can play a major role. It would also call for strengthening of the post-graduate facilities at the existing institutions and the setting up of an additional Agricultural College.

22·31 The extension services also need to be greatly strengthened. There should be an integrated approach for the development of agriculture, animal husbandry, fisheries, community development and co-operation. For this there should be a district level Officer exclusively for extension work. Every block should have about half a dozen graduate Extension Officers to provide technical guidance to farmers.

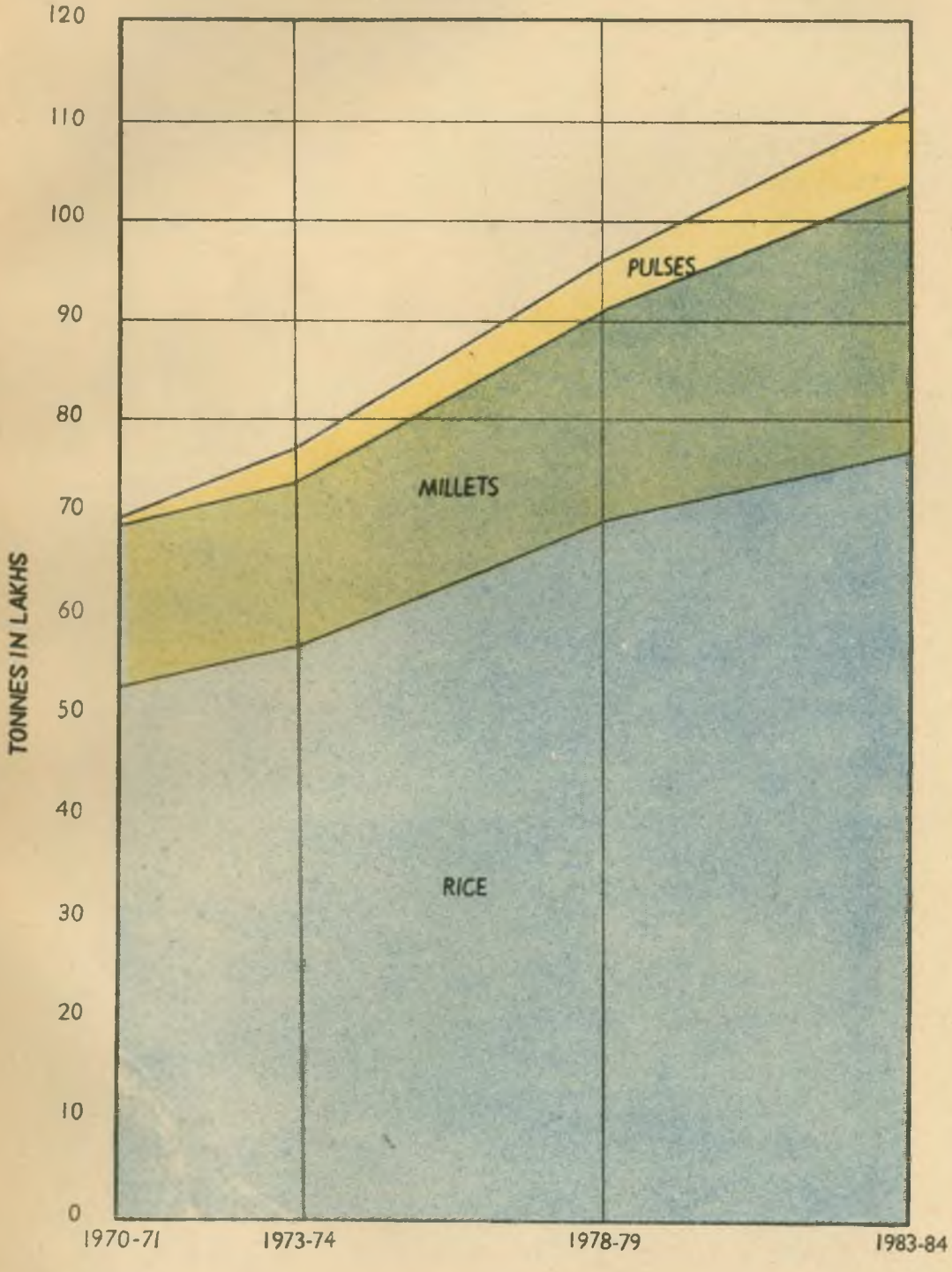
Agricultural Price Policy

22·32 Stabilisation of prices of agricultural commodities is a basic requirement for stepping up agricultural production. Violent fluctuations in prices have a depressing effect on production. In this context, a well-defined and clear-cut price policy and an efficient operational machinery are important factors for creating the right atmosphere for rapid growth of agricultural production. The price policy, should, therefore, be formulated on a comprehensive and continuing basis. With the above objective in view, a Prices Stabilisation Board is proposed. This Board would be primarily engaged in the fixing and announcing of floor and ceiling prices for different commodities before the sowing time, based on cost of cultivation studies in different regions of the State. In addition, the Board would give support by buying, stocking and selling, wherever necessary, to regulate prices. For this purpose, the Price Stabilisation Board should have an organisation which will combine the functions of purchase in the open market, storage of the commodity concerned and release of stocks as and when required. For this, the warehouses of the State and the Central Warehousing Corporations may be utilised. Later, this organisation may develop its own storage facilities. To help the farmer to market his produce through regulated markets, the regulated marketing structure will have to be strengthened.

Changing the Cropping Pattern

22·33 The next important element in the strategy for agricultural development in the State is changing

PRODUCTION OF FOOD GRAINS IN TAMIL NADU



the cropping pattern. With the progressive exetnsion of irrgiation facilities to an additional area of 12·7 lakh hectares and implementation of massive multiple cropping programmes, the gross cropped area would increase from 75·31 lakh hectares in 1970-71, to 102 lakh hectares in 1983-84. The cropping intensity would go up from 120 per cent in 1970-71 to 160 per cent in 1983-84.

22·34 It is proposed to stabilise the area under rice at the present level, and divert the area that would be available as a result of implementation of massive multiple cropping programmes to other crops like sugarcane, oilseeds, cotton, vegetables and fruits.

PERSPECTIVES OF AGRICULTURAL PRODUCTION

Food grain

22·35 The per capita nutritional requirement of cereals and pulses is assessed as 12 oz., and 3 oz., per day respectively. The present per capita consumption based on availability works out to 14 oz., of cereals and 1·65 oz., of pulses, totalling to 15·65 oz. (438·35 gram.) per day. With the availability of larger quantities of pulses, vegetables, fruits and milk, there is likely to be a reduction in the per capita consumption of cereals. Therefore it is assumed that the per capita consumption of cereals and pulses in the Fifth Plan would be 13 oz and 2·5 oz., respectively reaching the balanced diet stage of 12 oz., of cereals and 3 oz., of pulses in the Sixth Plan period. Based on the above assumptions, the foodgrains requirements of Tamil Nadu for human consumption are projected as follows :

70·19 lakh tonnes for 1973-74,

77·13 lakh tonnes for 1978-79 ; and

82·01 lakh tonnes for 1983-84.

22·36 The rice yield in Tamil Nadu has been steadily rising. It is expected that it would increase to 69 lakh tonnes by the end of the Fifth Plan and to 76·5 lakh tonnes by the end of the Sixth Plan without any increase in area under the crop. Similarly, millet production is expected to reach the level of 22·55 lakh tonnes in 1978-79 and 28 30 lakh tonnes in 1983-84. In view of the massive programmes envisaged for live stock development, the area and production of maize will have to increase appreciably.

22·37 The crash programmes launched recently to bring about rapid increases in pulse production have started giving encouraging results. From 1·25 lakh tonnes in 1970-71, pulse production has increased to 2·01 lakh tonnes in 1972-73. The production potential of pulses in Tamil Nadu is estimated at 7·68 lakh tonnes at the end of the Perspective Plan. The requirements, however, would be about 16·40 lakh tonnes.

22·38 The over-all demand and supply position of foodgrains and pulses together would be 75·23 lakh tonnes and 76·15 lakh tonnes for 1973-74, 94·13 lakh tonnes and 95·77 lakh tonnes for 1978-79 and 107·88 lakh tonnes and 111·50 lakh tonnes for 1983-84 respectively.

Fruits and Vegetables

22·39 The per capita consumption of fruits in Tamil Nadu is estimated at 2 oz., per day for all income groups. This is also the figure recommended by nutrition experts. The rate of consumption of vegetables is estimated at 2·8 oz., per day per consumption unit. As vegetables and fruits are protective foods, and as provision of a balanced diet to the population of Tamil Nadu is an accepted objective of the Perspective Plan, the future requirements of vegetables and fruits are computed on the basis of nutritional requirements. This works out to 49·33 lakh tonnes in 1973-74, 54·73 lakh tonnes in 1978-79 and 60·16 lakh tonnes in 1983-84.

22·40 The present production of vegetables including roots and tubers is estimated to be 12 lakh tonnes. It is proposed to increase the area under vegetables from 1·17 lakh hectares to 4 lakh hectares during the Perspective Plan. As a large portion of the demand for vegetables is from big towns and cities, it is proposed to concentrate on growing of vegetables in green belt areas around cities. Production, transport and marketing would be co-ordinated. Though the present production of fruits is sufficient to meet the balanced diet requirements, large quantities of fruits produced here are sent to other States. Considering the

potential for increased production of fruits in Tamil Nadu, the area under fruits should be increased from 88,500 hectares to 2 lakh hectares during the next ten years.

Oil Seeds

22·41 The per capita per diem availability of edible oil has been estimated to be 10·4 grams (1968-69). The demand for vegetable oil for direct human consumption and industrial uses is projected at 2,15,005 tonnes in 1973-74, 3,19,225 tonnes in 1978-79 and 5,31,932 tonnes in 1983-84.

22·42 To meet the above demand, additional production has to come both from increases in area and productivity. The irrigated area under oil seeds may be increased from the present 1·51 lakh hectares to 2·70 lakh hectares by 1978-79 and to 4·70 lakh hectares by the terminal year of the Perspective Plan. The total area under oil seeds may be increased to 15·02 lakh hectares by 1978-79 and to 18·63 lakh hectares by 1983-84. The increase in irrigated area and extension of the area under oil seeds coupled with improved agronomic practices would result in a production of 17·60 lakh tonnes in 1978-79 and 24·53 lakh tonnes in 1983-84, the oil equivalent being 4·27 lakh tonnes and 6·13 lakh tonnes respectively. This production can more than meet the demand. There would be scope for export as well.

Coconut

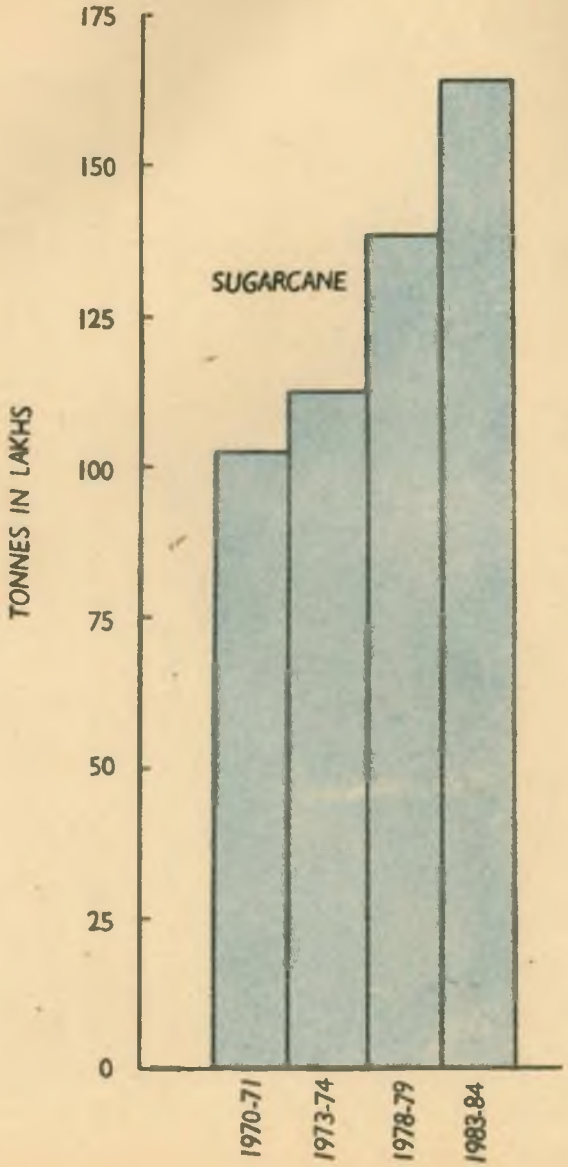
22·43 Coconut is consumed mainly as raw kernel in Tamil Nadu. Present production is estimated at 877 million nuts, of which 817 million nuts are consumed as raw, about 30 million nuts are utilised for the manufacture of copra and the rest sent to other States. Copra production in the State is of the order of 4,200 tonnes. 3,000 tonnes of copra is imported by this State from Sri Lanka, Malaysia and Andamans. Oil production in 1968-69 worked out to 4,320 tonnes. In addition, about 4,000 tonnes of oil is imported from Kerala for human consumption and for use in toilet and soap industries. The requirements of oil for soap and toilets would be double the present level by 1983-84. Besides, there is vast scope for the sale of coconut oil to other states. The demand is projected as 1,022 million nuts in 1973-74, 1,160 million nuts in 1978-79 and 1,319 million nuts in 1983-84.

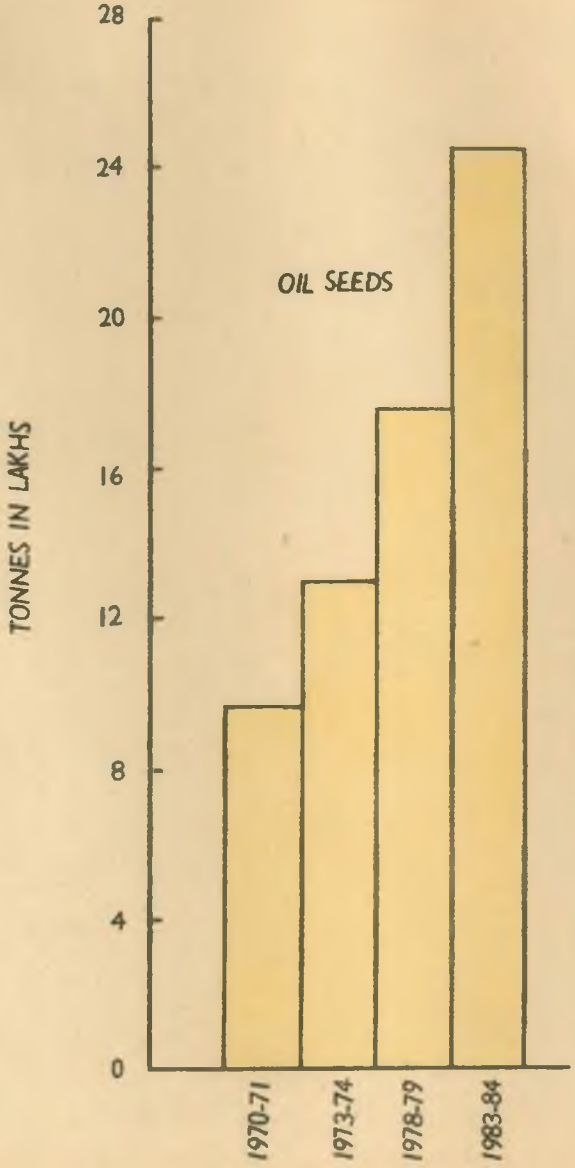
22·44 The number of palms that did not reach the bearing stage was estimate to be 6·89 millions in 1968-69. It is expected that about 4 million of these would come to bearing by the end of 1973-74. The remaining 2·6 million palms would come to bearing state in the course of the Fifth Plan. By adoption of modern techniques in the existing plantations, it would be possible to increase the average yield per tree from the present level of 45 nuts to 60 nuts per year. In addition, the area under the crop will have to be extended to reach 1·4 lakh hectares by 1983-84. Production and distribution of hybrid seedlings should also be increased. Special emphasis should be laid on the provision of fertilisers and irrigation facilities.

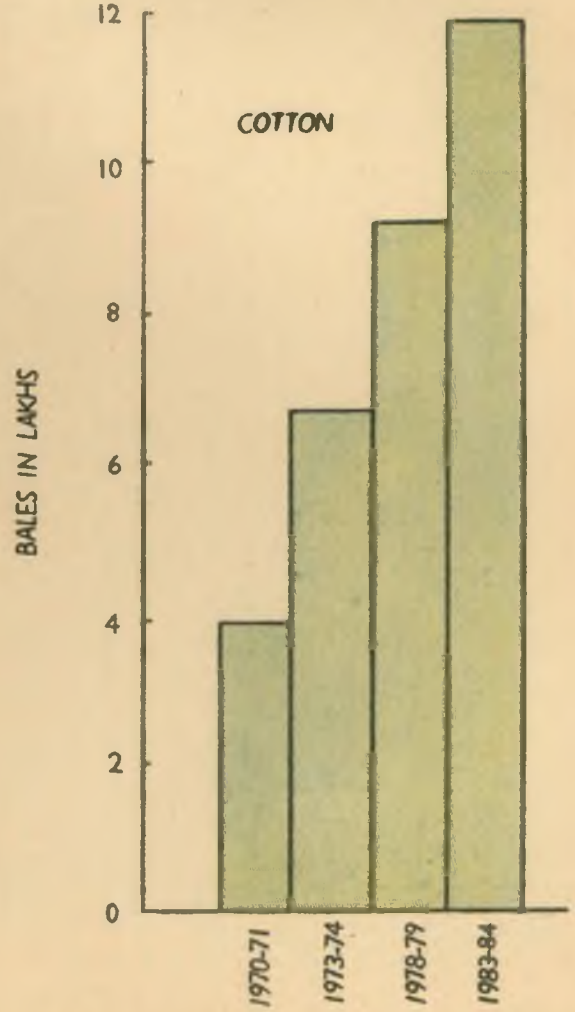
Cotton

22·45 The textile industry in Tamil Nadu consumed, on an average, 11·14 lakh bales of lint per year, during the five year period 1966-70. There has been a steady increase in the quantum of cotton consumed by the textile mills and the figure reached 12·82 lakh bales in 1970 (Indian cotton 10·92 lakh bales and foreign cotton 1·90 lakh bales). While estimating the furture requirements of cotton, it is assumed that the present per capita consumption of cotton cloth at an average of 13·7 metres will at least be maintained during the next 10 years. Increased consumption of man-made fibres need not be at the cost of cotton. With the lifting of the ban on expansion of spindleage, it is estimated that there will be a 16 per cent increase in the consumption of cotton in 1974 over that in 1970. Thereafter, an annual increase of one per cent from 1974 to 1984 is anticipated due to increased spindle activity only, since it might not be technically advisable to increase the spindleage further. Based on the above considerations, the demand for raw cotton by the textile industry in Tamil Nadu is projected as 14·37 lakh bales in 1974, 15·61 lakh bales in 1979 and 16·39 lakh bales in 1984. The present level of production of cotton in the State is 4·97 lakh

PRODUCTION OF INDUSTRIAL RAW MATERIALS IN TAMIL NADU







bales (1969-70). But, there is potential for increase in production. The possible ways to achieve this are : (*a*) Increasing the area, especially under irrigation and (*b*) Augmenting the yield per unit area by adoption of package practices. Based on this, the supply projections are 6·76 lakh bales in 1974, 9·22 lakh bales in 1979 and 11·88 lakh bales in 1984. At present, 36 per cent of the cotton consumed by textile industry is met by production in the State. With the adoption of improved techniques, the State can produce 45 per cent of cotton consumed by mills by 1984.

Sugarcane

22·46 The per capita consumption of sugar which was 3 Kgs. in 1950-51 increased to 3·3 Kgs. in 1960-61 and 4·4 Kgs. in 1970-71. Jaggery is also consumed extensively in Tamil Nadu. The per capita consumption of jaggery was 11 Kgs. in 1950-51 and 10 Rgs. in 1960-61 and 1970-71. Thus the total quantity of sugar (including jaggery) consumed per capita, varied from 13·8 Kgs. to 14·4 Kgs. per annum over the past 20 years. In view of the anticipated doubling of per capita income by the end of the Perspective Plan period, it is estimated that the per capita consumption of sugar would reach the level of 6·7 Kgs. supplemented by 7·7 Kgs. of Jaggery in 1978-79 and 9 Kgs. of sugar supplemented by 6 Kgs. of jaggery in 1983-84.

22·47 Hence the projected aggreagte demand for sugar would be as follows :

It will be of the order of 3·20 lakh tonnes in 1973-74, 6·00 lakh tonnes in 1978-79 and 9·25 lakh tonnes in 1983-84 ; and for jaggery 6·40 lakh tonnes in 1973-74, 5·50 lakh tonnes in 1978-79 and 4·40 lakh tonnes in 1983-84. The area under sugarcane will continue to increase and is estimated to reach 1·65 lakh hectares in 1983-84. Productivity is estimated to increase from 86·49 tonnes of cane per hectare to 99 tonnes. The projected supply of sugar and jaggery would meet the demand in full, including export requirements.

Cashewnut

22·48 Consumption of cashewnut in the State is estimated at 12·5 gms. per head per year. The bulk of the production is meant for export. With the increase in per capita income, the domestic consumption is likely to increase. Per capita consumption of cashewnut may go up to 25 gms. per head per year in 1983-84. This means 1,342 tonnes of cashewnut would be required for domestic consumption at the end of the Perspective Plan period. Tamil Nadu exported 2,66,203 Kgs. of cashew kernels to foreign countries in 1969-70. The vast scope that exists for export of cashew kernel should be fully exploited during the Perspective Plan period. To meet the internal demand and to maintain exports to countries abroad, it is estimated that the present production will have to be doubled. Extension of area to cover 50,000 hectares would result in an additional production of 15,000 tonnes at the end of Perspective Plan period. The yield per hectare of the existing cashew gardens can be increased by about 40 per cent through the application of fertilisers and plant protection measures. All these would mean an additional production of 10,000 tonnes annually. Production is expected to go up from 27,000 tonnes now to 52,000 tonnes in 1983-84.

Turmeric

22·49 About 62·5 per cent of Tamil Nadu's production of turmeric is sold to other States and other countries. Exports to foreign countries from Tamil Nadu was around 2,000 tonnes per year until 1966-67. From 1967-68, exports have declined. Exports to other States increased or decreased according to production in the State. It was estimated in 1966-67 that the State consumption was of the order of 5,000 tonnes per year. This works out to roughly 120 gms. per capita per year. Assuming that the future trend of consumption will be of the same order, the State's requirement would be 5,300 tonnes in 1973-74 and 5,900 tonnes in 1978-79 and 6,400 tonnes in 1983-84. Tamil Nadu can increase its production so as to capture foreign markets as well as markets within the country. The seed requirement would be about 12½ per cent of the production. All these would indicate the following targets of production 30,000 tonnes in 1978-79, and 36,000 tonnes in 1983-84. To achieve this, per hectare yield will have to be raised from 3,500 Kgs., to 4,000 Kgs., through the adoption of improved agronomic practices and

area under cultivation will have to be increased from 6,000 heactares to 9,000 hectares by the end of the Perspective Plan period.

Chillies

22·50 The per capita consumption of chillies is estimated at 2 Kgs., per year. It is assumed that the per capita consumption would continue to be the same during the Perspective Plan period. Based on the above assumption and taking into consideration the scope for exports, the targets of production are projected at 108,000 tonnes in 1978-79, and 126,000 tonnes in 1983-84.

Tobacco

22·51 Tobacco cultivated in Tamil Nadu is mostly for purposes of chewing and for preparing snuff. There has been a declining trend over the past decade in consumption of tobacco in Tamil Nadu. From 16·5 million Kgs. of chewing tobacco issued for consumption in 1962-63, the consumption progressively declined to 7·8 million Kgs. in 1969-70. With regard to cheroot, as against 2·5 million Kgs., of tobacco consumed in 1962-63, a quantity of 1·6 million Kgs. was cleared during 1969-70. In the case of snuff also, consumption declined from 0·4 million Kgs. in 1962-63 to 0·2 million Kgs. in 1969-70. Assuming that the present level of consumption would continue during the Perspective Plan period, the supply would be adequate to meet the requirements for chewing, cheroot and snuff. The area under flue-cured virginia tobacco should be increased in view of the increasing demand for this variety, both from within the country and abroad. An additional area of 6,000 hectares can be brought under virginia tobacco in Hosur Taluk in a phased manner. This would result in the production of 5,000 tonnes of flue-cured tobacco.

Plantation Crops

Tea

22·52 Domestic consumption of tea increased at an annual rate of 6 per cent over the past ten years. It is estimated that for every one per cent growth in GNP there will be $2\frac{1}{2}$ per cent rise in tea consumption. Accroding to a study carried out by UPASI in May, 1971, India may reach a stage of non-export in tea by 1981–82 unless production rises at more than 3 per cent per annum as against the present rate of 1·87 per cent. A higher rate of crop increase must depend on a variety of means such as more intensive cultural practices, a narrowing of the gap in yield levels between high and low yielding areas, greater efforts at in-filling in old fields where vacancies exist, replacement planting at 1 per cent whenever poor fields cannot be rehabilitated, net extension by at least 2 per cent per annum and replanting by 1 per cent.

Coffee

22·53 The scope for the expansion of coffee consumption within India is not markedly different from that of tea. The development of coffee might be considered in terms of successful introduction of genetic advances in yields and field technology to control diseases and improve growing conditions Such innovations to be applied in the field require suitable land, sufficient economic incentives and resources. A three per cent expansion in area should take care of wastages and another three per cent may be added for additional production.

New Crops

22.54 The Perspective Plan envisages the introduction of new crops such as mesta, sugar beet and red oil palm in suitable localities as also expansion of area under sun-flower and commercial flowers such as jasmine, rose, chrysanthemum and cossandra. The extension of area under sun-flower to 3 lakh hectares by 1983–84 would result in the production of 3 lakh tonnes of oil seeds (1·20 lakh tonnes of oil) in that year.

PROJECTS

Inputs

Improved Seed

22·55 Increased irrigation facilities, and supply of tractors and other equipment to State Seed Farm should be provided. This will improve their efficiency. The Seed Certification Agency should be strengthened so that the provisions of the Seed Act are enforced and that supply of quality seed conforming to the standards laid down are

ensured to the farmer. Seed testing laboratories should be established to help the certification agency. An investment of Rs. 463·00 lakhs is envisaged.

Certified Seed Production Programme

22.56. The objective of the Scheme is to cover the entire acreage under various types of crops in Tamil Nadu with certified seed of high genetic quality. A State Seed Corporation is proposed to be established for the purpose. The total outlay is estimated to be Rs. 10 crores for the Perspective Plan period.

Night Soil Compost

22·57. The object of the scheme is to provide facilities to village Panchayats to utilise waste material including night soil for the preparation of compost. It is targetted to double the production of night soil compost. An outlay of Rs. 10 lakhs is proposed for the project.

Urban Compost

22.58. The object of the scheme is to utilise all wastage for production of good quality compost on scientific basis with the help of local bodies. The scheme aims at doubling the present level of production of urban compost. Financial outlay is Rs. 5·00 lakhs for subsidy and Rs. 65·00 lakhs for loan.

Soil Conditioners Demonstration Scheme for Supply of Soil conditioners

22·59. To correct alkalinity and acidity, soil conditioners like gypsum and lime will be distributed to the farmers at 50 per cent subsidy. Demonstrations, each to cover 10 acres, will be conducted. Large scale reclamation of alkaline and acid soils is aimed at. An outlay of Rs. 200·00 lakhs is envisaged.

Soil Testing Laboratories

22·60. The proposals aim at strengthening the existing laboratories both in equipment and staff. The study of micro nutrients in soil like Zinc, Boron and Iron would be taken up. An outlay of Rs. 139·6 lakhs is proposed.

Plant Production and distribution of sprayers, etc.

22·61. The existing institutions for testing plant protection chemicals are to be upgraded and strengthened. In addition, nine more additional pesticide testing laboratories would be established. The strategy of mass spraying operation would be fully exploited. Mobile and permanent workshops to repair the Sprayers and dusters will be established. Integrated Pest control work and pest surveillance work will be intensified. An outlay of Rs. 2,950·00 lakhs over the ten year period is envisaged.

AGRICULTURAL RESEARCH

Research on rainfed Agriculture

22·62. Specific projects to carry out research on rainfed agriculture in low, medium and assured rainfall areas of the State are to be formulated and implemented. This would mean starting of some new Research Stations in representative belts. In all, 8 such centres should be established. This would cost approximately Rs. 5·00 crores.

Research on new cropping pattern

22·63. The project envisages setting up of 5 new research stations and strengthening of work at five of the existing stations to evolve suitable crop varieties for better utilisation of the land, better water management, and for developing mixed farming to suit agro-climatic regions of the State. This would cost Rs. 5·00 crores.

Research on Water Conservation and Management

22·64. New Research projects on soil and water management, drainage reclamation of saline and alkaline soils, etc., are to be undertaken. Studies on integrating surface, sub-soils and underground water supply to irrigated farm lands are to be carried out intensively all over the state. This would cost about Rs. 8·5 crores.

Research on Farm Management and Marketing

22·65. In the context of giving research support to Farm Management and Marketing, a project for changing the cropping pattern and for rapidly moving the agricultural economy forward is proposed. Market study as well as cropping

pattern on private farms would be taken up to advise farmers on the relative profitability of crops. Actual cost of cultivation, market price and demand for different combination of crops would be studied to advise farmers on the most profitable crop combination. The proposal is estimated to cost Rs. 2·50 crores.

Research on Agro-based Industries

22·66. For evolving small and big industrial processes, and to utilise the agricultural produce of the State, extensive research work is required. An amount of Rs. 3·00 crores will be required.

Research on Extension Methodology

22·67. Research work on extension methods to be adopted by extension workers in the departments of the Government to effectively and efficiently disseminate newer scientific knowledge among farmers is envisaged by this project. This would cost approximately Rs. 1·00 crore.

Agricultural Research Programmes

22·68. To solve the other problems faced by farmers, eight research programmes have been suggested :

(Rs. in Lakhs)

Scheme	*Outlay*
(0)	(1)
1. Scheme for establishment of fruit research station.	68·64
2. Scheme for the establishment of Tobacco Research Station in Dindigul.	5·20
3. Scheme for the establishment of Regional Research Station at Ambasamudram.	11·32
4. Scheme for the establishment of Regional Research Station at Tirukuppam.	11·32
5. Scheme for the establishment of Coconut Research Station.	200·00
6. Scheme for the production of breeders and foundation of seed of rice, millets, oil seeds, cotton, pulses and vegetables.	49·04
7. Scheme for the establishment of Rice Research Institute at Aduthurai.	69·35
8. Scheme for the establishment of Millet Research Station at Tenkasi.	5·20

These are in addition to the research programmes proposed earlier. The aggregate outlay for these eight programmes will be Rs. 420.00 lakhs.

AGRICULTURAL EDUCATION

Strengthening the agricultural education to meet the demand of technical graduates

22·69. The demand for more B.Sc., (Agri.), B.Sc., (Horti.), B.E., (Agri.), and M.Sc., (Agri.) degree holders for the various development activities of the State is increasing . Based on an estimate of manpower needs of the State, the Tamil Nadu Agricultural University has proposed to provide additional facilities to 785 students in 1973–74 and 1,140 students in 1983–84. The expansion programmes would need an investment of Rs. 24·00 crores.

Starting a new Agricultural College

22·70. To meet the additional requirements of agricultural graduates to man the programmes proposed, one more agricultural college will be required. An outlay of Rs. 7 crores is proposed.

AGRICULTURAL EXTENSION

Extension of Intensive Agricultural District Programme

22·71. This aims at increasing rice production in the districts of Tirunelveli, Tiruchirappalli, Coimbatore, South Arcot, Chingleput, Madurai, Salem and North Arcot. An outlay of Rs. 375·00 lakhs is proposed.

Strengthening the Extension Agency

22·72. As a result of technological revolution in agriculture, new varieties of seeds, new cropping patterns, new crops and techniques, new fertilisers, pesticides and weedicides and new implements and machinery are fast appearing on the scene. Transmission of this new technology to the farmer

in the field demands strengthening of the existing set-up. Hence the following schemes are proposed.—

(1) Strengthening the extension staff at each district head-quarters : Approximate cost Rs. 960·00 lakhs.

(2) Appointing subject matter specialists in each district head-quarters. The outlay proposed is Rs. 480·00 lakhs.

(3) Establishing Farmers' Training Centres in each district for 10 districts. An outlay of Rs. 400·00 lakhs is proposed.

(4) Establishing Training Centres for extension staff and farmers at University Campuses. The outlay proposed is Rs. 240·00 lakhs.

Total outlay on the above schemes comes to Rs. 2,080 lakhs.

Extension Activities

22·73. The scheme envisages the opening of new agricultural depots for the supply of seeds and pesticides. For staffiing these new depots and for supervision an outlay of Rs. 134·49 lakhs is proposed.

Agricultural Information

22·74. Short documentary films on improved practices are proposed to be made to educate the farmers. Slides on new techniques will be prepared to provide audio-visual education to farmers. Permanent exhibits will also be prepared to draw the attention of the farmers to new techniques. An off-set press will be installed at headquarters to print extension education leaflels and pamphlets. The outlay will be Rs. 247·30 lakhs.

High Yielding Varieties Programme

22·75. In view of the complexities involved in agricultural production, it is felt that it would be desirable to have six graduate extension officers at the Block level to provide technical guidance to farmers. Necessary provision to meet this objectives has been made under this project. Provision has also been made for intensifying production programmes in the Innovation IADP district, Tanjore, and for the conduct of large scale demonstrations on farmers' fields using high-yielding varieties in all districts In addition, provision has been made for implementing the agricultural production programme in Panchayat Union areas and also for the construction of Agricultural Depots. The total financial outlay under this head is Rs. 30·00 crores.

Multiple Cropping

22·76. The increase in net sown area during the Perspective Plan period would only be marginal. It may reach the level of 64 lakh hectares by 1983–84. The increased acreage proposed under various crops would be the result of introducing multiple cropping programmes. In addition to the strengthening of the existing pilot projects, 7 more would be implemented during the Fifth Plan and massive schemes aimed at multiple cropping, would be implemented in the Sixth Plan. The financial outlay proposed is Rs. 500 lakhs.

Vegetable production including cold storage

22·77. Production of vegetables would be planned and organised in the green belt areas around big towns and cities. Each green belt area would be under the charge of a separate unit and this unit would co-ordinate production, transport and marketing. An outlay of Rs. 350·00 lakhs is proposed for the scheme.

Development of Potatoes on the hills

22·78. The project envisages the production and distribution of disease-free seed to cultivators Adequate cold storage facilities would have to be provided for the prerservation of seed. Further, the project envisages research and development of disease-free and high yielding varieties. The outlay proposed is Rs. 600·00 lakhs.

Pulses

22·79. The Crash programme for the rapid maximisation of pulses production in Tamil Nadu envisages a provision of Rs. 600 lakhs over the ten year period.

Agricultural education through National Demonstrations

22·80. National Demonstration incorporating all the latest research findings would continue to be laid on farmers' fields and these would be

utilised as visual aid to educate the local farmers in the advanced technique. The project would cost Rs. 120·00 lakhs over the ten year period.

Integrated Dry land Development

22·81. The project aims at a rapid stepping up of production in dry land areas which account for 56·5 per cent of the crops cultivated in Tamil Nadu. Integrated dry land development on an extensive scale would be taken up in all dry land tracts. In view of the special nature of this project and also due to the weak economic position of the farmers, special incentives have to be provided to the participating farmers. An outlay of Rs. 24 crores is proposed for this project during the Perspective Plan period.

COMMERCIAL CROPS

Development of Cotton, Sugarcane and Oil Seeds

Cotton Development

22·82. The cotton package scheme and the co-ordinated Cotton Development scheme for the multiplication of improved varieties of cotton seed would be continued during the Fifth and Sixth Plan periods. Coverage of entire area with pure seed is aimed at. The expenditure over the next ten years is estimated to be Rs. 1,360·00 lakhs, including the extension of Intensive Cotton Development Programme over the entire state.

Sugarcane Development

22·83. The area under Sugarcane would be stepped up to 1·65 lakh hectares and the production to 9·25 lakh tonnes of sugar in 1983-84. The objective of the scheme is to increase productivity and to provide communication facilities in factory areas. An outlay of Rs. 1,000·00 lakhs is proposed for the development of communications and Rs. 250·00 lakhs for sugarcane development work.

Oil Seeds Development

22·84. The following schemes will be continued under Oil seeds Development Programme :—

(i) Integrated Oil Seed Development Scheme (Seed multiplication).

(ii) Nucleus and foundation Seed Farms.

(iii) Groundnut Package Scheme.

In addition, Intensive Development of oil seed would be taken up in districts like North Arcot, South Arcot and Madurai to maximise the production of groundnut on area development basis. An outlay of Rs. 200·00 lakhs is proposed for the ten year period.

Coconut Development

22·85. By taking intensive measures, it is aimed at increasing the average yield per tree from 45 to 60 nuts per year. The area under the crop will be increased in those regions which are agro-climatically most suited for the growth of the palm. Blocks of 100 acres or more of Government land would be selected and coconut farms raised by Government. These farms, besides, being run on commercial lines, could serve as seed farms in future. It is proposed to produce 11 lakhs of seedlings each year. An outlay of Rs. 250·00 lakhs is proposed for coconut development.

Miscellaneous Commercial Crops

22·86. Chillies and Turmeric Development schemes aim at increasing production of these crops by the adoption of package of practices. An outlay of Rs. 20·30 lakhs is proposed for the project.

Development of F. C. V. Tobacco

22·87. It is proposed to bring an additional area of 6,000 hectares under virginia tobacco in a phased manner in Hosur and Krishnagiri taluks. In view of the highly specialised techniques involved both in cultivation and curing of the crop, it is recommended that adequate technical staff and incentives to farmers should be provided. The project is estimated to cost Rs. 66·00 lakhs over the ten year period ending 1983-84.

Promotion of export-oriented crops—Groundnut

22·88. The project aims at intensive development of groundnut by taking concerted efforts in specified areas. Large scale spread of improved methods of cultivation like the use of improved seed, application of adequate dose of fertilisers, rhizobium innoculation and timely plant protection measures are envisaged to step up r oductivity at a quick pace. The estimated expenditure for the project would be Rs. 200·00 lakhs.

Production of Tall and Dwarf hybrid Coconut Seedlings

22·89. The project aims at establishing an additional State-owned coconut Seed farm to produce hybrid coconut seedlings. The project would cost Rs. 50·00 lakhs.

Sunflower, Cashew and Castor demonstrations

22·90. It is estimated that the yield per hectare of the existing cashew gardens could be increased by about 40 per cent through the application of fertilisers and plant protection measures. The project envisages area development programmes for stepping up the productivity of cashewnut. Demonstration will be laid out on sunflower and castor to spread improved techniques. Financial outlay is Rs. 1,040 lakhs.

Mushroom cultivation

22·91. The project aims at the large scale introduction of mushroom cultivation both on the hills and plains. The seeding material would be prepared at the Central Institute proposed to be established under this scheme. In addition, research and development programmes would be undertaken. The project is estimated to cost Rs 10·00 lakhs.

Cashew Development Corporation

22·92. The main objectives of the project are :

(i) To help in the scientific cultivation of cashew ;

(ii) Collection, storage and efficient marketing; and

(iii) To encourage Cashew-Product-based Processing industries.

22·93. A provision of Rs. 1·00 crore will be required.

22·94. The area under Cashew will be extended by 50,000 hectares. Each year 40,000 hectares would be covered by plant protection measures and adequate number of demonstration plots will be laid out to demonstrate the improved agricultural practices. The production of cashew will be increased to 52,000 tonnes, through the extension of area and stepping up of production by the adoption of a package of practices. The outlay proposed for the project is Rs. 120·00 lakhs.

HORTICULTURAL DEVELOPMENT

22·95. Development of Fruit Production will involve an outlay of Rs. 300·00 lakhs.

22·96. Model Orchards—one at Yercaud, one in South Arcot and one in Coimbatore District will cost Rs. 18·00 lakhs. Banana package scheme will cost of Rs. 1·50 lakhs.

22·97. Arecanut Development will require Rs. 0·50 lakh.

22·98. Minor plantation crops including cocoa, cardamom, pepper, cloves and nutmeg will call for an outlay of Rs. 260·00 lakhs.

22·99. Schemes for increasing vegetable production will involve an outlay of Rs. 400·00 lakhs.

22·100. Schemes for development of Commercial flowers like Rose, Jasmine, Crossandra grown in large areas in the districts of Coimbatore, Madurai, Tirunelveli, North Arcot, Tanjore, Salem, Chingleput and Kanyakumari would involve an outlay of Rs. 250·00 lakhs.

22·101. Pilot scheme for cultivation of Coffee in Dharmapuri District will call for an outlay of Rs. 20·00 lakhs.

LAND DEVELOPMENT AND MINOR IRRIGATION

Land Development

22·102. Land Development Programmes at an estimated cost of Rs. 1,700·00 lakhs are proposed. New bulldosers will be purchased for land levelling and gully plugging and the Agricultural Engineering Workshops will be strengthened. The Agro-Industries Corporation will be encourged to distribute agricultural machinery to the farmers.

Soil Conservation Schemes

22·103. There are 24 sub-divisions implementing soil and water conservation programmes in Tamil Nadu covering about 40,000 hectares (including 600 hectares on hills) each year. Schemes to cove

an additional area of 4·5 lakh hectares are proposed. Additional sub-divisions would be created to take up the increased work load. Ravine reclamation works to cover 500 hectares each year and planting of shelter belts in an area of 14,000 hectares in the wind eroded areas of Theni and Bodi are also envisaged. Percolation ponds would be constructed to help re-charging of wells. All these schemes will require an investment of Rs. 20·00 crores.

Minor Irrigation

22·104. Ground Water potential would be tapped through 1,25,000 new wells including bore wells and filter points during the Perspective Plan. It is proposed to sink 30,000 tube wells under the Private Tube Wells scheme and 20,000 filter points would be installed. In addition, sinking of community wells and deepening of wells is envisaged.

22·105. The outlay proposed is Rs. 760·00 lakhs.

Ayacut Development Programme

22·106. This is a continuing programme to develop the ayacut brought newly under irrigation. Cost envisaged is Rs. 5·00 lakhs.

AGRICULTURAL MARKETING

Agricultural Price Stabilisation Board

22·107. The objective of the project is to provide a clear-cut price policy in the sphere of agriculture and an efficient operational machinery to improve it. The Price Stabilisation Board at State level should fix floor and ceiling prices and give price support by buying, stocking and selling so as to regulate prices. A separate wing of the Board should undertake a study of the cost of cultivation of important crops in Tamil Nadu. This autonomous Board will call for an outlay of Rs. 1,500·00 lakhs over the ten year period.

Development of Agricultural Marketing

22·108. The 13 Marketing Committees in the State have established 112 market yards upto March 1972, against the Fourth Plan target of 150. These market yards call for improvements. Storage facilities need to be strengthened; grading of agricultural produce needs to be intensified and additional ghee and oil grading centres and kapas grading centres are to be established. An outlay of Rs. 1,255·00 lakhs would be nescessary.

Warehousing

22·109. Realising the need to augment the warehousing facilities available to the farmers especially near regulated markets, a provision of Rs. 550·00 lakhs is recommended. The project aims at the provision of warehousing facilities to farmers who are not in a position to market their produce immediately.

HILL AREA DEVELOPMENT

Hill Development Project

22·110. It is proposed to extend fruit cultivation over 40,000 hectares, vegetables over 10,000 hectares and spices over 17,500 hectares on the hills. The project envisages the establishment of orchard-*cum*-nurseries, agro-industries, research and development and the provision of communication facilities. The outlay proposed for the project is Rs. 1,615·00 lakhs.

Crop Survey of hill areas

22·111. A survey for the study of the soils and climate of the hill areas to evolve cropping patterns is proposed. This will involve an outlay of Rs.15·00 lakhs.

AGRO-INDUSTRIES

Agro-Industries Utilising Maize

22·112. The processing of maize is an important adjunct to popularise maize cultivation. At present there is no agency in the field of processing of maize. It is recommended that the processing may be sponsored by the State. The total outlay proposed is Rs. 2,000·00 lakhs.

Agro-Industries Utilising Coconut Husk, Shell, etc.,

22·113. There is vast scope for the development of agro-industries utilising coconut husk and shell. An investment of Rs. 100 lakhs is proposed for the Perspective Plan period.

Growth Rate

22·114. Implementation of the programmes indicated above would result in the doubling of

value of agricultural production by 1983-84 as compared to 1970-71. This would mean a compound growth rate of 5·5 per cent over the Perspective Plan period.

FINANCIAL OUTLAY

Financial outlay for the Perspective Plan

Abstract.

(Rupees in Lakhs)

Item	*Outlay*
(0)	(1)
A. Irrigation.—	
1. Remodelling channels	3,784
2. Lining channels	8,286
3. Tank efficiency Improvement Programme.	6,000
4. Major and Medium Irrigation Project. ..	5,750
5. Groundwater exploitation ..	12,500
Total—(A)	**36,320**
B. Crop Production.—	
1. Agricultural inputs	4,833
2. Agricultural research	2,920
3. Agricultural education	3,100
4. Agricultural extension	10,406
5. Commercial crops	5,916
6. Land Development	4,465
7. Agricultural Marketing and warehousing.	3,305
8. Hill Area-Land Development ..	1,630
9. Agro-Industries	2,100
Total—(B)	**38,675**
Total—(A) *	**23,820**
Grand Total	**62,495** or **625** crores.

* Outlay on ground water exploitation is assigned to the private secotor.
Total oultay on irrigation in the state sector will, therefore, be Rs. 238·20 crores.

ANNEXURE 1.

Remodelling and Lining of Channels

Serial number and name of Channel/System	*Net area irrigated (Lakh Ha.)*	*Present irrigation (gross) (Lakh Ha.)*	*Present water consumption (T.M.M.)*[s].	*Present duty (Hac/Mm.)*[3].	*Benefits by remodelling the channels*		
					Improved duty (Hac/Mm.)[3]	*Cost (Rs. in lakhs)*	*Stabilisation (Lakh Hac)*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. UNLINED CANALS WITH NO CONTROL STRUCTURES—							
1 Cauvery Delta System	3·645	4·860	6·850	71·5	85·80	3,000·00	4·86
2 Cauvery Channels in Salem and Tiruchirapalli districts	0·575	0·891	1·842	48·6	57·20	213·00	0·891
3 Lower Coleroon Anicut System	0·437	0·567	1·075	52·9	57·20	162·0	0·567
4 Noyyil River channels	0·0609	0·061	0·085	71·5	78·65	23·00	0·061
5 Arakkan Kottai Channel	0·0243	0·033	0·113	28·6	67·20	47·40	0·033
6 Thadapalli Channel	0·0608	0·101	0·362	28·6	57·20	55·00	0·101
7 Kalingarayan channel	0·0486	0·097	0·394	24·3	57·20	66·00	0·097
8 Nandiyar Channel	0·0284	0·037	0·051	71·5	78·65	11·00	0·037
9 Poiney Anicut System	0·0891	0·101	0·034	297·4	297·4 **	34·00	0·101
10 Cheyyar Anicut system	0·0932	0·150	0·051	294·2	294·2 *	34·00	0·150
11 Tirukoilur Anicut system	0·1134	0·162	0·136	118·8	127·2	42·00	0·162
12 Sethiatope Anicut system	0·130	0·203	0·405	50·1	57·20	48·00	0·203
13 Mehmathur Anicut system	0·023	0·024	0·042	57·2	61·50	8·00	0·024
14 Vridhachalam Anicut system	0·0365	0·045	0·079	57·2	61·50	13·00	0·045
15 Pelandhachalam Anicut system	0·0527	0·065	0·079	81·5	38·60	19·00	0.065

(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
16 Vallur Anicut system	0·0203	0·020	0·020	101·50	113·00	8·00	0·020
17 Palar Anicut system	0·224	0·478	0·113	422·00	..	..	..
18 Grand Anicut Canal	1·037	1·195	1·587	75·80	..	..	..
19 Mettur Canal	0·182	0·182	0·368	50·10	..	..	..
20 New Kattalai High Level Canal	0·0851	0·0851	0·148	60·10	..	..	..
21 Pullambadi Canal	0·0891	0·0891	0·113	71·65	..	..	..
22 Lower Bhavani Canal	0·810	0·810	0·020	80·20	..	..	..
23 Old Amaravathi Channels	0·1296	0·243	0·340	71·50	..	..	..
24 Krishnagiri Reservoir System	0·0365	0·0365	0·0454	80·20	..	..	..
25 Sathanur Reservoir System	0·081	0·081	0·0991	81·50	..	..	..
26 Amaravathi Main Canal	0·0871	0·0871	9·113	57·20	..	..	..
27 Periyar Improvements Scheme	0·5265	0·7088	0·603	117·30	..	..	..
28 Kodavar System	0·2349	0·470	0·505	93·00	..	..	..
29 Gomukhi Reservoir System	0·0203	0·0203	0·0213	71·50	..	..	..
30 Manimukthanadhi Reservoir	0·0162	0·0162	0·0255	62·90	..	..	..
31 Old Vaigai Channel	0·5265	0·5265	0·920	57·20	..	..	..
32 Old Tambaraparani Channels	0·1742	0·324	0·566	57·20	..	..	..
(In lakhs of hectares)						3783·40	7·417
Total	**9·775**		**12·77**	**18·21**			
	3 TMm						

Note for Columns (6) and (7)—1 Acre per million ft.—143 hectares per million cubic metres.

Serial number and name of Channel/System	*Benefits by remodelling the channels*			*Further benefits by lining the canals with the cement concrete*			*Remarks*
	New area (lakh Hac.)	*Total (lakh Hac.)*	*Additional Food Production (lakh tonnes)*	*Cost (Rs. in lakhs)*	*New area (lakh Hac.)*	*Additional Food Production (lakh tonnes)*	
(0)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
A. UNLINED CANALS WITH NO CONTROL STRUCTURES—							
1 Cauvery Delta System	1·013	5·873	8·000	20,800·00*	0·729	1·440	Lining of Cauvery Channels can be considered after remodelling works are carried out and their performance watched.
2 Cauvery Channels in Salem and Tiruchirappalli districts.	0·162	0·953	1·420	568·00	0·115	0·227	
3 Lower Coleroon Anicut System	0·049	0·616	0·796	432·00	0·0875	0·173	
4 Noyyil River Channels	0·0061	0·0671	0·087	60·00	0·0122	0·024	
5 Arakkan Kottai Channels	0·0324	0·0654	0·104	19·00	0·0049	0·010	
6 Thadapalli Channel	0·106	0·207	0·335	62·00	0·0122	0·024	
7 Kalingarayan Channel	0·128	0·225	0·373	49·00	0·0098	0·019	
8 Nandiyar Channel	0·0028	0·0398	0·051	28·00	0·0057	0·011	
9 Piney Anicut System	..	0·101	0·125	90·00	0·0178	0·035	
10 Cheyyar Anicut System	..	0·150	0·185	91·00	0·0186	0·037	**The systems are fully supported by Ground Water.
11 Tirukoilur Anicut System	0·0113	0·1733	0·222	112·00	0·0227	0·045	
12 Sethiathope Anicut System	0·0322	0·2352	0·308	128·00	0·0259	0·051	....
13 Mehmathur Anicut System	0·0020	0·0260	0·034	20·000	0·0041	0·008	....

(0)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
14 Vridhachalam Anicut System	0·0037	0·0487	0·062	35·0	0·0073	0·014	....
15 Polandurai Anicut System	0·0053	0·0703	0·090	51·0	0·0105	0·021	....
16 Vallur Anicut System	0·0020	0·022	0·020	21·0	0·0041	0·008	....
17 Palar Anicut System	..	..	..	315·00	0·0648	0·128	....
18 Grand Anicut Canal	..	..	..	1536·0	0·2074	0·410	....
19 Mettur Canal	..	..	..	270·0	0·0365	0·072	....
20 New Kattalai High Level Canal	..	..	..	124·0	0·0170	0·034	....
21 Pullambadi Canal	..	..	..	133·0	0·0178	0·035	....
22 Lower Bhavani Canal	..	..	..	1170·0	0·162	0·320	....
23 Old Amaravathi channels	..	..	..	120·00	0·0259	0·051	....
24 Krishnagiri Reservoir System	..	..	..	54·0	0·0073	0·014	....
25 Sathanur Reservoir System	..	..	..	126·0	0·0162	0·032	....
26 Amaravathi main canal	..	..	..	101·6	0·0142	0·083	....
27 Periyar Improvements Scheme	..	..	..	425·0	0·1255	0·140	....
28 Kodayar System	..	..	..	352·0	0·0470	0·093	....
29 Gomekhi Reservoir System	..	..	..	30·0	0·0041	0·008	...
30 Manimukthanadhi Reservoir	..	..	..	24·0	0·0032	0·006	....
31 Old Vaigai Channel	..	..	..	780·0	0·105	0·208	....
32 Old Tambaraparani Channels	..	..	..	160·0	0·0348	0·059	....
Total ..	**1·56**	**8·873**	**12·221**	**28,286·6**	**1·976**	**3·850**	

ANNEXURE 2.

List of Medium Schemes under Detailed Investigation

Scheme	Cost (Rupees in Lakhs).	Gap Stabilisation. Acre.	
(0)	(1)	(2)	(3)
1 Forming a reservoir across Kallar near Periasamikoil, Attur Taluk ..	30·00	768	..
2 Forming a reservoir across Anaimadugu river in Kurichi Village, Salem Taluk.	112·00	2,400	..
3 Forming a reservoir across Donimadugu river in Periyamallur Tanda Village, Mettur Taluk.	65·00	1,200	..
4 Forming a reservoir across, Varattar in Attur Taluk	26·00	550	..
5 Forming a reservoir across Kariakoil River in Attur Taluk	60·00	930	..
6 Forming a reservoir across Sarabanganadhi river in Omalur Taluk ..	32·00	780	..
7 Formation of a reservoir across Pambar river near Uthangiri Village of Krishnagiri Taluk.	88·00	2,000	..
8 Formation of a reservoir across Vaniar near Mullikadu Village of Harur Taluk.	155·00	3,700	..
9 Formation of a reservoir across Kesarigulihalla in Tirumalvadi Village, Dharmapuri District.	30·00	1,200	..
10 Formation of a reservoir across Ponniar river near Kalavaranappali Village, Hosur Taluk.	159·00	5,790	..
11 Formation of a reservoir across Kallar near Kottampatti Village of Harur Taluk.	70·00	1,865	..
12 Formation of a tank across jungle stream in Sastramatulu Village of Dharmapuri District.	31·00	480	..
13 Forming a reservoir across Chinnar in Shoolagiri Marudahalli Village, Hosur Taluk.	32·00	880	..
14 Forming a reservoir across Nagavathi river Ajjanahalli Village in Dharmapuri District.	40·00	1,400	..
15 Varattupallam	60·00	1,672	..
16 Valukkupparaipallam	50·00	883	997
17 Gundaripallam	45·00	1,136	..
18 Thanneerpallam	36·00	1,050	..
19 Formation of reservoir across Vaippar near Vembakottai Village in Sattur Taluk.	35·00	1,062	..
20 Mudhirayar Scheme	46·10	1,455	700
21 Kodaganar Scheme	180·00	4,896	819

ANNEXURE 2—*oontd.*

(0)	(1)	(2)	(3)
22 Thirumanimuthar Scheme	41·90	1,821	1,120
23 Kuppamparai Scheme	146·00	760	1,381
24 Pachaiyar reservoir scheme (Nanguneri Taluk)	180·00	906	9,060
TOTAL	1,750·00	39,584	14,047

ANNEXURE 3.

Serial number and name of the Scheme	*Cost* (Rupees in lakhs)	*Ayacut (new)*	1,000 *Acres Stabilisation.*
(0)	(1)	(2)	(3)
LIST OF SCHEMES UNDER CONSIDERATION :—			
1 Modernisation of old Cauvery Delta System	4,900·00	350·00	40·00
2 Doddahalla Scheme	91·80	1·83	0·03
3 Improvement to Periyar Dam	425·00	31·00	..
4 Marudanadhi Scheme *	99·00	2·32	2·28
5 Reservoir across Ayyar near Kolli hills	255·00	3·30	3·70
Total	**5,770·80**	**388·45**	**46 01**

* Since cleared by Planning Commission.

ANNEXURE 4.

List of Medium Schemes under Preliminary Investigation.

1 Forming a Reservoir across Varattar in Vallimadurai village, Harur taluk.

2 Forming a reservoir across Chittar near Attavanaipudu village, Bhavani taluk.

3 Improvements to Sanganurpallam to prevent flood damages.

4 Forming a tank across Ballahalla near Chickjanur village, Gobi taluk.

5 Forming a tank by diverting Maniyachipallam, Bhavani Taluk.

6 Raising Mannarai anicut across Neyyal river near Tiruppur Town and excavating a channel to feed four existing tanks and five new tanks to be formed.

7 Irrigation facilities to Mulanur by excavating a cantour canal from Pattagar anicut on the right side Nallathangal odai.

8 Advinainarkoil scheme in Shencottah taluk.

9 Jambunadhi Reservoir Scheme in Ambasamudram taluk.

10 Formation of a reservoir across Valamalayar and Kottamalaiyar in Sankarankoil taluk.

11 Gatana High Level Canal Scheme.

12 Formation of reservoir across Malattar near Bothalapalli Village, in Gudiyatham taluk.

13 Formation of a reservoir across Mudamudaiyar a tributory of Nambiyar.

14 Formation of a reservoir across Koundinyanadhi near Mordhana Village in Gudiyatham taluk.

15 Formation of reservoir across Killimalayar near Melarasapattu Village, Vellore taluk.

16 Formation of a reservoir across Kamandalanadhi near Shenbagathope Village in Polur taluk.

17 Formation of a reservoir across Cheyyar rive near Kuppanatham village in Chengam taluk

18 Formation of a reservoir across Naganadh near Amirdhee village in Vellore taluk.

19 Excavation of a channel from right bank of Panniar river above the pick up anicut of Sathanur Reservoir Project in Chengam taluk.

20 Formation of Flood Moderator across Thurinjalar river, Virayur village in Tiruvannamalai.

21 Construction of an anicut across Palar river near Thirumukkudal and Palayaseevaram causeway

22 Formation of a reservoir across Andiyappanur odai near Andiyappanur village in Tiruppattur taluk.

23 Forming a reservoir across Goundanadhi near Thangalacheri village in Thirumangalam taluk.

24 Formation of a reservoir across Chinnar and Koneri rivers near Periyur village in Perambalur taluk.

25 Formation of a reservoir across Agniar near Mangalathupatti village in Alangudi taluk.

26 Vaigai-Peyanar Scheme.

27 Forming a right side leading channel from the proposed Virahanur regulator.

28 Forming a left side leading channel from the proposed Virahanur regulator.

29 Forming a right side new leading channel from the proposed Parthibanur regulator to Gundar.

30 Forming a left side channel from Parthibanur regulator joining Sarugani, Manimuthar and Pambar.

31 Increasing the irrigation potential in Manimuthar river by forming a reservoir near Eriyur.

32 Forming a reservoir across Goundanadhi near K. Karisalkulam.

33 Forming a reservoir by connecting Goundanadhi, Yherkal and Kanalodai near P. Pudupatti village.

34 Forming a link reservoir by connecting Gundar and Kanalodai near Odayampatti village.

35 Linking the major drainage, viz., Gundar, Kanalodai, Gridhamal and Paraliar, etc.,

CHAPTER 23.

Animal Husbandry

INTRODUCTION

23·1. According to the 1966 Livestock Census (the latest for which figures are available), Tamil Nadu had a total livestock population of 24·57 millions. Of these, cattle and buffaloes accounted for 13·58 millions (55·2 per cent), sheep and goats 10·39 millions (42·3 per cent) and other animals such as pigs, horses, mules, etc., accounted for 0·60 million (2·5 per cent). The State had 6·1 per cent of the total cattle population of all India. The net value of livestock products estimated at Rs. 170 crores, accounted for 6 per cent of the State's total income. Cattle and buffaloes are the major contributors to income from livestock sector.

23·2 Milk production had increased from 6.58 lakh tonnes in 1951 to 9·49 lakh tonnes in 1971. Assuming that 50 per cent of the breedable cows and buffaloes are in milk, the average yield per animal works out to 285 Kgs. in 1951 and 291 Kgs. in 1971 showing hardly any perceptible improvement in productivity in the last two decades.

DEMAND AND SUPPLY BALANCE

23·3. The per capita availability of milk is only 63 gms. per head per day for the State as against 300 gms. considered necessary for a balanced diet. The reasons for such a low per capita milk availability are (i) low production and productivity of the animals, and (ii) the lack of scientific processing and marketing system in urban areas.

23·4. While the per capita requirements of egg per day is 8·4 gms., availability is only one gram. Against the per capita requirement of 1·4 oz. (40 gms) of fish and meat, availability is only 26 gms., leaving a gap of 14 gms. Thus, consumption of milk will have to be increased five-fold, eggs about about nine-fold and meat two-fold the current consumption. The lag in productivity has checked the pace of expansion and widened the gap between requirement and availability. It is against this back-drop that the frame-work of the Perspective Plan for Animal Husbandry Sector has to be designed.

OBJECTIVES

23·5. The objectives of the Perspective Plan for Animal Husbandry Sector are :

(1) to increase the animal protein production through (*a*) milk, (*b*) meat and (*c*) egg as stated above ;

(2) to increase the contribution of Animal Husbandry Sector to State Income from 6 per cent to 12 per cent ;

(3) to produce adequate raw materials for Animal Husbandry based industries ; and

(4) to create more employment opportunities.

STRATEGIES AND PROGRAMMES

23·6 It will be possible to realise these objectives by adoption of a set of strategies and programmes. These may be outlined as follows :—

(1) Upgrading the indigenous cattle with quality exotic germ-plasm for high milk production ;

(2) Upgrading of local buffaloes with quality Murrah bulls ;

(3) Breeding through artificial insemination ;

(4) Improving marketing facilities for milk and eggs ;

(5) Providing adequate health cover through establishment of a net work of Veterinary institutions ;

(6) Establishing large size layer farms and hatcheries for poultry development ;

(7) Multiplying the Yorkshire pigs in a massive way for meat production ;

(8) Improving the quality of sheep for mutton, insk and wool ;

(9) Increasing feeds and fodder production adequately to support the production programmes ; and

(10) Strengthening and streamlining the Animal Husbandry Department as well as Veterinary Education and Research to cope with the Plan work.

This ten-point strategy and the package of programmes they relate to, are examined at some length below, to indentify the detailed schemes that have to be implemented.

CATTLE AND DAIRY DEVELOPMENT

23·7 Development programmes should aim at upgrading the non-descript and draught types with noted breeds of cattle, both indigenous and exotic, and upgrading local buffaloes, with high yielding buffaloes such as Murrahs. Sustained efforts have been made to develop buffaloes by upgrading the non-descripts with Murrah. This has led to increased milk production, establishment of numerous creameries and a few modern processing plants in the private sector, especially in Coimbatore District and parts of Madurai District adjoining Coimbatore District. Breeding of pure Murrah buffaloes in these districts should be encouraged in the Co-operative sector, particularly in Tudiyalur and Senjeripudur areas.

23·8 Regarding cows, cross breeding with Jersey n the main and Friesian in a limited way has been attempted by urban artificial insemination centres through cross breeding schemes, at Ootacamund and Kodaikanal Hills, Cattle Development Scheme and Intensive Cattle Development Projects, with good results.

23·9 In Tamil Nadu milk production is only a subsidiary occupation. The quality of the bulk of the milch animals is low and their productivity poor due to the genetic make-up and lack of adequate nutrition. The demand for fluid milk is great in urban areas. Lack of scientific organisation for collection of milk in small quantities from a large number of scattered producers in the villages, limits the availability of fluid milk in sufficient quantity for consumption in towns and cities. Efforts at promoting organised production and collection of milk were made during the Second Plan period when the Madras Milk Project was started with an ancillary unit at Erode. This was followed by Madhavaram Milk Project in the Third Plan to improve the milk supply in Madras City and to evacuate cattle from the congested areas of the city, in due course. The total installed capacity available for handling and processing of milk at present is about 1,25,000 litres per day. The co-operative Milk Supply Unions and feeder Societies have been maintaining a steady supply of milk.

23·10 Under the "Operation Flood" scheme designed for the four major cities of the country viz., Bombay, Calcutta, Delhi and Madras, Tamil Nadu will get Rs. 8·87 crores. The "Tamil Nadu Dairy Development Corporation" will have an integrated approach providing all necessary inputs in selected areas covering a toal cattle population of 2·5 lakh cows. The scheme aims at handling 50,000 litres of milk per day from each of the project areas except Nilgiris, where only 25,000 litres is programmed. Along with collection from non-project areas and from the Cattle colony at Madhavaram, the total receipt under the project would be of the order of 2,50,000 litres per day on an average. It is proposed to purchase about 50 road tankers under "Operation Flood". It is proposed to organise Village Co-operative Societies and Milk Supply Unions for increasing milk production and for marketing the milk produced by the rest of the 38·3 lakh cows and buffaloes. The aims and functions of the agencies will be :—

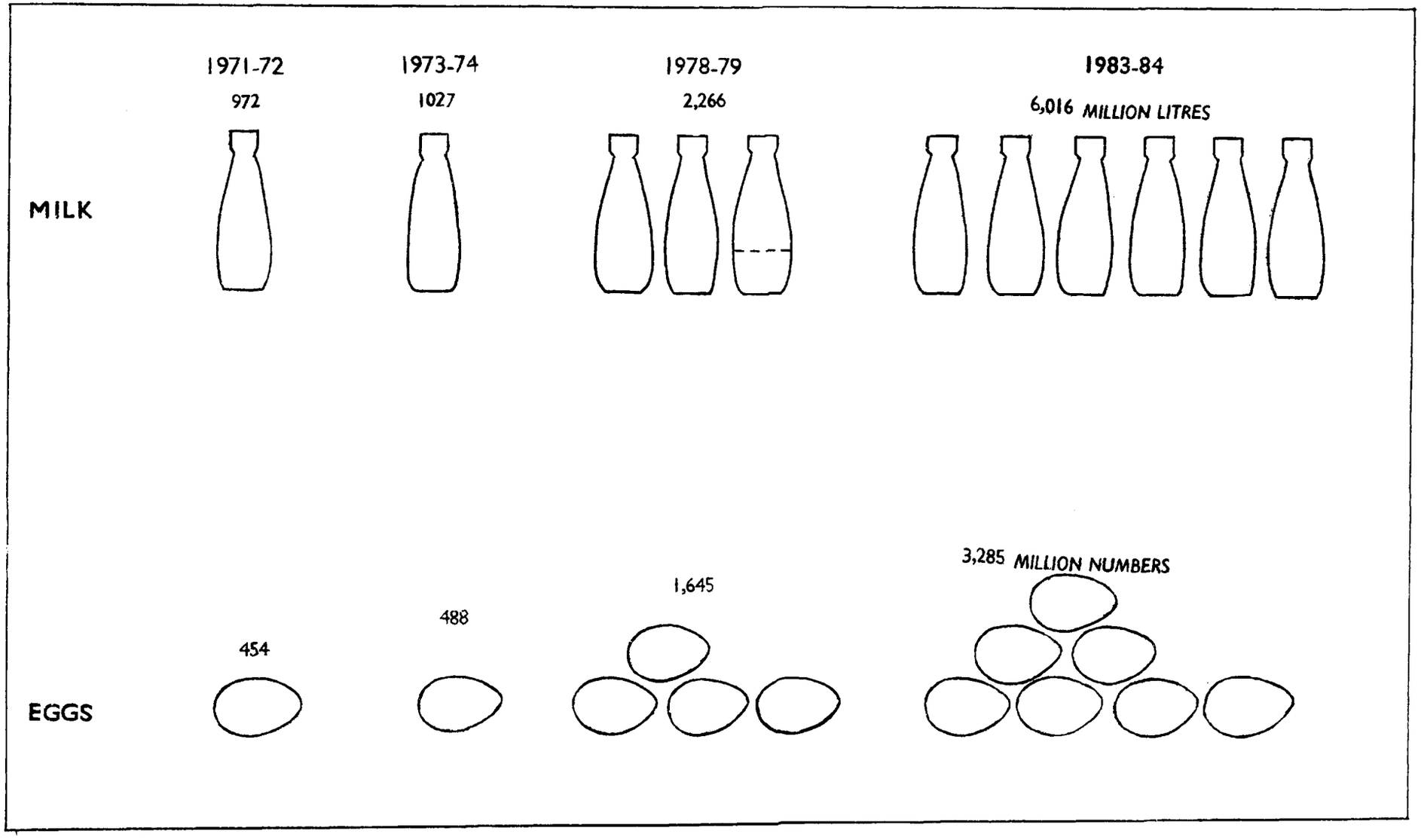
(*a*) organising the small and marginal farmers and agricultural labourers ;

(*b*) mopping up the surplus resources of primary societies ;

(*c*) operating common ameliorative measures like (1) Cattle mortality fund (2) Feed mixing unit (3) Heifer rearing farm (4) Dairy product units and (5) Fodder farms ;

(*d*) arranging for short and medium term credit for purchase of milch animals, etc., to the members of the primary village dairy co-operatives ; the borrowing limit to an individual under co-operative milk supply societies and unions may be increased from Rs. 1,000 at present to Rs. 10,000 and the term of the loan may range from 5 to 10 years and;

PRODUCTION OF DAIRY PRODUCTS IN TAMIL NADU



(*e*) recognising Dairy farming as a small scale industry for purposes of credit from the co-operatives and the banks.

ANIMAL HEALTH

23·11 Veterinary institutions were established in the past for the treatment of animals for non-contagious diseases. Initially, institutions were organised mainly in cities and towns. In order to combat contagious diesases, there were touring Veterinary Assistant Surgeons at taluk head quarters with jurisdiction over one or two taluks. The opening of the Veterinary Dispensaries received grater attention during the Plan periods and all the community development blocks are now provided with at least one Veterinary Dispensary. Blocks, which have grater density of cattle and increased animal husbandry activities, have now more than one Veterinary Dispensary.

23·12 Not only the "Physcial Health" of the livestock, but also thier "Physiological or Productive Health" should be assured, since mere survival without "Productive Helath" is rather a liability than an asset.

23·13 An efficient organisation to prevent the incidence of major contagious disease is an absolute pre-requisite for safeguarding the Live-stock Industry. Advance action is possible for certain diseases while action for control of an actual outbreak alone is possible for certain other diseases.

Diagnostic Facilities

23·14 At present one clinical laboratory is available for each district. This is quite inadequate. The laboratories must be fully equipped to undertake bacteriological work and function as District Investigation Laboratories. Each laboratory must be incharge of a Research Officer with Assistant Research Officers for diseases of Cattle, Poultry, Sheep and Goats and Pigs.

Veterinary Dispensaries

23·15 In the case of Veterinary aid, accessibility is an important factor since it is difficult to transport sick animals over long distances. The provision of Veterinary Institutions, in as dispersed a manner as possible, in the rural areas is, therefore desirable.

Parasitic Control

23·16 The Endo-parasites cause a great deal of economic loss particularly among calves, sheep and goats. Ecto-parasites also cause economic loss in all animals directly by being the "Vectors" or "transmitters" of certain Protozoan diseases and by devitalising the animals by sucking the blood and thereby indirectly causing damage to the hides and skins. Mass deworming of calves and sheep and mass spraying of sheep and cattle will be necesary to have an effective parasite control.

23·17 It is vital that the livestock should be maintained in a positive state of health free from any contagious and infectious diseases. An Immunological Laboratory is to be set up in the State under the "Operation Flood" scheme with financial assistance from the United Kingdom. The campus of the Institute of Veterinary Preventive Medicine would be an ideal place for locating the proposed Immunological Laboratory. Work in this sphere should be undertaken in the following directions :

1. The production of the various biological products in the Institute should be stepped up and improved upon.

2. Laboratories and equipments required for the manufacture of biologicals and the research work connected thereto should be provided.

3. Personnel at the various tiers should be suitably trained in adequate strength both within the country and abroad in advanced technologies.

23·18 This would involve schemes as detailed below :—

(i) In as much as cross breeding of our cattle with exotic blood is to be undertaken on a large scale, the most suitable and potent vaccine for protection against Foot and Mouth disease should be produced. A laboratory for this purpose and also for isolation and classification of Foot and Mouth Viruses may be located preferably in any of the high altitude areas in our State. A Centre for the collection of semen and supply may be organised in the ratio of one centre for ten to twenty sub-centres. One adequately equipped investigation centre or laboratory would be necessary for each district.

(ii) Manufacture of Rinderpest Tissue Culture vaccine should be taken up on an adequate scale so that it may be readily available for use on the exotic and grades.

(iii) Production of Tuberculin, Johnin, Salmonella antigen for diagnostic work.

(iv) Production of anti-rabic vaccine.

(v) Production of Swine Fever and Distemper vaccines.

(vi) Studies on diseases of unknown aetiology and on diseases such as avain leucosis complex.

(vii) Studies on the improvements of the existing vaccines against Ranikhet Disease.

POULTRY DEVELOPMENT

23·19 The Plan contemplates poultry development in a big way. While meeting the nutritional requirements of the population, poultry development can also create large opportunities for employment and be a major subsidiary occupation of farmers.

23·20 Poultry has been usually kept as a backyard unit of country hens without any extra expenditutre by the villagers. Since country hens hardly lay about 50 to 60 eggs a year, the indigenous poultry is not at all suitable for economic production on a large scale.

23·21 From the nutritional point of view, it is, considered that the daily consumption of egg per person should be at least 8·5 gms. As against this the present availability is only one gram per person per day. The Plan aims at increasing availability of eggs to the nutritionally desirable level by 1984. An exotic poultry bird usually lays large size eggs weighing, on an average, 50 grams. The requirement of eggs being 8·5 grams per capita per day, the total eggs required for a population of 53·7 millions in 1984 would be 9 million eggs a day.

Programme for poultry and egg production

23·22. To achieve an egg production of 9 millions per day, 15 million layers would be necessary. This poultry population has to be planned for, in economical units. Hence, the programme contemplates the following :—

(i) improvement of Hatcheries leading to larger production of chicks ;

(ii) establishment of individual poultry units in the villages ;

(iii) supply of feed ;

(iv) Marketing of Poultry products ; and

(v) establishment of a Poultry Development Corporation.

(i) *Hatchery*

23·23. The Hatchery may be taken as the base and each hatchery is to be attached with a breeding unit of 10,000 layers. This will release 4·5 lakh chicks annually which will in turn provide 2,20,000 day-old female chicks and 1,76,000 ready-to-lay pullets. Retaining 10,000 pullets for replacement at each hatchery, 1,66,000 pullets can form 1,660 village units of 100 layers each. To reach the target 1·5 lakh rural units, 90 hatchery units have to be established. So 9 hatcheries will have to be established annually. A unit of 10,000 layers will have daily collection of 6,000 eggs, of which 3,000 will be suitable for hatching. With loading at 3 days intervals incubator space for 9,000 eggs is required for every 3 days. With loading in 21 days incubator space for 63,000 eggs is necessary. Seven incubators of 10,000 eggs capacity are required. For 90 units 630 incubators are required.

(ii) *Village units*

23·24. As a subsidiary occupation, one unit of 100 layers is an economically viable unit. The total number of layers required is 15 millions. Hence setting up of 1·5 lakh units in villages as clusters of 100 units will be ideal. 100 such units may form a co-operative society. 10 societies may form a union with a federation of all unions at the district level.

23·25. The individual village unit will be started by receiving about 22 weeks-old pullets (5-6 months age group) initially. After a few months, a unit of 120-day old chicks will be supplied for rearing replacement stock. A further consignment of 120

chicks will be supplied after 5 months, after the first consignment for rearing and sale of pullets to new units. Thus, each unit will maintain 100 layers and in addition, rear and produce 200 layers annually.

23·26. One fifty village societies should be organised each year for a 10 year period. At 60 per cent production level, these 1,500 co-operative societies having 15 million layers will give 9 million eggs per day. The layer units attached to the hatchery will also supply table eggs. From 90 hatchery units, 116 million eggs would be avilable per year. This amounts to 4 per cent of the annual egg production and will compensate any drop-outs in the rural units.

23·27. Fifteen million village unit layers and 9 lakh hatchery layers making a total of 159 lakh layers will be available for table, after one year. Successive drop outs at 5 per cent, about 151 lakh layer birds with an average body weight of one kg., will provide 15,100 tonnes of poultry meat. Out of 20 million male chicks, 80 per cent or 16 millions can be disposed off for table at 3 months of age. This will provide (at 0·50 kg. each) 8,000 tonnes of meat per year.

(iii) *Feed mixing unit*

23·28. The total balanced feed to be prepared is about 8 lakh tonnes annually. An economically viable unit will be one with 6 tonne capacity per hour. Per shift of 5 hours, 30 tonnes of feed and in two shifts 60 tonnes per day can be produced With 25 working days per month, a quantity of 1,500 tonnes of feed and for 12 months 18,000 tonne can be produced. 45 units will supply 8·1 lakh tonnes. In otherwords, one feed mixing unit for every two hatchery units will be the norm.

(iv) *Marketing*

23·29. The success of the programme depends upon the marketing facilities created. The poultry farmer should be enabled to transport eggs to the market quickly and assured a good price. As poultry products are perishable, their transportation presents problems. Refrigerated vans for transportation and cold storage centres in large towns will be necessary.

23·30. In the matter of pricing, regulation is necessary. At present, middle men are conering the profits. The marketing system should be so organised that the farmer gets a fair price while the consumer also pays only a reasonable price.

(v) *Poultry development corporation*

23·31. The poultry programme involves investment of large amounts, in a recurring manner, and production and marketing of poultry products, on a large scale. In this, the recently set up Tamil Nadu Poultry Development Corporation should play a major role. The main objects of the Corporation are :

(1) to organise and assist production, processing, storage, collection, marketing, transport, distribution, sale, import and export of poultry products, poultry feeds and equipments ; and

(2) to establish, maintain and operate poultry farms to produce eggs, egg products and chicken, to transport, store, distribute, sell, import and export poultry, poultry products, poultry feeds and equipments and to establish, maintain and operate all ancillary, subsidiary and all necessary units, industries and plants for breeding, hatching, processing, dressing, storage and marketing of poultry, poultry products, poultry feed and equipments.

In short, the structure envisaged is :

Poultry units	1,50,000
Village societies each having 100 Poultry units.	1,500
One Union for 10 societies ..	150
A federation of units for each district.	

23·32. The State Poultry Development Corporation at Madras will have Zonal Offices at Coimbatore, Tiruchirappalli and Madurai.

23·33. The implementation of the above programme will involve an outlay of Rs. 1,092 lakhs over the Perspective Plan period.

Employment potential

23·34. Village units offer employment opportunities for 1·5 lakhs people. Egg handling and trade can employ another 20,000 persons.

Sheep and Goat Development

23·35. Apart from mutton, hair and wool, the skins of sheep and goats form an important exportable commodity, earning foreign exchange. The sheep and goats contribute mostly to the present meat supply in Tamil Nadu. The yield of fleece is, however, poor ranging from 0·2 to 0·4 Kg. except for Nilgiris sheep which yield, on an average, about a Kg.

Programme

23·36. Cross-breeding with Madras Red and Mandya is being done with a view to study the results and to evolve a new breed. The work should be continued. The Romney Marsh having proved a failure in the cross-breeding work in the Nilgiris, the Marine breed of sheep is now being tried, and the work should continue till a type is evolved suitable to the humid conditions of the State. The indigenous breeds of sheep, both hairy and woolly, should be continued to be bred at the Government farms for evolving pure strains and for production of studrams for breeding purposes. The results of cross-breeding work on our hairy sheep with Mandya in the State Farms should be applied in the field for increasing mutton production.

23·37. Suitable exotic breeds of sheep other than Merinos such as Corriedale, South Down and Dorset Horn combining both the quality of mutton and wool, should be imported and reared at our farms. Cross-breeding work should be undertaken with the indigenous woolly breeds at Coimbatore and other places to evolve a better type of woolly sheep suitable for the plains and for the hills.

23·38. The scope for increasing the population of sheep to a large extent is limited due to dearth of good pastures and feeds. The sheep population should be saved from being run down in health due to parasitic infestations and loss due to mortality through infectious and contagious diseases.

23·39. Area-wise programme of development should be formulated for the improvement of sheep, instead of individual, a breeder-wise programme. Inputs for breeding, disease prevention measures and supervision and marketing facilities should be provided. Loan assistance and an integrated State Marketing Organisation on co-operative lines may be established.

23·40. Experimental breeding work through the simultaneous use of artificial insemination and oestrus synchronisation by hormones should be taken up for woolly sheep, both at Oooty and at Chinnasalem farms, and in the neighbourhoods for quick improvement in upgrading work and also in cross-breeding and for evolution of suitable woolly types for greater yield. After gaining experience and seeing the results, the work could be extended to other areas and to the improvement of mutton breeds too.

23·41. As for goats, the line of improvement may be directed towards improving milk production. Exotic breeds like Saanen, noted for milk yield, as well as Indian breeds like Jamnapari may be introduced for cross breeding work in selected areas. Stall-feeding of goats should be popularised.

23·42. The sheep breeders may be organised into co-operative societies. Each society will have a minimum of 50 members. Each member-unit will have a minimum of 40 ewes and one ram. Thus, each society will have a minimum of 2,000 ewes and 50 rams with young stock and grower stock. Each society will be aided by making available the services of one Livestock Assistant who will work as Secretary also and one flockman, free of cost for the first five years and at half-cost during the next five years. For a group of ten societies, the services of One Veterinary Assistant Surgeon will be made available. Assistance will be given for purchase of equipments and medicines.

Piggery Development

23·43. Pigs are prolific breeders, grow more quickly in numbers and put on weight faster than other farm animals. The turnover of meat production will be high in the case of pigs. Another added advantage is that they do not require extensive grazing land as compared to cattle or sheep. Hence, pig farming offers a suitable avenue to meet the much-needed food material, viz., meat for nutritious diet. The pig, along with poultry, has an important place in any programme for increasing meat production in Tamil Nadu.

Target

23·44. Against a minimum requirement of 40 gms. of meat per capita per day recommended by nutritional experts, the availability, at present, is estimated to be only 4 grams excluding fish. Under the circumstances, the meat availability may have to be at least doubled. As there is a limitation due to lack of adequate pasture and natural fodder for enhancement in the production of beef and mutton, poultry and pig alone offer scope for any increase in meat production.

23·45. The poultry programme is planned for a contribution of 2 gms. of poultry meat per capita per day by the year 1984. Considering the feasibility of stepping up pork production, provision of 3 gms. of pork per capita per day may be targetted for the Plan period.

Schemes

23·46. It is estimated that 2·00 lakhs of sows and 20,000 boars of Yorkshire pigs would be required as foundation stock for raising the number of pigs for the production of the targetted quantity of meat. At the rate of 10 piglets per year per sow, 20·0 lakh pigs will be reared and slaughtered at the age of five months. At an average carcass weight of 30 Kgs. per pig, 20 lakh pigs would yield 0·6 lakh tonnes of meat in 1984. It would work out to 3 gms. of pork per capita per day in 1984.

Meat Hygiene

23·47. Meat hygiene is highly important. Slaughter houses should be modernised for production of clean meat. Plants for utilisation of slaughter-house by-products should be attached to big slaughter houses. Carcass utilisation plants should be started at suitable centres. Meat processing plants and bacon factories should be started.

23·48. Adequate number of personnel should be trained in meat inspection work and research into the problem of meat hygine and meat technology should be undertaken at the Veterinary College. A Meat Board in Tamil Nadu for dealing with the trade in animals and the organisation of slaughter houses and distribution of clean meat may be formed.

DEVELOPMENT OF FEED AND FODDER

23·49. Feeding of Livestock on the requisite scale is essential for the proper upkeep of livestock and increasing the output of livestock products. Any pragmatic approach to increase the supply of animal products neceessarily involves a provision for maximising feed and fodder availability, and adoption of the use of well-balanced rations in the feeding regime. While estimating the requirements of feeds and fodder, the feed requirement of poultry, piggery, etc. should also be taken into account.

Programme

23·50. Increase in the existing area under sewage cultivation of fodder and establishment of new sewage farms for fodder in all municipalities and major Panchayats should be aimed at. From 700 acres at present, the extent of sewage farms should be increased to 4,000 acres. This would result in 2 lakh tonnes of green fodder production.

23·51. By 1983–84 ten lakh acres should be brought under perennial grasses and 10 lakh acres under rotational legumes to realise the targetted production of 40 million tonnes of green fodder.

23·52. Fodder seed industry has to be developed on organised lines. Lucern may be used in the place of purchased concentrates and this fodder should be grown to the greatest extent possible. Agathi and other indigenous legumes should be grown in all field bunds and as mixed crops. Growing of lucerne alternatively with cereal crop contribute towards meeting the fodder deficit, without, at the same time, reducing the quantum of cereal production.

23·53. An Animal Feed and Fodder Research Institute should be started at any one of the large livestock farms for dealing with all problems of quality control of feeds and fodder and to evolve newer varieties and seed production units.

RE-ORGANISATION OF ANIMAL HUSBANDRY DEPARTMENT AND STRENGTHENING OF VETERINARY EDUCATION AND RESEARCH ORGANISATIONAL SET-UP FOR ANIMAL HUSBANDRY DEPARTMENT

23·54. The creation of Deputy Directors at district level will help to ensure efficient and co-ordinated work in each district.

23·55. Animal Husbandry Officers specially trained in the fields of development of cattle, sheep and poultry should be attached to each Deputy Director at the district level.

23·56. The Key Village work for livestock development may be entrusted to a separate Veterinary Assistant Surgeon rather than to the one attending to routine work in a Vetrinary Hospital or Veterinary Dispensary.

23·57. Research Officers in the cadre of a Deputy Director with Assistant Research Officers separately for Cattle, Sheep and Goats, Pigs and Poultry Diseases should be in-charge of the proposed Dsitrict Veterinary Investigation Laboratory.

23·58. The Organisation for collection of data and statistics pertaining to animal husbandry requires streamlining.

Veterinary Education and Research

Education

23·59. The emphasis for the next ten years should be on equipping the veterinary college further with morden and sophisticated equipment necessary for teaching undergraduate students and to provide necessary laboratory and class-room facilities. Clinical department will have to expanded for imparting Post-Graduate training. The Departments of Veterinary Statistics, Poultry Science, Genetics, Bio-Chemistry and Physiology and Animal Food Technology (Meat Inspection) now functioning will have to be strengthened with laboratory buildings, additional staff and equipments. New Departments for exclusive study of, and research on Biometrics with computer facilities, Bio-medical Engineering and Animal Husbandry Economics have to be established.

Research and Training

23·60. Adequate attention has not been given to research to tackle the several problems affecting livestock and the economy of the industry. A modest beginning has been made in the Fourth Plan in this direction. The progress of Livestock development so far had been negligible for want of adequate superior exotic germ plasm. As for the diseases, a few of them such as Brucellosis, Tuberculosis, Rinderpest and Parasitic disease were taken up for study. Refresher courses for Departmental Officers working in the field have not been adequately given in Veterinary and Animal Husbandry subjects. Field officers like the Assistant Director of Animal Hsubandry, Specialists, Farm Superintendents and Veterinary Assistant Surgeons should be afforded opportunities periodically for an appraisal of the latest techniques and developments in Veterinary and Animal Husbandry fields of work within the State.

FINANCIAL OUTLAYS

23·61. Total financial outlay proposed for different schemes under Animal Husbandry Sector for the Perspective Plan is set forth below :—

(Rs. in Lakhs)

Scheme	*Outlay*
(0)	(1)
1 Cattle Development	870·00
2 Dairy Development	400·00
3 Animal Health	420·00
4 Veterinary Biologicals	35·00
5 Poultry Development	1,092·00
6 Sheep Development	180·00
7 Piggery Development	1,110·00
8 Fodder and Feeds	2,460·00
9 Organisational set-up for Animal Husbandry Development.	33·00
10 Veterinary Education and Research	300·00
Total ..	**6,900.00**

Employment Potential

33.62. It is estimated that the Plan schemes outlined above would provide full employment for about 7,000 technical and about 15,000 non-technical personnel. Besides, more than a million amilies will get additional opportunities for self-employment.

CHAPTER 24

Forestry

PRESENT POSITION IN TAMIL NADU

Area of Forests

24.1· The extent of forests in Tamil Nadu adds up to 21,950 sq. Kms. constituting only 16.8 per cent of the area of the State, while the National Policy has laid down that a minimum of 33 per cent of the land area should be under Forests to ensure a balanced economy especially in a predominently agricultural State like Tamil Nadu.

Diversion of Forest lands for other purposes

24.2. The most disquieting aspect of forest management in our State in the past two and half decades has been the continuous diversion of forest areas for purposes other than Forestry. The details of such diversion are summarised below :

	HECTARES
1 Major Irrigation Projects	14,236
2 Minor Irrigation Projects	1,089
3 Hydro-Electric Projects	4,696
4 Use of other Departments	7,057
5 Other purposes including cultivation.	12,353
6 Encroachment	22,997
Total ..	62,428

FOREST PRODUCTS : CURRENT DEMAND AND PRODUCTION AND ESTIMATED DEMAND AND PRODUCTION AT THE END OF A DECADE

24·3. The priorities for forestry in the Perspective Plan must be based on an estimate of the demand during the Plan period. An attempt is made to indicate the current demand and production (year 1973–74) and the demand and production envisaged at the end of 10 years.

24·4. In the case of pulpwood required by the Paper Mills and Rayon Fibre Factory in the State, the present demand is 204,000 tonnes against a production of 171,000 tonnes, whereas at the end of 10 years, the demand for pulpwood would be 366,000 tonnes. In regard to timber used for industry and building purposes, the current demand is 249,300 tonnes compared with the production of only 67,810 tonnes; the demand at the end of 10 years would be 2,61,100 tonnes. The demand for firewood will increase from 8,400,000 tonnes to 9,400,000 tonnes as against the current production of only about 7,300,000 tonnes to which the State Forests contribute a meagre 300,000 tonnes.

TABLE 24—1.

Forest Products—Current and Estimated Demand and Production.

(in tonnes)

Serial number and produce	*Current*		*Imports from outside Tamil Nadu*	*Estimated* 1984		*Percentage increase of* (4) *over* (1)
	Demand	*Production*		*Demand*	*Production*	
(0)	(1)	(2)	(3)	(4)	(5)	(6)
PULPWOOD						
PAPER AND BOARDS						
1 Bamboo	71,000	54,000	17,000	80,000	80,000	88·7
2 Wood	23,000	7,000	16,000	68,000	50,000	33·8

(0)	(1)	(2)	(3)	(4)	(5)	(6)
3 Eta reed	10,000	10,000	Nil	18,000	20,000	55·5
4 Rayon and staple fibre ..	100,000	100,000	Nil	200,000	200,000	50·0
TIMBER						
5 Industrial use	14,800	26,110	181,490	15,800	80,000	93·7
6 Non-Industrial use	234,500	41,700		245,300		95·7
7 Railway sleepers	44,000	1,650	42,350	10,500	Nil	41·9
8 Matches	112,000	175	111,825	117,000	200	95·7
TANNING						
9 Wattle bark	17,600	1,400	..	17,600	5,000	..
10 Wattle Extract	1,700	200	1,500	1,700	500	9·6
11 Myrabolam	1,800	1,000	800	1,800	1,000	..
12 Konnai	100	100	Nil	100	100	..
13 Avaram	300	300	Nil	300	300	..
14 Cashew	5,000	29,000	Exported.	5,000	50,000	..
15 Sandalwood	1,500*	1,500*	Nil	1,500	1,500	..
16 Fuelwood	8,900,000	1,000,000	7,900,000	9,400,000	7,400,000	94·7
17 Bamboo (Domestic Use).	16,000	16,000	Nil	24,000	16,000	66·7

* Actually unlimited demand and bulk is exported

POSSIBLE CONSTRAINTS

24·5. The major constraints in the development of forestry in the State have been two. The first is inadequate outlay on forestry development. This resulted in vast areas of State forests remaining undeveloped and in consequence, there has been intense and constant pressure to divert these forest lands to other uses on the plea that they are undeveloped. This has created the second problem. Since the organizational and administrative facilities to carry through the development programmes already exist and suitable lands for the purpose are available, the only requirement now is to take a decision on the policy and implement it.

OUTLINE OF THE EXPANSION SCHEMES IN THE PERSPECTIVE PLAN PERIOD

24·6. Under the programmes of forestry development envisaged in the Perspective Plan, the forest area should cover the following :

(1) An extent of 17,259 sq. Kms. of reserved forest under the control of the State which should be conserved ;

(2) 2,808 sq. Kms. of reserved lands which should before the end of 1978-79, be consolidated into forest ;

(3) 883 sq. Kms. of private forest which should be brought under rational management ;

(4) 2,000 sq. Kms. of marginal agricultural lands which should progressively be brought outright during the Perspective Plan period and which should be developed and managed to produce wood ; and

(5) out of the total uncultivable waste lands estimated at 14,820 sq. Kms. an extent of 1,250 sq. Kms. will be put under forestry, in addition to the 300 sq. Kms. already brought under forestry by 1971-72. As a result of these extension and conservation schemes, the forest area of Tamil Nadu will increase from 21,950 sq. Kms. in 1971-72 to 23,550 sq. Kms. in 1983-84 raising the percentage of land under forestry in the State from 16·84 to 18·06.

FOREST DEVELOPMENT PROGRAMMES

24·7. The Forest Development Programme consists of the following projects :

I. OUTSIDE STATE FORESTS—

(1) 700 sq. Kms. of tank-beds and waste lands will be put under tree and fodder crops ;

(2) 110 sq. Kms. of river and canal bank lands will be planted with timber species ;

(3) 160 sq. Kms. of road margin lands will be developed by raising avenue trees producing timber and minor forest products ;

(4) 50 sq. Kms. of sea-shore sandy tracts will be planted with suitable tree species ; and

(5) The catchment areas of reservoirs will be put under permanent vegetation to arrest floods and silting. Work will be continued in the catchments of four reservoirs, and survey will be carried out in the four new catchment areas and protective work commenced on them.

II. WITHIN STATE FORESTS

(1) Teak and other timber species will be raised over an extent of 90 sq. Kms. by the end of 1983-84. (Teak regeneration will be intensified in Coimbatore, Tirunelveli and Kanyakumari Districts)

(2) Intensive measures will be intiated in wattle areas to achieve greater yield on a shorter rotation. (The wattle plantations in Nilgiris and Madurai Districts will be subjected to intensive measures.)

(3) Species producing pulp for paper, rayon and staple fibre such as Eucalyputs, Bamboo and Odai will be raised over an etxent of 360 sq. Kms. before the end of 1983-84. (Intensive regeneration of Eucalyputs species in Tiruchirappalli, Ramanatha puram, Coimbatore and Madurai Districts ; Bamboo in Coimbatore District; Odai in Ramanathapuram and Tirunelveli Districts).

(4) Sandal plantations over an extent of 22 sq. Kms. will be raised before the end of the Perspective Plan period and natural sandal tended.

(5) Matchwood species will be raised over 22 sq. Kms. before the end of 1983-84.

(6) Over an extent of 5·5 sq. Kms. plantations of lac hosts will be raised before the last year of the Perspective Plan.

(7) Speices that yield important minor forest produce like Tamarind, Neem, Myrabolams and Geranium will be raised over 110 sq. Kms. before the close of the ten year period 1974-84. Apiaries will be set up to augment the honey production.

(8) Fuelwood plantations will be raised over an extent of 110 sq. Kms. during 1973-74 to 1983-84, according to the projects already sanctioned.

(9) A project will be drawn up for the introduction of oil palm along with or in lieu of rubber in the event of the rubber projects proving uneconomic.

(10) Coffee will be introduced over an extent of 400 hectares before the end of 1977-78 and the plantations thereafter maintained in a state of maximum production.

(11) Cardamom producing areas will be increased.

(12) Cashew will be raised over 10 sq. Kms. and the extent of 310 sq. Kms. of cashew plantations owned by the State, maintained in a state of maximum production.

RESEARCH PROJECTS

(13) (a) The work of the research and education wing of the Forest Department will be intensified and re-oriented towards:

(i) increased production through lowest rotation by cultural practices :

(ii) Forest genetics ;

(iii) improved methods of seed collection, storage and distribution ; and

(iv) providing facilities for periodic refresher courses in forestry for the staff.

(*b*) Introduction of degree and post-degree courses in Forestry in the Agricultural University and also advanced research on Forestry.

The objectives of the Research Projects will be :

(*a*) To study the damage caused by pests and diseases to forest plants and to evolve effective control measures ;

(*b*) To carry out research wortk on farm forestry with a view to utilise marginal and below marginal lands of private farms and Government porambokes for economic afforestation programmes;

(*c*) Research on soil and water conservation n forest areas and the relationship of such areas with farm land adioining the forests;

(*d*) Use of trees as windbrakes in agricul tural land in forest areas ;

(*e*) Evapo-transpiration and watershed management studies ;

(*f*) Microbiology of various soils ; and

(*g*) Biotaxonomic studies on various plants.

(14) The network of forest roads will be improved and 220 Kms. of new roads will be formed to ensure efficient execution of projects and expeditious and economic extraction of forest produce.

(15) Rest Houses will be built at the rate of four every year.

(16) Amenities to labour employed in forestry projects will be improved by providing 2,000 houses, adequate medical facilities, supply of blankets and waterproof coats. Cultural promotion will be initiated among the tribals and labour.

(17) Every year during 1973-74 to 1983-84, houses for one officer, five rangers, eight foresters, sixteen forest guards and sixteen forest watchers will be built.

(18) For efficient and economic extraction of timber, well graded drag paths will be provided and adequate number of lorries acquired.

(19) For protection of the forests from fire and theft, adequate provision will be made for fire tracing, internal and external firelines, watch towers, fire watchers and mobile patrol parties with jeeps.

(20) The State Lac Factory at Madurai will be expanded and improved to increase production.

(21) The number of wild life sanctuaries will be increased to 8 from the present 5 in suitable blocks in the Hassanur plateau, Anamalai and Palni Hills. The Mudumalai Wild Life Sanctuary will be upgraded to a National Park. Scientific studies on wild life will be intitiated.

(22) (a) A separate wing in the Forest Department will be created under a Chief Conservator of Forests to execute the plantation projects of rubber, tea and coffee;

(22) (*b*) The existing administrative, controlling, executive and protective units will be reorganized into smaller units in the interests of efficient management ;

(*c*) The present "planning and statistics" cell of the Forest Department will be called the "Development and Planning" wing. It will periodically assess the progress in the execution of the projects, and the benefits thereof. It will also serve as the Secretariat of the Forest Development Board to be constituted.

(23) A comprehensive survey of resources will be completed before 1983-84.

(24) The working plan circle will be expanded and the prescriptions revised to conform to the Perspective Plan Projects.

(25) A Sandal Oil Distillation Factory will be set up before 1975 in the State Sector.

(26) A cashew shelling factory and a "Fenny" distillation factory will be established in the State Sector.

(27) A Forest Development Board consisting of the Secretary to Government in the Forestry and Fisheries Department, the Chief Conservator of Forests and three representatives from the paper, rayon and wattle extract industries will be constituted. It will assess the demand for forest produce, formulate long-range forest development programmes, keep the Perspective Forest Plans under continuous review, take responsibility for forest development in the State, assess progress in the execution of forest projects and communicate to the Government its views and recommendations on new and existing projects and programmes.

24·8 An abstract of the projects proposed during the Perspective Plan period is set forth below :

TABLE 24-2.

Proposed Projects during Perspective Plan Period

(*Area in hectares and value in lakhs of rupees*)

Serial number and Project	1974-75 to 1978-79		1979-80 to 1983-84		*Employment potential*	
	Physical	*Financial*	*Physical*	*Financial*	*Fifth Plan*	*Sixth Plan*
(0)	(1)	(2)	(3)	(4)	(5)	(6)
A. DEVELOPMENT OUTSIDE STATE FORESTS—						
1 Village forests	31,500	109·20	35,000	138·60	2,500	3,500
2 Plantations along river and canal banks.	5,000	15·22	5,000	18·23	350	500
3 Plantations along road margins.	3,500	26·52	5,000	41·40	1,000	1 500
4 Plantations along sea-shore adyus tracts.	2,120	14·22	2 400	17·40	1,000	1,500
5 Soil Conservation in catchment areas	..	117·00	..	109·00	2,400	
Forest Publicity	..	7.70	..	11·60	..	

(0)	(1)	(2)	(3)	(4)	(5)	(6)
B. Development within State Forests—						
I. Plantations—Industrial and Commercial use.						
7 Timber-teak, etc., ...	4,250	19·04	4,250	18·87	450	450
8 Matchwood	1,000	3·90	1,000	3·90	200	200
9 Wattle	11,000	45·60	11,000	47·00	1,300	1,500
10 Pulpwood	16,000	77·44	16,000	78·40	2,000	2,000
11 Sandal	1,000	16·00	1,000	18·50	400	400
12 Lac hosts	250	3·02	250	2·94	100	100
13 Minor Forest produce plants and apiary	5,000	35·40	5,000	48·00	600	600
14 Fuelwood	5,000	28·45	5,000	37·10	800	800
15 Rubber	1,000	47·52	..	53·55	1,000	1,000
16 Tea	400 ac.	184·42	..	41·35	1,500	500
17 Coffee	400	35·53	..	41·35	2,000	2,000
18 Cashew	..	118·92	..	118·40	3,000	3,000
II. General Development—						
19 Consolidation	..	5·6	..	..	140	..
20 Wild Life Sanctuaries	..	19·50	..	13·50	400	250
21 Forest Research and Education	..	29·20	..	29.20	400	400
22 Forest Communication ..	200 Kms.	154·25	200 Kms.	154·25	7,500	7,500
23 Amenities to labour	..	23·50	..	25·00	..	..
24 Buildings for staff and rest houses	..	53·50	..	53.50	1,700	1,700
25 Timber operation	..	10·00	..	10·00	250	250
26 Forest Protection	..	17·50	..	17·50	350	350
27 Lac Products	..	5·00	..	5.00	..	..
28 Development and Planning Cell	..	4·00	..	4 00	..	..
29 Reorganization	..	5·40	..	2·40	..	..
30. Forest Resources Survey	..	8·00	..	8·00	100	100
31. Working Plans,	..	8·00	..	8·00	..	..
II Other Projects—						
32. Sandal oil Factory	..	10·00	..	..	250	250
33. Fenny	..	10·00	..	..	250	250
34. Tribal welfare	..	10·00	..	..	..	-

N. B.—The employment potential gives the equivalent number of persons who will be employed throughout the year and the figures are approximate.

CINCHONA

Present position

24·9 The cinchona tree was first introduced in South India in 1860 in the Nilgiris and Anamalais and a Quinine Factory was set up at Naduvattam in 1871 to manufacture Quinine and its derivatives. A second Quinine Factory was set up in 1955 in the Anamalais to utilise the produce from expanded plantations. This factory worked entirely on behalf of the Government of India upto 1962 and thereafter it was taken over by the State Government.

24·10 From 1950, the Cinchona Department had taken up cultivation of aromatic and other medicinal plants in suitable areas within its holding and the factories are producing essential oils like Geranium, Eucalyputs, Citronella, etc., At present the factory at Naduvattam concentrates on refining and standardising medicinal and essential oils, while the factory at Anamalais is solely entrusted with production of Quinine and its products.

Area under the Cinchona Department

24·11 The Department holds a toal of 7,099·57 hectares; 3,823·51 hectares being in the Coimbatore District and 3,276·06 hectares in the Nilgirs District.

Past Development

24·12 No special project was taken up in the first three Five-Year Plans or in the three Annual Plans. During the Fourth Plan, nine schemes were taken up costing Rs. 54·33 lakhs.

Recommendations

24·13 (1) The department should carry out a detailed stock map after assessment of the growth already in the field and demarcating the stock under the following categories :—

(i) Dense—70—90 per cent per acre.

(ii) Medium—50—70 per cent per acre

(iii) Sparse—30—50 per cent per acre.

(iv) Poor—Less than 30 per cent per acre.

(2) Re-planting should be carried out in a phased programme spread over three years so as to achieve maximum production.

(3) An annual planting programme of about 500 acres should be undertaken which would maintain the factory at Anamalais in a state of full production.

(4) The following schemes taken up during the Fourth Plan will be continued:

(*a*) Developing high Quinine and Quinidine yielding and drought resisting strains of Cinchona by vegetative propagation (raising of plants derived from high-yielding strains and analysis of Cinchona bark).

(*b*) Expansion and intensification of cultivation of medicinal and aromatic plants (planting of medicinal and aromatic crops).

(*c*) Intensive research and development of medicinal and aromatic plants and development of *dioscorea deltoidea.*

(*d*) Pilot scale processing of medicinal and aromatic plant material, production of activated carbon, Cinchonine and Cinchonindine and preparation of extracts of *Pyrethrum*, etc., on large scale to meet the market requirements.

(*e*) Provision of buildings, roads and other amenities to officers, staff and workers and electrification of buildings, water supply, etc., to meet the needs of expanding colonies.

(*f*) Purchase of equipments for the two factories (for improving production capacity and quality control of production).

(*g*) Scheme for extraction of *Diosgenin* from *Dioscorea Deltoidea* and *composita.*

(*h*) Scheme for production of Geranium oil by solvent extraction.

(*i*) Scheme for production of Oleo-resin and oil of ginger.

(*j*) Scheme for processing of Geranium in ryots fields.

(5) An annual outlay of about Rs. 3·00 lakhs under non-plan schemes should be allotted for the cultivation of Cinchona and extraction of barks.

24·14. The following statement sets forth the schemes during the Fifth and Sixth Plans and the proposed outlay.

ANNEXURE I.

Proposed Schemes and Outlays during the Perspective Plan period

(*Rupees in lakhs.*)

Serial number and scheme	*Outlay*
(0)	(1)
1 Developing high quinine and Quinidine yielding and drought resisting strains of Cinchona by vegetative propagation (raising of plants derived from high-yielding strains and analysis of Cinchona bark).	14·00
2 Expansion and intensification of cultivation of medicinal and aromatic plants (planting of medicinal and aromatic crops).	40·00
3 Intensive research and development of medicinal plants and aromatic development of *dioscorea deltoidea.*	42·00
4 Pilot scale processing of medicinal and aromatic plant material, production of activated carbon, Cinchonine and Cinchonidine and preparation of extracts of *Pyrethrum, etc.*, on large scale to meet the market requirements.	12·00
5 Provision of buildings, roads and other amenities to officers, staff and workers and electrification of buildings, water supply, etc., to meet the needs of expanding colonies.	50·00
6 Purchase of equipments for the two factories (for improving production capacity and quality control of production).	5·00
7 Scheme for extraction of *Diosgenin* from *Dioscorea Deltoidea* and *composita.*	17·00
8 Seheme for production of Geranium oil by solvent extraction.	24·00
9 Scheme for production of oleoresin and oil of ginger.	38·00
10 Scheme for processing of Geranium in ryots' fields.	..
Total	242·00

ABSTRACT OF OUTLAY

FORESTRY—1974 to 84

(*Rupees in Lakhs*)

Item	*Outlay*
(0)	(1)
1 Development outside State Forests.	600·00
2 Development within State Forests.	1,000·00
3 General Development	700·00
Total	**2,300·00**
CINCHONA	300·00
Grand Total	**2,600.00**

CHAPTER 25.

Fisheries

Objectives and Targets

25·1· The fisheries development programme aims at building up rapidly the fishery industry in the state so that it would

(1) contribute to general economic development;

(2) provide an adequate supply of protein rich food;

(3) increase foreign exchange earnings ;

(4) provide employment opportunities;

(5) contribute to meeting various socio-economic needs;

(6) make a substantial addition to rural income; and

(7) provide personnel for navy in times of emergency.

25·2, The annual per capita consumption of fish in Tamil Nadu will be stepped up from the present level of 7·9 kilograms to 17·58 kilograms by 1984. Our annual exports of Marine products which are about 16,000 tonnes will be 77,000 tonnes by the end of 1984 fetching a foreign exchange of Rs. 77 crores.

25·3. The Perspective Plan lays emphasis on mechanisation of fishing vessels. Consequently by 1984, over 3,000 small boats and 300 medium and large trawlers along with 4,250 power driven catamarans and canoes would be operating off Tamil Nadu coast. For these vessels, landing and berthing facilities would be provided at the two major fishing harbours at Madras and Tuticorin and at 14 other minor ones. These centres will be completed with infra-structural facilities by the establishment of 46 ice-*cum*-cold storages, freezing plants and 36 units of cold-chains.

25·4. On the inland fisheries side, 10·10 crores of fingerlings would be produced from 20 induced carp spawning centres, 150 nurseries and 120 hectares of fish farms for stocking 3·51 lakh hectares of cultivable waters. Intensified fish culture in 46,750 hectares of backwaters and estuaries-49,000 hectares of reservoirs and 10,000 hectares of deep water paddy would boost up inland fish production. Fish production from Marine and inland sources is estimated to go up from 5 lakh tonnes in 1974 to 12·42 lakh tonnes by the end of 1983–84.

Trends in Fish Production

25·5· The total fish production in Tamil Nadu increased from 1·51 lakh tonnes in 1960 to 2·79 lakh tonnes in 1970 and is expected to reach 5 lakh tonnes in 1974.

25·6. The marine catches of the total landings were 1·08 lakh tonnes in 1960, 1·59 lakh tonnes in 1970 and likely to be three lakh tonnes in 1974. The inland landings were 0·43 lakh tonnes in 1960, 1·20 lakh tonnes in 1970 and are estimated at two lakh tonnes in 1974. The increase was due to the boat mechanisation programmes and production of fish hatchlings by induced breeding techniques.

Contribution to State Income

25·7. The State domestic product from the Fisheries Sector increased from Rs. 13·37 crores to Rs. 22·61 crores during the last decade, the average annual rate of growth being 6.9%· By the end of the Fourth Plan it is expected to rice to Rs. 36.55 crores at 1970–71 prices It is estimated that the income from fisheries would further increase to Rs. 53·34 crores at the end of the next five years registering an average annual growth of 9·19 per cent. By the close of the Perspective Plan, the income from the Fisheries sector is estimated to reach Rs. 90·75 crores with an annual average rate of growth of 14·02 per cent in the latter five year period.

Constraints and measures to overcome them

25·8. The progress in the field of mechanisation of boats is slow. Production of boats is below demand. To raise the production level, construction of boats in the private sector should be encouraged and timely orders placed.

25·9. There is still a certain amount of apathy to mechanisation from the traditional fishermen. Active interest should be created among them to intensive extension work and demonstration of the utility of modern methods.

25·10. Berthing and landing facilities for the operation of mechanised boats are lacking. Administrative delays in finalising plans and estimates and granting approval in matters like harbour projects, cold storage and freezing plants should be avoided. Top priority decisions with time schedules for the quick implementation of the projects should be made.

25·11. In the field of inland fisheries only 1·4 lakh hectares of water-spread has been brought under culture. We are yet to tap about 2·1 lakh hectares of culturable waters. To meet this problem a quick and precise assessment of the culturable water-spread should be undertaken. All such waters should be taken over by Government for culture irrespective of ownership. Backwaters and swamps should be reclaimed for culture. Marine acqua-culture of edible oysters, molluscs, shrims and sea-weeds should be seriously attempted.

25·12. In the Fisheries sector, research has not been adequate; and extension service and statistics are conspicuous by their absence. Research programmes should be given prominence. Research-based experimental fishing and survey with diversified gears and vessels should be attempted. Hydro-biological study of the sea with research vessels should be taken up. Demonstration with audio-visual aids, dessemination of information by publications of newsletters, brochures, journals, etc., with the help of trained personnel should form part of a State-wide network of Extension Service. Well organised statistical units on the model of the pilot project, now under progress in Madurai, should be extended to other districts.

25·13. The lack of comprehensive study of the domestic fish marketing is a handicap. Marketing study needs re-orientation, keeping in view the following objectives:

1. breaking up of the monopolistic rings;
2. strengthening of co-operatives to make them self-reliant; and
3. regulation of fish markets.

25·14 The rehabilitation of fishermen has been halting. This challenging problem can be met by giving priority to projects like housing, water-supply, education and communications and by provision of adequate credit faciliteis.

25·15 The administrative set-up of the Fisheries Directorate needs re-orientaion and strengthening to undertake the massive programmes embodied in the Perspective Plan.

(i) The department should be reorganised as a "technical" department headed by a technical officer.

(ii) Subject matter specialists in the grade of Joint Directors would be needed to formulate and execute the projects.

An abstract of the Projects in the Perspective Plan

25·16 In order to achieve the objectives of the Plan, a dynamic strategy is called for. This strategy would involve sufficiently large investments for exploiting the advances in Science and Technology and on projects for generating additional employment and benefiting a larger section of people.

Marine Fisheries

Assistance to non-mechanised fishing

25·17 *Preservation of craft materials* : For preventing the deterioration of the indigenous crafts by means of chemcial treatment, six chemical plants are proposed to be established in Tamil Nadu.

25·18 *Provision of insulated boxes* : 10,250 insulated boxes would be supplied to fishermen at 25 per cent subsidy, to bring fish in fresh condition from fishing grounds.

25·19 *Supply of out-board motors to catamaran* : Catamarans hitherto depending on sail power would be made more mobile by the supply of 3,250 out-board motors at 20 per cent subsidy.

25·20 *Provision of improved sail materials* : 7,750 improved sail materials would be supplied to the needy fishermen.

25·21 *Modern gear and gear materials*: About 1,125 tonnes of synthetic twine and webbings would be made available to fishsermen at 20 per cent subsidy.

25·22 *Boat Yards for indigenous crafts* : It is proposed to establish three boat yards in the co-operative sector for the construction of non-mechanised crafts, with Government assistance by way of loans and free services of technical personnel.

25·23. *Porvision of winches for shore-seines* : For the easy and effective operation of shore-seine nets, mobile shore winches have been proposed to be supplied to the coastal fishermen.

25·24. *Forest plantation of suitable trees for catamaran logs* :—It is proposed to plant suitable species of trees in 400 hectares of forest area for yielding sufficient logs for the replacement of the worn out catamarans.

Assistance to small boat mechanisation

25·25. *In-board motors for indigenous crafts* :—This scheme is for the indigenous sailing canoes. 1,250 sailing canoes would be mechanised with in-board diesel engines to make them more mobile and independent of the prevailing winds.

25·26. *Construction and supply of mechanical boats*:—A fillip will be given to the existing mechanisation programme by building 1,900 numbers of 9·1, 9·8 and 13·8 metre mechanised boats in the private and co-operative sectors with a subsidy of 20 per cent to the boat operator.

25·27. *Financial assistance to Private and Co-operative enterprises* :—Private and Co-operative bodies will be encouraged to enter the fishing industry for operating 1,850 boats by availing of the major portion of required funds from Commercial Banks. Government would assist them with 20 per cent interest-free loan while the operators would need to invest an equal amount as their contribution.

25·28. *Service centres, workshops and boat building yards* :—To cater to the needs of the large fleet of mechanised boats, adequate service facilities will be provided by the expansion of the existing service centres and boat building yards and by establishing two more units in each field.

25·29. *Modern gear and gear materials* :—As complementary to the production of a large fleet of mechanised fishing boats, a scheme is drawn up for the supply of 9,440 tonnes synthetic twine and webbings with a subsidy of 20 per cent.

25·30. *Rescue vessel* :—For rushing assistance to the fishing vessels in distress 5 fast moving Rescue vessels fully equipped with electronic gadgets will be based at major harbours.

Deep-sea Fishing

25·31. Emphasis will be on deep-sea fishing with the provision of incentives for production of exportable varieties. About 300 fishing trawlers in the range of 17·5, 22 and 27 metres would be operating in the offshore and deep-sea regions by the end of the Perspective Plan. 50 per cent of the requirements of trawlers would be imported and the rest would be built locally. Co-operatives and private entrepreneurs would be encouraged in these ventures.

PROCESSING, STORAGE AND MARKETING

25·32. *Establishment of Cold-chains* :—The boosting up of fish production necessarily means additional processing and storage facilities. Thirty six cold storage chains are being proposed to ensure the movement of this highly perishable commodity. The cold-chains would serve important cities and municipalities.

25·33. *Big ice plants and distribution of ice* :—This is part of an integrated project in the major fishing harbour schemes at Madras and Tuticorin. 6 big freezing plants for storage and ice production with a fleet of insulated vehicles will be put into operation.

25.34. *Assistance to Co-operative marketing societies* :—The large production of fish involves efficient and quick handling and marketing. To handle the fresh and frozen fish in such large

quantities, suitable agencies will be set up. It is proposed that the Co-operative sector should take up this role in the industry. For 37 such organisations, Government will be giving loan facilities.

TRAINING

25·35. *Establishment and Expansion of Fishermen Training Centres* :—In order to provide the necessary technical man power to handle the fleet of fishing vessels contemplated in the Perspective Plan, it is proposed to expand the existing training centres of the Department to take up the additional load of 1,600 trainees.

25·36. *Provision of stipend for advance training of personnel in Central Institutes* :—Government of India have Training Institutes for diversified technical courses of study in the Fisheries Sector at Bombay, Calcutta, Hyderabad, Cochin and Madras. It is proposed to send 200 trainees to these institutes to qualify as skippers, fishing second hands, fitters, electronic experts, processors, etc. Such trainees have to be paid stipends for the duration of their course. The Government will also have to reimburse the cost of training.

25·37. *Strengthening of the Staff Training Institute*:—It is proposed to expand the existing Staff Training Institute for running intensified courses in the various technical fields and to have in-service training and refresher courses for the departmental staff. This training centre would be upgraded and expanded to suit the reoriented course

INLAND FISHERIES

25·38. *Establishment of additional induced carp spawning centres* :—To reach the optimum requirements of fish seed, 3,000 lakhs of hatchlings would be produced in 15 additional induced carp spawning centres.

25·39. *Establishment and expansion of fish-seed farms* :—To rear 3,000 lakhs of hatchlings and 560 lakhs of fry and fingerlings, additional nursery space and rearing farms are necessary. Nursery ponds and Rearing farms would be established in 120 hectares.

25·40. *Distribution of fish seed, transport and staff* :—The additional supply of fish seed that would result from the two projects indicated above has to be handled and transported for stocking water-spreads. For the transport of live fish seed, fifteen units of vehicles and fields staff are to be provided for.

25·41. *Fisheries Development in Panchayats* :—(1) The Panchayats would be encouraged in the direct distribution of fishing requisites with 25 per cent subsidy; (2) Improvement to Panchayat fish markets with 50 per cent Government subsidy is proposed; (3) For renovation of tanks and construction of the fish nurseries 2/3 of the cost would be forthcoming from the Government as grant; (4) Distribution of fish fingerlings to public with 50 per cent Government grant is also proposed.

Reservoir Fisheries

25·42. In Tamil Nadu, there are 28 reservoirs with a total water-spread of 49,000 hectares. They would be activated for fish production to yield 2,000 tonnes by the end of 1979, by judicious stocking with quality seed, regulated fishing and conservation measures.

Reclamation of Tanks

25.43. There are large pieces of derelict waters, swamps, estuaries, back-waters and tanks. It is proposed to reclaim all such waters and improve them and make them suitable for fish culture. Grant upto 50 per cent is also proposed for encouraging Panchayats to take up such renovation work.

High Altitude Fisheries

25·44. *Setting up and expansion of* (i) *Trout hatcheries and* (ii) *Trout farms* :—These two schemes will be implemented in Nilgiris and Kodaikanal, the two hill stations of Tamil Nadu where cold water fishes like trout and mirror carp alone thrive. The existing trout hatchery on the Nilgiris will be expanded and two fresh ones established to produce enough trout fry for stocking all the reservoirs and other waters in the hill stations. It is proposed to grow trout in two fish farms to be constructed in the State and private sectors.

RESEARCH

25·45. *Inshore Survey* :—The programme is to intensify the survey of inshore waters with vessels upto 13·8 metres utilising different types of gears, during different seasons and locations. It is proposed to open inshore fisheries survey centres at three more places and strengthen the existing four centres with 40 mechanised boats.

25·46. *Experimental fishing with medium and large vessels* :—To obtain a precise knowledge of the fishing grounds of the various species of fish including Lobsters, Tuna and other allied varieties and for charting such grounds for the benefit of the private entrepreneurs, experimental fishing with 24 vessels of 17·5, 22 and 27 metres fitted with modern equipments will be conducted.

25·47. *Research-Local problems* :—In order to deal with the local problems of marine biology, fresh-water fisheries, hydrobiology and technology, a State Fisheries Research Institute will be started. Research Officers appointed in the grade of Deputy Directors headed by a technical Joint Director in direct research on the problems would be attending to these items of work.

25·48. *Research vessels* :—It is proposed to have two vessels fitted with modern equipments for conducting detailed investigation on the hydro-biology and bionomics of marine fisheries.

25·49. *State commitment for co-ordinated I.C.A.R. Project* :—Certain important research problems like pearl oyster culture and pearl culture, paddy-*cum*-fish culture, mariculture, preparation of fish feed etc., are proposed to be dealt with in co-ordination with the Indian Council of Agricultural Research.

25·50. *Strengthening the Statistical unit for marine and inland fishery statistics* :—Fish is landed at more than 300 centres along the coast of Tamil Nadu. Inland fish is landed at numerous places on the banks of rivers, tanks and other water sources. The collection of accurate statistics of all the landings would involve laborious work. In order to improve the method of collection of statistics, it is necessary to strengthen the departmental statistical organisation. The project provides for the cost of staff, computers, etc.

25·51. *Establishment of an Extension Unit* :—To fill up the communication gap in the Fisheries Industry, an extension unit is proposed. It will collect information on the latest technological advancements and provide assistance and advice to fishermen, fish culturists and private entrepreneurs.

25·52. *Provision for Seminars and Refresher Courses* :—The scheme provides for organising seminars and refresher courses on subjects pertaining to fisheries. It is proposed to arrange district-wise or regional seminars to bring together the research workers, industrialists and fishermen for exchanging views.

SOCIO-ECONOMIC BETTERMENT

25·53. *Housing* :—It is proposed to construct 25,000 houses in the fishing hamlets during the Perspective Plan as a socio-economic measure. Better housing facilities with basic amenities are urgently needed for the uplift of the traditionally backward fishing community.

25·54. *Assistance to Co-operatives* :—Grant of medium, long-term and short-term loans and working capital loan will be provided under the scheme.

25·55. *Approach roads* :—The scheme provides for the construction and improvement of roads linking fishing villages and landing centres to the main roads for easy and quick transport of fish. Funds will be provided to the Highways and Rural Works Department for execution of these works.

25·56. *Water-supply* :—Protected water-supply in about 300 fishing villages with over-head tanks, wells and pipe system is planned.

OTHER SCHEMES

Demonstration of fish processing Units

25·57. This scheme is proposed in order to popularise the methods of preservation by actual demonstration of salt curing, refrigeration, canning and freezing. Properly trained staff will conduct demonstration at various centres to popularise the practices of fish preservation.

Establishment of Fisheries Industrial Estate

25·58. The establishment of fish-based industrial estates is essential. These industries cover boat construction, fabrication of fittings for the boat, engine repair and servicing facilities, net-making, manufacture of sophisticated equipment, etc., Developed plots with all amenities will be provided by the Government, to establish such estates at Ennore, Cuddalore, Mandapam and Tuticorin.

Establishment of State Fish Seed Farm and Fish Farmers' Development Agency

25·59. It is proposed to have large seed farms covering an area of 200 hectares. Such farms may be set up under Centrally sponsored scheme. This also envisages the creation of the Fish Farmers' Development Agency which will manage the seed farms.

DEVELOPMENT OF FISHING HARBOURS

25·60. The increased marine fish production envisaged in the Perspective Plan call for improved and additional landing and berthing facilities. It is necessary to provide such facilities at every 60 to 80 km. point along the coast. Already landing and berthing facilities for fishing vessels like trawlers, mechanised boats, etc., have been developed in Cuddalore, Nagapattinam, Mandapam and Rameswaram. Besides these, a major fisheries Harbour at Turicorin is nearing completion and the construction of Madras Fisheries Harbour is to be taken up shortly. The III stage of Cuddalore Fisheries Harbour at an estimated cost of Rs. 25 lakhs and the II stage of Nagapattinam fisheries harbour at an estimated cost of Rs. 15 lakhs may be taken up during the Fifth Plan. A new fisheries harbour at Colachel is also necessary and this is estimated to cost about Rs. 250 lakhs. Mallipattinam in Thanjavur District, where a large number of mechanised boats are operating requires provision of a concrete jetty. Ennore can be improved for berthing of small boats. Mandapam requires improvements in the form of dredging and extension of wharves.

25·61. During the Sixth Plan, landing and berthing facilities have to be provided at six more points. Chinnamuttam in Kanyakumari District and Vellianokkam in Ramanathapuram District can be developed to fisheries harbours. Kulasekarapattinam in Tirunelveli District, Point Calimere in Thanjavur District, Porto Novo in South Arcot District and Muttam in Kanyakumari District are other suitable centres where jetties would be necessary for berthing of the boats and landing of catches.

TOURIST PROMOTION

25·62. *Aquarium.*—Tamil Nadu lacks a proper aquarium. It is proposed to have a modern aquarium on the Marina with all amenities and facilities to attract tourists. The cost of building and staff is provided for.

25·63. *Aquati sports (Boating, angling and water skiing)*—There is considerable scope for developing aquatic sports like boating, angling and skiing in Tamil Nadu to attract tourists. The cost of boats and buildings at five centres is provided for.

25·64. *Administrative set up of the Department.*—The Fisheries Directorate has to be adequately strengthened with the necessary staff in the various technical fields. It is proposed to create posts of Joint Directors to look after Inland Fisheries, Survey of Resources, Fisheries Education and Training, and Planning. Upgrading of staff engaged in research and administration will also be necessary to keep pace with the tempo of development.

PERSPECTIVES OF CONSUMPTION, DEMAND AND PRODUCTION

25·65. Estimates made by the Food and Agricultural Organisation regarding food consumption in India in terms of caloric values show the gap between requirements and actual availability. This is presented below :

	Supply	*Demand*
Calories per capita per day	1,980	2,200
Proteins total grammes per capita per day	52	60
Animal protein of the above	5	..

25·66. Out of the requirements of 60 grammes per capita of protein, we are getting 52 grammes only, out of which, the animal protein including fish is only 5 grammes. The position in Tamil

Nadu is not different. As against this, the supply of animal protein available in developed countries is 64 grammes in North American countries, 30 grammes in U.S.S.R. and 17 grammes in Japan.

25·67. The great disparity in this regard between a low income country such as ours and economically advanced countries points to the imperative need for rapidly augmenting the production of protein-rich foods. It is hoped that the implementation of the various programmes for fishery development in the Perspective Plan will go a long way towards achieving this end. Fish production in the State increased from 1·50 lakh tonnes in 1960 to 2·78 lakh tonnes in 1970 which gives an annual rate of growth of 8·5 per cent. This target of production to be attained at the end of the Perspective Plan is 22·42 lakh tonnes implying an annual growth rate of 9·2 per cent in the Fifth Plan Period and 14 per cent in the next five years.

25·68. What this increase in production would mean in per capita availability is shown in the Table below :

25·69. *Employment opportunities*—The operation of the Perspective Plan for Fisheries sector provides vast scope for generating Employment in the rural areas. It is estimated that the direct man-power requirements would be 1,30,000. In addition, during the construction phase of the projects m the Perspective Plan, additional employment potential generated would be 16,000.

25·70. *Source of Finance*—The financial outlays for the developmental projects in the Fisheries sector are met largely by the Government of Tamil Nadu. Only a portion of the assistance is forthcoming from the Government of India on certain approved projects. The State Government also provides loans and subsidies treating these measures as services rendered to the producer.

25.71. The Agricultural Refinance Corporation recently agreed to finance two projects for marine fisheries development by the District Fishermen Co-operative Federations at Madras and Turicorin. A third scheme for Thanjavur District is under consideration. In these projects, 75 per cent of the outlay is met by the District Co-operative Banks who are reimbursed by the Agricultural Refinance Corporation. The financial commitment of the Tamil Nadu Government is only on the amount of subsidies on boars, nets and cost of supervisory staff. There is scope for getting such financial assistance for similar projects.

TABLE 25—1.

Total Production of Fish and Availability for Consumption per capita 1971—84

Serial number and item	*1971*	*1974*	1979	1984
(0)	(1)	(2)	(3)	(4)
1 Gross annual production of fish (in lakh tonnes)	2·78	5·00	7·30	12·42
2 Population of Tamil Nadu (in lakhs.)	412·00	440·37	488·58	536·90
3 Per capita annual consumption of fish (in Kgs.)	5·87	9·70	12·56	17·58

25·72. The Government of Tamil Nadu have now sanctioned a scheme under which entrepreneurs who start fishery projects can get 20 per cent of capital as interest-free loan by initially contributing 20 per cent of capital. The balance of 60 per cent has to be obtained from Commercial Banks or other financing agencies.

25·73. For mechanisation and deep-sea fishing projects, heavy investments are called for. The necessary finance will have to be arranged by the Government from financing institutions on easy deferred payment terms with interest not exceeding 6 per cent. As there are no special fishery bank in our country as in Norway and Iceland to finannce the need of the fishing industry, there is an urgent need for a Fisheries Development Corporation for Tamil Nadu. This Corporation shall undertake all commercial ventures pertaining to the sector. The Development Corporation, in turn, will get the required funds from financing Corporations. A sum of Rs. 50 lakhs is provided for State participation in the shares of the Development Corporation.

Abstract of Development Outlays in the Perspective Plan

(Rs. in lakhs)

	Scheme.	*Outlay*
	(0)	(1)
1.	Assistance to non-mechanised traditional fishing ..	280.00
2.	Assistance to small boat mechanisation ..	3,400.00
3.	Deep-sea fishing ..	255.00
4.	Processing, Storage and Marketing ..	290.00
5.	Training ..	60,00
6.	Fish seed production ..	305.00
7.	Reservoir fisheries ..	145.00
8.	Reclamation of tanks ..	35.00
9.	High Altitude Fisheries ..	50.00
10.	Research ..	900.00
11.	Economic Betterment ..	535.00
12.	Other scheme ..	110.00
13.	Administrative set up ..	35.00
14.	Tourist Promotion ..	65.00
15.	Pilot projects ..	145.00
16.	Provision of landing and berthing facilities at minor ports ..	682.50
17.	Establishment of State Seed Farm and Fish Farmers' Development Agency ..	200.00
	*** Total** ..	7,492·50

* Of the total Rs. 7492.50 lakhs the State Sector outlay will be Rs. 6,500.00 lakhs, the balance being met by the Central Sector.

PART VI.

Special Problems and Programmes

CHAPTER 26.

Development of Backward Areas

BACKWARD AREAS—THEIR DEFINITION AND PAST PROGRAMMES

26.1. The development of backward areas in the State is an imperative of the Perspective objective to double per capita real income, to eradicate unemployment, to attack selectively poverty and to move towards a more just social order for all parts of the State. Backwardness of some parts of the State and regional disparities have persisted in spite of more than two decades of developmental planning primarily because a centralised system of planning has not adequately allowed for differences in local resource endowments. Like mass poverty, its accompaniment of unbalanced spatial development and backwardness of large groups of people and territory in the State has been taken as part of the laws of progress.

26.2 What is backwardness ? What is its content and what are its identifiable indicators ? The content of economic backwardness is people with ;

—low per capita income,

—low consumption level,

—unemployment,

—under-employment,

—large scale poverty,

—lack of health and sanitary facilities,

—low educational attainments and inadequate transport and communication facilities.

26.3. Applying these criteria, the Pande Committee appointed by the Union Planning Commission in 1968 to identify the backward districts, listed the following indicators of backward areas :—

—The district outside a radius of about 50 miles from large cities or large industrial projects or complex ;

—Poverty of the people as indicated by low per capita income and low consumption level ;

—High density of population in relation to utilisation of productive resources and employment opportunities ;

—Inadequate availability of electric power or absence of it ;

—Inadequate availability of transport and communication facilities ; and

—Inadequate availability of water.

Apart from the regions which fall under the category of backward areas according to the above criteria, the following areas also have been classified as backward areas. They are :—

—desert areas,

—chronically drought affected areas,

—hill areas ; and

—the areas with high concentration of tribal population.

26.4. It was in the Fourth Plan that the nature of these problems and the extent to which they operate as impediments to rapid development were studied and for the first time measures such as the several crash programmes, rural industrialisation programmes, Drought Prone Area Programmes and a host of other programmes were launched. To give an impetus to the economy of backward areas and for redressing inter-state differences, the Fourth Plan identified three directional measures to be initiated by the Centre, namely : (i) allocation of Central assistance, (ii) location of Central projects and (iii) adjustment in procedures and policies of financing with a view to encouraging private investment.

26.5 Following these norms, 10 per cent of the central assistance was set apart for the States whose per capita income was lower than the national average, and the principle of locating Central projects in the backward areas, subject to their techno-economic feasibility and viability, was established. Also, financial measures were taken to attract private capital to the backward areas and to off-set their locational disadvantages. These include a 15 per cent subsidy for the location, expansion and diversification of the private sector projects in backward areas, a package of incentives like concessional power tariff and water royalty, preferential treatment in Government purchase and allotment of developed plots on easy terms etc.

26.6. A number of promotional measures have been undertaken by the State Government to encourage establishment of industries in backward areas. Important among them is the programme of identifying areas in which various basic economic facilities such as electricity, adequate supply of agricultural raw materials, improved means of transport, etc., are available or would become available. Intensive campaigns have also been organised by the Small Industries Development Corporation of Tamil Nadu (SIDCO) and the State Industries Promotion Corporation of Tamil Nadu (SIPCOT) to find out potential pockets/ Districts having the basic infrastructure facilities in the State to encourage prospective entrepreneurs to take up industries there. Technical assistance is rendered to the units set up in backward areas through the net-work of Small Industries Service Institute and Extension Centres and SIPCOT. In several cases, techno-economic surveys have been conducted in the backward areas in order to draw up schemes suitable for enterprises to be located in those areas. Mobile Demonstration Vans have been visiting these areas frequently to acquaint the rural artisans with the use of improved types of machinery and to help them in improving their productivity.

26.7. The record todate in the development of backward regions, is, however, a modest one. There has been the absence of machinery for properly identifying backward areas, and till recently no procedure for techno-economic surveys and feasibility studies of such areas was available. Further, such programmes as were launched did not succeed because they were often diffused over too wide an area and lacked spatial focus. All the villages or even small towns which are backward cannot be developed simultaneously nor are all suited for industrial development. Yet, there are a large number of towns of intermediate size which could promote linkages between villages and cities. Those small towns can act as levers of industrial spread in rural and backward areas. To ensure successful and effective implementation of the programmes, "development nuclei" or "growth centres" in these areas should have to be identified and the preparation of "Area Development Plans" organised.

26.8. There was also the problem of inadequate resources to deal with massive unemployment and under-employment in the rural areas; some thing more substantial was necessary to produce results and to infuse a new spirit in the minds of the people. What was needed was an integrated scheme of modern cottage, small and medium industries based on a realistic assessment of not only resources available in the different regions, but also resources that could be brought into them.

26.9. In the case of agriculture and allied activities, the retarding factor has been absence of local planning and industry. To tackle the inter-related problems of backwardness, rural poverty and unemployment, a reorientation and integration of the various rural development programmes is needed. These would cover minor irrigation, soil conservation, soil development, animal husbandry, forestry, fisheries, rural roads, crash schemes for rural employment and drought-prone areas, land consolidation, land and water development, drainage and rural infrastructure. In so far as these progammes exist only in embryo they have not relieved backwardness or alleviated poverty and unemployment.

26.10. An investigation into the pattern of distribution of income among the districts in the State reveals not only wide regional imbalances but also considerable disparity in per capita district income figures. This is shown in Table No. 26-1. This has

been due to the absence of a planning and implementation machinery at the district level and the consequent practice of spreading the available limited resources in as wide a manner as possible over all areas—developed and backward—of the State.

TABLE 26.1

District income and per capita district Income in Tamil Nadu in 1970-71 (at current prices)

Name of the district	*Total district income (Rs. in crores)*	*Population (in lakhs)*	*Per capita income (in Rs.)*
(0)	(1)	(2)	(3)
1 Chingleput ..	210·63	29·1	729
2 Coimbatore ..	347·83	43·7	798
3 Dharmapuri ..	72·08	16·8	432
4 Kanyakumari ..	91·14	12·3	741
5 Madras	217·39	24·7	880
6 Madurai ..	235·42	39·4	599
7 Nilgiris ..	40·77	4·9	832
8 North Arcot ..	240·13	37·5	642
9 Ramanathapuram	150·92	28·6	528
10 Salem	170·45	29·9	570
11 South Arcot ..	219·41	36·2	608
12 Thanjavur ..	238·92	38·4	624
13 Tiruchirappalli ..	218·97	38·5	570
14 Tirunelveli ..	229·50	32·0	719
15 **State**	**2,683·56***	**411·0**	**653***

Source : Dtrectorate of Statistics Government of Tamil Nadu, Madraa.

STRATEGY FOR THE DEVELOPMENT OF BACKWARD AREAS

26·11. For the Perspective Plan period, the development of backward area should involve:

—concentrating efforts in a few areas;

—using the district and regional planning organisation to plan and monitor area development programmes in these areas; and

—providing the selected areas with all the incentives and inputs necessary for their development.

26·12. In view of the size and the complexity of the problem and limitation of resources, it will not be possible to select too many regions for development. Suitably concentrated programmes must be drawn up for maximum impact depending on the resources available. In selecting backward regions for development, preference should be given to those already having some basic potential for development, i.e., having some infrastructure facilities or adequate supply of raw materials. Within the selected regions, a few growth points, say, two or three should be selected on the basis of the State's development programmes pertaining to construction of approach roads, erection of trasmission lines, supply of electric connections, housing and education facilities. On this basis Ramanathapuram, Dharmapuri, Thanjavur and South Arcot may be selected under the first phase of the Backward Regions Development Programme. In the next phase, the programme should be extended to South Tiruchirappalli, Salem North (Hilly area) and the Nilgiris.

26·13. For planning and monitoring this programme, the district planning organisations set up by the State Planning Commission should be the agency. In the selected regions, the district planning organisation should be strengthened to undertake the continuous planning, coordination and evaluation functions. Of the four Districts which are backward, South Arcot and Thanjavur have a very sound agricultural base but are backward in point of industrial development and contain certain patches which are chronically dry. A part of Tiruchirappalli and the hill areas of Salem and the Nilgiris may also come under this category.

26·14. Techno-economic feasibility studies have been completed for the areas suggested for the first phase.

26·15. The main objectives of these surveys have been ;

—to indicate the basic requirements of backward areas and backward classes ;

Note : *These figures have been calculated using districtwise details of goods and services and hence these figures differ slightly from that of state net domestic product.

—to assess the physical and financial resource potential :

—to identify the main economic activities and the growth centres to be developed ;

—to list the subsidiary and supplemental activities to be promoted in their order of importance;

—to determine the need of main economic activities in terms of infrastructural facilities, inputs and services; and

—to correlate the requirements of various areas, determine the location of the projects; integrate and organise spatially and functionally with least cost and largest coverage.

On the basis of these studies, detailed, co-ordinated agricultural and industrial development projects for each area should be launched. In the case of agricultural and allied activities, the major projects would relate to dry land, hilly tract and irrigated farming, fisheries and animal husbandry, using the programmes and techniques of SFDAS[1], MFALS[2], and DPAP[3] and the resources of co-operatives, land development banks and nationalised banks as well as of the farmers. The implementation of land reform legislation and minimum wages for landless labourers should be a particular concern of the District Planning Organisations in these regions.

26·16 The studies have also identified the industrial growth points for these areas. As the first step in the move towards industrialisation of the backward areas, it is necessary to offer certain special incentives to the entrepreneurs in the matter of fixed assets, supply of developed plots, built-up accommodation, machinery and equipment, etc. The developed plots should be given to the entrepreneurs desirous of setting up units in the backward areas on a down payment of 10 per cent of the value of the land and no further payment should be asked for from them during the first five years. The balance of 90 per cent should be recovered over a period of nine years after the expiry of the five years moratorium, in easy instalments. In regard to the supply of machinery and equipment for the small scale units in the areas, there is need for providing them on a hire-purchase basis at low rates of interest. For attracting entrepreneurs to set up industries in the selected backward areas, the following fiscal incentives should be offered:

—Grant of higher development rebate to industries located in backward areas;

—Grant of exemption from income-tax, including corporate tax, for five years after providing for the development rebate;

—Exemption from the payment of import duties on plant and machinery, components etc., imported by units set up in backward areas;

—Exemption from excise duties for a period of five years;

—Exemption from sales tax, both on raw materials and finished products, to units set up in specified backward areas for a period of five years, from the date of their going into production;

—A transport subsidy for a period of five years for transporting raw materials and finished products.

Some Backward Districts and their Special Features—An Analysis

Ramanathapuram district

26·17 An Analysis of the special features of the backward regions in the State begins with Ramanathapuram district. The characteristic features of its backwardness are:

—A low per capita income among the districts of Tamil Nadu, with Rs. 528 as against the State's Rs. 654;

—The high dependency load-the economically active population of 35·7 percent, carrying 64·3 per cent of the population which is economically inactive;

—Heavy dependence on agriculture (73·9 per cent) with a labour force of 2·29 persons per hectare of gross sown area

(1) Small Farmers Development Agency Scheme.
(2) Marginal Farmers and Agricultural Labourers Scheme.
(3) Drought Prone Area Programme.

—High proportion of fallow lands to net area sown of about 35·2 per cent;

—The heavy tilting of the cropping pattern of the district in favour of low priced non-commercial crops;

—Area under these crops constituting 72·4 per cent of the total area sown;

—A relatively smaller secondary sector both in terms of its percentage contribution (14·8 per cent) to total income and in terms of proportion of people engaged (14·8 per cent);

—Low productivity per worker and the low level (26·1 per cent) of urbanisation of the district population; and

—High incidence of unemployement and the predominance of economically weaker section of the population which includes Scheduled Tribes and Scheduled Castes.

26·18 The aim of the development programme should be to increase the per capita income of the district from Rs. 528 to Rs. 1,308 by the end of the Perspective Plan. This would mean raising the district income from Rs. 150·92 crores in 1970-71 to Rs. 457·62 crores in 1983-84.

26·19 The diversion of the rivers flowing west from Western Ghats to the Eastern side would add to the extent of irrigated land by one lakh acres in Madurai and Ramanathapuram districts—50,000 acres each in Sattur and Srivilliputhur taluks of the latter district. There is a surplus of about 190 TMC in Pamban river. There is a possibility of lifting the tail race waters (26 TMC) of Pambar Hydro Electric Project from elevation + 675 by about 100 ft. and diverting them eastwards through a 12 mile long tunnel. This would benefit 2·6 lakh acres in Sattur and Srivilliputhur taluks of Ramanathapuram district and Sankarankoil and Kovilpatti taluks of Tirunelveli district. Out of the savings of water as a result of remodelling the Cauvery delta channels, lining G.A. Canal and Periyar Main Canal, an extent of about 1·10 lakh acres can be irrigated in Tirupattur, Tiruvadanai, Paramakudi and Mudukulathur taluks. In all, about three lakh acres could be benefitted in the district resulting in an additional production of more than two lakh tonnes in terms of paddy. This would change the face of the district agricultural economy leading to a complementary development of the industrial sector.

26·20 The switch-over from dry to dry irrigated-crops will double the yield without a proprotionate increase in the cost of cultivation. The system of dry irrigated farming is more suited to the region than wet farming. The area under dry irrigated lands can be more than 2 to 3 times the extent of wet lands under tank and well irrigation. The provision of liberal credit facilities, demonstration farms, effective extension work, soil conservation, bunding operations are yet other measures that will help in improving productivity. By these means, the growth rate in agriculture can be raised to 5 per cent per annuam (compound).Crop production will almost be doubled by 1983-84 and agricultural income would be about Rs. 92 crores as against Rs. 48 crores in 1970-71. By 1983-84, as a result of the development programmes envisaged, the availability of milk per capita would be 144 ml. The exploratory fisheries survey conducted by the Indo-Norwegian Project has opened up vast deep-sea resources lying off Mandapam for development and exploitation. The current production of 41,000 tonnes can be stepped up to 2·40 lakh tonnes by 1983-84.

26·21. An accelerated programme of industrial development has been suggested for the District calling for an investment of about Rs. 200 crores during the next decade. Important Industries which are suggested for the Fifth Plan in the East Ramanathapuram District are, Sodium Hydro Sulphite Plant at Karaikudi at a cost of Rs. 2·50 crores, an Automobile Tyre and Tube project at a cost of Rs. 12·00 crores, and the establishment of a Motor Cycle manufacturing plant at a cost of Rs. 1·18 crores. Similarly, big industries in the West Development District would include expansion of Alangulam Cement Plant at a cost of Rs. 7·50 crores, establishment of Automobile Tyre and Tube Plant at a cost of Rs. 8·00 crores and starting of a Calcium Carbide Industry at a cost of Rs. 1·80 crores. There seems to be little scope for exploitation of minerals, as limestone is the only available mineral deposit in this district. Prospects of further expansion in mineral production exist for clays,

gypsum, graphite, limestone and mineral pigments. The district is also one of the largest producers of common salt from sea water which can be further developed.

Dharmapuri District

26·22. The per capita income of this District lying in the northern part of Tamil Nadu and adja cent to Karnataka is Rs. 432 which is the lowest of the thirteen districts of the State. Even the plan to double the per capita income from Rs. 432 to Rs. 864, will leave it far below the State average of Rs. 1,308 expected to be reached by the end of 1983–84 at 1970–71 prices. To bring the per capita income of the District to that of the State, viz., to Rs. 1,308 by 1983–84, per capita income should increase at an annual 9 per cent compound growth rate. This is possible only if the District income increases by 14 per cent annually for which a total investment of Rs. 49,140 lakhs will be required.

26·23. Dharmapuri District is predominantly agrarian, and massive investment programmes have been proposed in dry farming in respect of commercial crops such as sugarcane, tobacco, cotton, oil seeds, etc. Large scale cultivation of commercial crops would also lead to the development of processing and agro-industries. Three important reasons for giving pride of place to the development of the primary sector in this district are the follwoing : The first is the very limited scope for diversification of the district's economy through development of mining and industry on a scale that would provide substantial new employment to the growing working force. The second is the relatively low population density of the district, which gives a more favourable man-land ratio than is normally found in comparable situations. There is already sufficient diversification of the primary sector in Dharmapuri, as seen in the existence of varied occupations in forestry, sericulture, horticulture and animal husbandry to justify the assumption that this sector can be better and more quickly developed to provide more work and income. 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 patterns and application of new packages of inputs and agronomic practices.

26·24. A compound rate of growth of 6 per cent per annum in agriculture is within the limits of practicability ; in other words, Rs. 17 crores of output estimated from irrigated agriculture could more than double itself to over Rs.34 crores through extension of area under H.Y.V. programme and modern inputs and the modest increases in irrigated areas. For the rest, dry land farming should help in raising output of the value of Rs. 38 crores at present to Rs. 70 crores. In the long run, the district should increasingly grow crops of commercial value. Taking into consideration the national deficit in pulses, oil seeds and cotton, it would be appropriate to lay emphasis on the growing of these crops in the Dharmapuri district. As an alternative to groundnut, both sunflower and safflower appear very promising. In addition to the general encouragement of sugarcane cultivation in the district, a specific programme for sugarcane production in four blocks (Palacode, Pennagaram, Dharmapuri and Kaveripatnam) in areas within a radius 40 kms. of sugar factories should be launched. Of the district's total geographical area (964,300 hectares) nearly half—consisting of forests and uncultivable waste—is not available for agricultural purposes. At present, the net area sown is 397,480 hectares (41·2 per cent) and, excluding land required for orchards and non-agricultural purposes, there may be only marginal scope for bringing additional land under cultivation by reclaiming cultivable waste or by bringing current fallows under the plough. Even so, this limited scope for adding about 50,000 to 60,000 hectares to the net sown area should be fully explored. There are possibilities of linking such reclamation schemes to Rural Works Programmes to create off-season employment.

26·25. The establishment of the following industrial units in Dharmapuri district has been suggested:

—a cigarette factory at a cost of Rs. 4 crores;

—ragimalt unit at a cost of Rs. 20 lakhs;

—a fruit canning unit at a cost of Rs. 28 lakhs;

—the expansion of the Palacode Co-operative Sugar Mill and establishment of a distillery at a cost of Rs. 75 lakhs;

—a granite cutting and polishing unit at a cost of Rs. 20 lakhs ;

—a graphic manufacturing unit at a cost of Rs. 20 lakhs ;

—a fibre glass unit at a cost of Rs. 40 lakhs ;

—a unit for the production of semi-finished raw material from steel at a cost of Rs. 2 crores in the Sixth Plan period ; and

—powerlooms at a cost of Rs. 1·20 crores in the Fifth Plan and another Rs. 1·20 crores in the Sixth Plan period.

South Arcot, Thanjavur and Hill Areas Belt

26·26. South Arcot and Thanjavur districts are not comparable to the two districts mentioned earlier as these two districts have a sound agricultural base but lag behind in the industrial field. These two districts also have certain taluks which are dry and backward as neither agriculture nor industry has flourished The Aranthangi-Orthanad area of Thanjavur District and the Kallakurichi and Gingee taluks of South Arcot District have been identified as backward areas in these two districts. These areas will have to be supported by special programmes. The diversification of agriculture from the traditional paddy growing into sugarcane cultivation in wet lands and growing of sunflower, banana and cashew in the dry and garden lands are suited to the backward pockets of these districts which face the problem of water supply. The sub-soil water should be exploited fully for the development of agriculture.

26·27. Further, these areas can also develop arts and crafts for which they are traditionally noted. Items like metal craft, silver plating, making of bronze statues, etc., need encouragement. The dolls, for instance, have an international market. The scope for the growth of agro-industries is also considerable. The cashew shell oil produced in and around Panruti is of the order of 2,000 tonnes per annum and has a potential export market. Sugar ancillary industries and medium size chemical units, both in Thanjavur and South Arcot Districts, are possible avenues of industrial expansion especially in the backward taluks.

26·28. The development of Cuddalore as an intermediate port and the prospects of satellite towns such as Vadalur, Vridhachalam, Panruti, Nellikuppam, etc.,coming up with numerous industrial units in and around Neyveli along with the proposed second mine cut will change the face of the district and will contribute to its industrial advancement greatly. Development of inland and marine fishing and marine-based industries, which have an expanding export market will also greatly absorb idle man power of the coastal areas of South Arcot and Thanjavur Districts.

26·29. The backward pockets consisting of Yercaud, Periakalrayan and Pachamalai hills in Salem District and the entire Nilgiris District, where large tribal population live, need special attention and schemes designed to develop these areas have been included in the Perspective Plan. Forest products and forest-based industries need to be developed in these areas. But they are still far behind in the development of infrastructual facilities, and it is imperative that adequate basic facilities should be provided before any concerted schemes are contemplated for their development.

CHAPTER 27

Problems of Administration and Implementation

THE PROBLEM

27.1. The objectives of the Perspective Plan viz., doubling of per capita real income, providing full employment, reducing poverty, assuring social justice, accelerating social change, humanising development and decentralising planning—are set high. They are no less than the welfare of the common man in Tamil Nadu. These objectives will be embodied in sectoral programmes and new and continuing projects in the medium term plans. Bringing about a more just social order and reducing the privations of the poor, making them less unhappy and less discontented will, in part, depend on the rate, manner and style of the implementation of the Plan and the execution of its programmes and projects. Here our past experience with the four Plans provides a clear warning ; the Plans were good : the planning was not unsound. The failure lay in not implementing the Plans fully and in not executing the projects efficiently. Notably, the failures have been failures in achieving social justice. The gap between Planning and Implementation like that between pledges and performance has been wide and is widening. Hence, the forces making for failures or shortcomings in the implementation of the Plan must be identified and counteracted.

CAUSES FOR FAILURES

27.2. The causes for the failures in the implementation of the Plan are multiple. Some of them are built into our pluralistic democratic society with its governance by consensus and compromise, which blunts the sharp choice and focus of development issues and delays implementation, and its tendency to intervene at the execution and operational stage. There are five remediable major causes for failures in plan implementation. The first group of causes arises from our inegalitarian society with its highly skewed distribution of factor ownership and the limitations which it places on the optimum utilisation of human capital. This leads to increasing production of non-priority/non-essential goods with short supplies of essential goods in relation to the requirements. This economy of scarcity also gives rise to the parallel economy with large unaccounted resources and the resulting corruption in many forms, widening the gap between the plan and its achievement. A second group of causes relates to shortages in and non-food crop production, limited skilled labour supply, poor R & D results, declining savings, inadequate infrastructure and continuing industrial unrest. A third cause is that we do not have adequate managerial, technical and expert staff to implement the fast growing development functions, programmes and projects of the State and the public sector. Administratively we are still living in the pre-independence regulatory societal stage and have not equipped ourselves with the necessary expert staff ; nor do we have adequate training programmes for the administrative and technical staff or taken sufficient care to see that trained personnel are located in projects for their full duration. Fourthly, we do not have the machinery and procedures which can ensure the full implementation of our Plan and its programmes and projects. Our administrative system needs periodic review to meet the changing face of the economy, our budget procedures including the lapse doctrine need revision, simplification, rationalisation and co-ordination. There is no information system to help the staff face new problems and situtations that come up and the monitoring system, if any, is not alert enough to send up warning signals of implementation delays or errors. We are trying to execute the Plan with procedures never meant for economic development and we fill the gaps by creating a confusing array of ad-hoc institutions and programmes to meet each new situation. Fifthly, the whole system of plan formulation and implementation is highly centralised and for the second most populous country in the world and for a State whose size would place it tenth among the 132 members of the United Nations, such

centralization is by itself enough to defeat all realistic planning and effective implementation. The none-too-clear and over-lapping responsibilities for programme execution and project approval as between the Union and the State Governments, the lack of delegation of responsibilities to the local authorities for executing projects within their competence, the absence of annual operational district plans and machinery to execute them, the inadequate participation of universities, the private industrial and agricultural sectors, voluntary agencies and people generally in the execution of programmes and projects contribute to the growing short-falls between plan targets and physical implementation.

Remedial Action

27.3. In the light of these factors inhibiting adequate and full implementation of the Plans, it is recommended that Union, State and Local authorities take corrective action on both a short-term and long-term basis along the following lines. A continuing requirement is for the political authority including the political parties to require that its technical organs prepare and place before it, and through it to the public, in clear and sharp focus the various plan options and implementation alternatives in the light of which it can decide on plan policies and strategies. Having so decided on policies and strategies including the needed structural changes, the political parties should develop a convention not to intervene in project formulation and execution. The Perspective Plan strategy and programmes deal with the second group of substantive constraints. The other remedial actions refer to restructuring of the planning levels, district plan implementation, administrative reforms, monitoring and evaluation, peoples' participation and a programme of training.

Planning Levels

27.4. The Plan should evolve from the district level, to the regional level, State level and on to the National level. A start has been made in Tamil Nadu to develop District and Regional Plans simultaneously with the State Plan. By starting with the first two levels, the State Plan can be made into a comprehensive and integrated programme of developments taking into account the needs and problems as well as the pattern of development envisaged at the lower levels. In some areas such as power, water and perhaps higher education, which should be treated as assets of the nation as a whole, there could be a further intermediate level of Planning between the State and National Plans. For the Perspective Plan, as resources and needs in these areas cut across State boundaries and make the Southern Zone a natural zone, Zonal plans in these sectors should be developed and jointly financed and executed by the States through Zonal bodies. The National Plan should set forth the National goals and objectives as established by the National Development Council and should be essentially a co-ordinating and integrating instrument of plans developed at the various levels referred to above. The Central projects to be undertaken in a state should be notified to it so that they may be programmed in an integrated manner in the State Plan. This will also enable the States to contribute to their effective implementation. The Plan and non-Plan resources available to the State (if this distinction is maintained) should be fixed by legislation, so that the Planning exercise, though accompanied by applying the legislative provision to particular conditions, is freed from bargaining for resources. The machinery and procedures for Plan implementation are those used for the execution of the State's entire development programme. The responsibility for such implementation is that of the State Council of Ministers and its various subsidiary organs.

District Plan Implementation

27.5. Plan implementation requires that district plans become the basis for execution of the Plan. For this purpose, the Perspective District Plans should be translated into operational Annual District Plans. It has even been suggested that the Constitution may be amended to establish a list of subjects which are within the competence of local bodies. Without going so far, the operational Annual District Plans should establish output targets for the programmes and projects, co-ordinate the functioning of the several agencies involved in each project and draw on all local agencies, the voluntary bodies and the people in the implementation

of the Plan. This will involve delegating authority for implementation of the annual operational district plans, once they are reviewed and approved by the Government, to a District Authority. This authority should be the District Development Corporation*. Its functions, financial resources and relations with the Panchayat Union Councils and District Development Councils are set forth in the Chapter on District Planning. The question of making the existing districts smaller in size, with which the Administrative Reforms Commission is already seized, should be pursued. The District Authority, while being the executive body composed of District officials headed by the District Collector, will rely for advice and review of its operations on the District Development Councils. The functions of the District Authority will include drafting the operational district plan and the supervision of its execution which is the responsibility of the departmental officers and the Panchayat Union Commissioners. The financial resources accruing to the Authority must be examined with care in relation to any responsibility given to it in the matter of taxation and mobilisation of local resources. It can also act as banker to the Panchayat Union Councils and be helped financially by making available to it a part of the resources mobilised locally through an apex body like the proposed State Investment Trust. All these will also involve authorising the District Authority to make project changes and transfers within certain limits, setting apart district allotments in the State budget and equipping the District Authority with the necessary Secretariat including accounting services. To begin with, the Authority aided by the District Development Council may be entrusted with implementation of a category of rural development programmes. The entrustment of the functions to cover the rest of the District Development Programmes can be considered in the light of the experience.

ADMINISTRATIVE REFORMS

27·6. Plan implementation calls for the large investment and adequate manpower with new and varied skills, new organisations and new lines of control, adoption of new techniques of decision making and quicker and more effective lines of communication. Successful plan implementation, thus, means that the administrative machinery must be under continuing review to facilitate its renovation and renewal through a standing Administrative Reforms Commission or department which should also be vested with responsibility for monitoring the execution of its approved recommendations. The immediate administrative reforms should include (*a*) recruiting technical experts who will have the freedom to analyse and advise on problems from the technical point of view and finding and placing the best men required for each job, (*b*) making the secretarial and executive heads of Departments function as a single self-contained unit for implementation, (*c*) adjusting the budget process and administrative cycle, to the agro-climatic requirements of the State involving in particular early notification of budget allotments/sanctions to the district officers and replacing the lapse doctrine by monthly letters of credit, (*d*) freeing the Finance Department from day-to-day expenditure sanctions so that it can concentrate on recommending investment priorities, and undertake performance audit, cost-effective and cost-benefit analyses, (*e*) speeding up decision making processes and setting up a system of audit and evaluation, (*f*) simplifying and reducing industrial licensing procedures, for large industries by the Union Government, and for medium and small industries by the State Government, (*g*) co-ordinating the functioning of the Department of Agriculture and the Department of Panchayat Development at the State, district, block and village levels, (*h*) re-organising in a phased manner the department of Highways starting with a separate Department of Minor Irrigation and (*i*) strengthening the personnel and devising other means of increasing the efficiency and profitability of public sector enterprises.

MONITORING AND EVALUATION

27·7. A continuous monitoring of the rate and quality of the implementation of all Plan projects should be undertaken by both the Head of the Department concerned and a central non-executive organ, preferably the State Planning Commission using the services of the Data Processing Centre and the performance budgets of the Departments. The reform of the treasury system referred to earlier for simplifying procedures for remittances, payments, and vesting departments

* Since announced by the Honourable Chief Minister of Tamil Nadu in the Budget speech 1974–75.

with financial authority will also facilitate implementation and monitoring. A core sector comprising of industrial production, irrigation, agricultural production, power generation and transmission and public transportation should be established for the preparation of production-oriented or economically viable projects. Special cells of competent persons should be established in these departments to prepare project reports and evaluate their execution. A spot evaluation by a non-executive body like the State Planning Commission of selected projects as a double check is also necesary.

Participation in Plan Implementation

27·8. To ensure the widest measure popular participation in plan implementation, the Universities, the proposed State Council of Educational Research, and Training, and other research bodies may be called upon to contribute through their research, and Research and Development programme particularly in the neglected social sciences area, both to defining plan projects and improving their implementation. For this purpose, the financial allocations for research must be increased. Voluntary agencies can act as catalytic agents and undertake innovative programmes to speed up the realisation of Plan targets. The task of implementation is so vast and urgent that there is a question which should be given further consideration. If there can be consensus on the Plan among the political parties, could their cadres be mobilised to help in the implementation of some of the Plan programmes, particularly those involving land reform, housing, site for landless, adult education and literacy, family planning, distribution of essential goods to the poverty sector ?

TRAINING

27·9. Training programmes in Management Institutes, Universities, Research Institutions and on the job are needed to raise the level of competence, develop aptitudes and update the knowledge of persons involved in Plan implementation. In this connection, the proposal to set up an Institute of Management in this State is timely. All avenues of training in the State should be used and priority in the matter of training should be given to the senior staff. Such training should be both pre service and much more post-service and in-service for training like education is a life-long imperative in the context of the present exploding rate of knowledge, information and technological and scientific advancement.

CHAPTER 28.

Research and Development

The Place of Science and Technology in the Development of Tamil Nadu

28·1. Tamil Nadu is self-sufficient in food grains production. According to the latest Annual Survey of Industry, it is the third most industrialised State in the Country. These gains however, cannot be conserved into the future because capital limitation is a pervading national phenomenon and lack of an adequate raw material base, a perpetual fact of State life. Under these conditions, the State's future and further development depend, primarily on the quality of its people—their skills, their inventiveness and thier innovations. These are qualities that can be developed only over a long haul but the period can be shortened and the volume and content directed by planned effort. It is achievement in this line that should be the main concern of the Perspective Plan for the Science and Technology sector and the Research and Development component of the Plan.

An Assessment of S & T in Tamil Nadu

28·2. Tamil Nadu has an impressive stock of engineers, scientists and highly trained manpower. As on April 1971, the State had 18,540 graduate engineers and technologists, . 24,440 licenciate engineers and technicians, 8,350 science post-graduates and 50,820 science graduates, 540 agricultural science post-graduates, 3,300 agricultural science graduates, 8,900 medical graduates, 11,500 arts and commerce post-graduates and 71,130 arts and commerce graduates*. Basic research is largely associated with the Universities and the affiliated colleges of Madras, Madurai and Annamalai and the Institute of Mathematical Sciences, Madras. The efforts of the Tamil Nadu Agricultural University and the State Government's Agricultural Research Stations have resulted in a break through in over 200 research projects in seeds, fertilisers, pest control and storage operations. The 12 engineering institutions including the Indian Institute of Technology, Guindy, and the College of Engineering, Guindy, have developed into incipient Research and Development centres, with consultancy services to industry and commerce in the State, to space and atomic programmes of the Union Government and to the antipollution programme of the city of Madras. The Central Leather Research Institute in Madras, the Electro-Chemical Research Institute in Karaikudi and the CSIR regional complex which groups regional branches of MERADO, CSIO, SERC in the Adyar campus have made available a number of processes and designs to their respective industries and have recently established links for offering them research and consultancy services. The State's research laboratories in Highways and Irrigation undertake investigations, the findings of which form an input into the on-going programmes of the respective Departments. Some of the public sector undertakings such as BHEL, ICF, Heavy Vehicles, Hindustan Photo films as well as a few private firms such as Seshasayee, Lucas-TVS, MRF, SPIC, Madras Fertilisers, SIMCO, India Pistons have started and are operating small Research and Development Units.

28·3. But the Research and Development picture also has its sombre shades. There is really no recognition at any level—Government, the private sector or the people—of the vital importance of Research and Development to the State's development. Basic and fundamental research is being neglected by the Universities and such research is being starved for funds. The organic links between agricultural research in laboratories and demonstration centres and their practice in farms, between the Research and Development in the national laboratories and engineering intsitutions and its inflow into appropriate industrial units are tenuous, weak and sometimes absent. There is no system of economic evaluation of Research and Development programmes in terms of cost-benefit analysis before

*Technical Manpower Bulletin, Vol. XV No. 4, page 3 C S I R, New Delhi, April, 1973,

they are approved, no cost utilisation studies during their currency or assessment of the results attained at termination. The financing of Research and Development everywhere in the public and private sector, in the government and educational and research institutions seems like an after-thought. It is usually what is left over after meeting other pressures. There is no information system linking researchers and potential research users. There is little-interaction among the various disciplines and researchers in the social, human, natural, engineering, medical and agricultural sciences. There is no inter-locking system for such Resarch and Development as exists. Medical research and development, investigations relating to fisheries, educational research and even industrial Research and Development have been limited or absent. Quite often foreign technology is bought at a high price but enough attention is not paid to adaptation or absorption of what is bought. One serious gap is that no attempt is made to develop Research and Development programmes to meet out mass needs in such essential goods as coarse cloth, edible oils, and housing materials for the rural poor. It is, therefore, necessary to evolve a suitable policy frame to encourage and promote Research and Development activities in the State along purposeful lines.

The Perspective Plan for Research and Development

Relation with National Plan

28·4 It is on the basis of the limited Research and Development achievements to-date and the Science and Technology infrastructure and as a means of filling the gaps in both, that the Perspective Plan for Research and Development in the State has been established. The limits of a State Plan in this regard have to be recognized and the need for fitting it into the National Plan for Science and Technology has to be stressed. The link up between the State Research and Development programmes with the National programmes has to be established in three ways: First, in the matter of financing, it is advisable to rely on the national decision to mobilise and disburse one per cent of the Gross National Product for promoting science and technology. It is the Union Government which will have to raise the major part of the resources and make them available to the State for the implementation of its programmes relating to Research and Development and the building up of the science and technology infrastructure. Accordingly, it is suggested that 80 per cent of the financing of the programme should be shared in the ratio of 70:30 between the Union and State Governments. Second, the policy regarding importing of foreign technology must be set at the Union Government level. This would involve limiting imports to those not available in the country; requiring that what is imported is examined, studied and adapted to suit our industrial and agricultural needs and conditions; providing the fiscal and non-fiscal incentives for our firms to invest in Research and Development and the maintenance of a Central data bank of all available technologies both imported and indigenous, with an information system covering all potential users of what is available in the country, so that the enormous current wastage resulting from repetitions in Research and Development efforts can be eliminated. Third, the co-ordination of State Research and Development plans and their appropriate integration in the National Plan is similarly a Union Government responsibility. This is necessary because quite a good number of Research and Development programmes will be of interest and benefit to many states. For instance, the Research and Development Programmes proposed for seeds and dry farming technology for sugar, textiles and cement technologies will have spin-off effects for agricultural and the relevant manufacturing units in Maharashtra, Uttar Pradesh, Gujarat and Haryana and other Research and Develpoment programmes, in turn, will have fall-out effects on industry and agriculture in this State. In this sense the State Plan for Science and Technology is not only a means of meeting the specific growth needs of its agriculture and industry but also provides the necessary base for the synthesis which a co-ordinated and integrated National Plan requires.

Directive Principles

28·5 The State Research and Development sector is to be developed on the basis of seven other principles, in addition to its providing the base for the National Science and Technology Plan. First, the State's Research and Development should be an out growth of its Science and Technology infrastructure provided by its adult education and training programmes, its demonstration farms and pilot projects. Second, the Research and Development programmes should be

subjected to cost-benefit tests before approval and/ or during their currency, to ensure that they are commercially viable and have a minimum pay off. Third, such viability and pay off should be determined in terms of the consideration whether each project will help to attain the ultimate objective of research and development, viz., meeting successfully the seven goals of the Perspective Plan. Fourth, the science and technology programmes proposed must be interdisciplinary and the Research and Development projects should be problem-oriented so that they meet the real industrial, agricultural and development needs of the State. Fifth, the absence of a close link between Research and Development in our colleges and national laboratories and industry has led to the marginalisation of our science and technology activities ; (that is, since our Science and Technology tends to be a replica of Research and Development in the affluent countries, our industries prefer to buy their Research and Development from them because this alternative procedure is both speedy and certain). Hence, it is suggested that all industrial Research and Development programmes should have organised links with their appropriate industrial undertakings and in the case of new Research and Development programmes, preference should be given to those which are located in and are part of the industrial sector concerned. Sixth, the Research and Development programmes for the State should set up a closely established order of priorities, namely, (*a*) projects which directly contribute to the reduction of poverty and social inequalities, (*b*) projects which support and promote existing agricultural technologies and industrial clusters in the State and (*c*) projects for which the Science and Technology infrastructure already exists in the State. Finally, the Research and Development programme should establish research project formulation, execution, supervision and evaluation machinery at sectoral and overall levels so that Research and Development effort in the State follows these agreed and established principles.

The State Research and Development Plan

28·6 At the State level, the Perspective Plan provides for two levels of organisations to fill the existing gap in formulating Research and Development policy, setting priorities, allocating resources, monitoring execution and co-ordinating the entire effort for the State as a whole on the one hand, and in preparing Research and Development projects, evaluating their feasibility , supervising their execution, assessing their results within each sector, on the other. As an agency for the first overall policy-setting purpose, the Tamil Nadu Science Foundation is proposed and for the second, ten Sectoral Research Councils are proposed. The foundation will have the Chief Minister who is the Chairman of the State Planning Commission as its President and representatives of each of the sectoral Research Councils, N.C.S.T. and the five universities as members. The Sectoral Research Councils proposed are for Agriculture, Forestry, Fisheries, Veterinary Science, Power, Water, Industry, Medicine, Education, Training and Housing. Each Sectoral Research Council will have the concerned Minister as its Chairman, the senior scientist in that area as the Deputy Chairman and a number of scientists, engineers and administrators as members, with its Secretariat located in one of the scientific institutions or departments of Government. In the case of Industrial Research and Developmet the foundation itself will establish a Standing Committee on Industrial Research with scientists and engineers from TIDCO, SIPCOT and SIDCO Departments of Industries and Technical Education, the engineering institutions, SITRA, the five chambers of Commerce, Trade Unions and the C.S.I.R. Complex, Madras, with the Secretariat located in the Indian Institute of Technology, Guindy.

28·7 One of the proposals in the Perspective Plan is the bringing together of the producer and consumer in some of the new Research and Development programmes that have been proposed. There are, of course, some advantages in having separate location and foci of Research and Development efforts and the cosumer industries. The location of scientists and engineers in a National laboratory or an educational institution helps to develop a research ambience, allows for interdisciplinary interaction between them, and provides facilities for the co-operation of groups of researchers which is necessary in certain lines of study and investigation In any case organisation in this form was necessary to start off Research and Development in the country.

But, with the kind of valuable lessons that we have learnt from the vertical integration of Research and Development production and sale in our Atomic Energy and Space Research Programmes, the time has now come for use to move industrial Research and Development into the user industry. The Perspective Plan, therefore, proposes to place the Research and Development programme for sugar in SISMA for coarse clothers in SIMA and SITRA, for edible oils in the oils and chemical industry, and for cement in the cement industry.

28·8 The Perspective Plan proposes 106 Research and Development projects listed below.

1. *Agriculture and allied activities*

Rainfed agriculture in Tamil Nadu, new cropping pattern for irrigated areas in Tamil Nadu, agro-based industries, seed technology, farm management and marketing, extension methodology, production designs of farm machinery, tools and implements, horticultural crops in the hill areas.

2. *Forestry Research*

Problems caused by pests, farm forestry, soil and water conservation in forest area, use of forests as wind-brakes in agricultural land in forest areas and allied studies.

3. *Veterinary*

Evolving new dairy breeds, evolving new breeds of swine, evolving new strains of sheep.

4. *Fisheries*

Assessment of marine fisheries, etc., experimental testing with medium large vessels, local fishery problems, investigation and assessment.

5. *Irrigation*

Real-time computer simulation, recycled irrigation, sedimentation in reservoirs, regeneration of the river basins, soil and water management, hard rock area investigation, water and well location investigation, artificial recharge, abstraction of ground water, drilling techniques.

6. *Minerals*

Research station for magnetic iron ores, mining research station, scheme to study sources of alumina, scheme for study of building stones and materials, scheme for extraction of rare earths and other strategic elements in minerals.

7. *Industry*

Standard cloth and powerlooms research, The Tamil Nadu Institute of Research on edible oil, sugar technology and research, agro-industrial machinery research and development, facilities for electrical industries, facilities for electronic industries, The Tamil Nadu Institute of Cement Technology, plastics, technical consultancy cell, quality development and preservation of raw materials for Handicrafts, research on the infrastructure facilities for small industries, A study on the present use of and substitute for ferrous and non-ferrous metal, Sericulture Extension Centres for lower altitudes, Central Standardisation and Research Cell for SSI products, project for leather technology and trade.

8. *Roads and Road Transport*

Data Processing Centre for Highways Research Station, Fly-ash for rural roads, pre-cast culverts, quarries, bridge structures, load carrying capacity of roads, 600-ton test floor, coastal and water logged areas, low grade road aggregates, Pavement strength and surface enrichment, load bearing capacity of foundation piles, vibration study on reinforced concrete and prestressed concrete, test track, transportation research, traffic and transportation studies.

9. *Fuel and Power*

Electric energy systems, institute, dynamic power study, relay and protection engineering, augmentation of power supply, plant utilisation-improvement of plant factor, transmission losses, insulation studies of power equipment, corrosion of insulator fittings, economisation of rural electrification.

10. *Housing and Urban Development*

Housing and Urban Development Research Programme, Regional Planning.

11. *Health and Family Planning*

Bio-Medical Research in Family Planning and reproductive Physiology, Bio-chemical investigation on certain diseases in man (A) Research Hematology, (a) Anaemias, (b) Leukaemias, (B) The study of prevalence of Anaemia among pregnant women in rural and urban areas, Clinical Pharmacology, Research on Rural Filariasis, Study of Efficacy of B.C.G. vaccination in the new born, Diabetic Research Cell, Comparative study of (a) an Occupation Therapy programme and (b) a Social Therapy on intensive care programme for the Chronic mentally ill, Oral Cancer (A) Premalignant Lesions and Oral Cancer, (B) Complete treatment and Rehabilitation of oral Cancer patient, A Retinal Clinic, Detection of Genetic Disease before onset.

12. *Water Supply*

Water treatment for Rural Water-Supply, Sewage treatment and re-use, New construction techniques of water-supply and sewerage works, Sewerate flow patterns, Industrial Wastes treatment, Public Health Engineering Research and Development Centre, Studies on leak detection and corrosion control.

13. *Nutrition*

Longitudinal and cross sectional study of boys and girls (Pre-Schools to teen-age level).

14. *Education*

A Project for the reduction of school drop-outs (Pilot Project by Voluntary agency), A scientific study of the developmental trend of the performance intelligence of pupils in the Schools of Madras City, House wives' knowledge of the factors in child growth rearing and healthful living (Preliminary study), Drop-out Survey, School teachers' professional growth, Internal assessment in Secondary Schools, Institutional Planning by and in Schools.

15. *Management*

Tamil Nadu Economic Research Foundation, Individual Industries Study, Professional management in Tamil Nadu.

16. *Overall Goals*

The minimum needs programme in the District Administration, Absenteeism and Labour Turnover, Social factors affecting innovative acceptances, Reduction of poverty, Caste and Hierarchy, Agrarian structures.

Manpower Perspectives

28.9. This Research and Development Programme envisages a plan to employ effectively and creatively the engineering and scientific manpower in the State. Here there are several problems. First, of the total stock of 114,890 scientists and engineers in the State referred to earlier, only around 12,000 or less than 10 per cent are engaged in Research and Development Programmes. According to C.S.I.R. the proportion is even less, i.e. 6 per cent. Whether we take international norms or our own agricultural and industrial development needs in the State, this proportion should be raised to 12 per cent by the end of the Fifth Plan and 15 per cent by the end of the Sixth Plan, if the proposed programme is to be viable. This increased ratio of Research and Development scientists and engineers is based on an estimate of the increased stock at the end of each Plan period. Second, as on April 1971, 1,869 graduate engineers, 3,021 licentiate engineers, 242 medical scientists and 12,591 general scientists in the State were unemployed. The utilisation of this valuable manpower resource in Research and Development and teaching programmes and in industrial and agricultural research centres is one of the major aims of the Perspective Plan. It will mean the scattering of this trained manpower over Research and Development establishments, teaching institutions, agro-industrial centres, rice mills, textile factories and automobile units. As regards agricultural and medical scientists, the plan is to make use of them for providing advice and guidance in the ratio of one agricultural scientist for each 2,000—3,000 hectares of land, and one medical scientist for every 10,000 of rural population. Third, the productivity of our scientist and

engineering personnel has been computed at 20—25 per cent of that of the average world scientist. The validity of this precise percentage is open to question but what is not open to question is the fact that there is a very heavy technological and medical brain drain, in the country as well as in the State. The Perspective Plan is programmed to equip our research and teaching institutions in relation to our basic economic and social needs so as to increase the productivity of our scientists and technologists. For the large part of our industries, agriculture and infrastructure services, the Research and Development that will be developed must be oriented and improvised in relation to basic needs of food, clothing, housing, water supply and health, nutrition, family planning and similar services. It is by these means, that the productivity of our scientists and technologists has to be raised during the Perspective Plan period to comparable international standards.

Science and Technology: Teaching and Research

28.10. All this has a direct impact on the teaching and research institutions in the State during the Perspective Plan period. Provision is made for creating the Madras University of Technology to organise advanced study and research in the 12 engineering colleges in the State. Special projects in this context include development and expansion of the computer centre in Guindy and starting of new ones at Coimbatore, Madurai and Tiruchirappally. It is proposed to set up at the College of Engineering, Guindy, a centre for ocean engineering and marine sciences, a centre of urban engineering and a project for analog and digital simulation of the Cauvery Delta—A materials testing Bureau and the Centre of Automotive engineering will be set up at the Madras Institute of Technology and a bio-medical engineering centre at the Indian Institute of Technology, Guindy. The Tamil Nadu Agricultural University is to be expanded with a College of Veterinary Sciences and College of Fishery Sciences added to it.

FINANCE

28.11. The 106 Research and Development projects proposed during the Perspective Plan period call for an outlay of Rs. 54·98 crores. The project will be financed as follows : 10 per cent of the total outlay will be financed from the private sector, notably for the industrial Research and Development projects. A further 10 per cent will be through self financing of some of the proposed projects. The balance will be shared between the State and Union Governments, the State contributing 20 per cent and the Union Government including the foreign aid agencies 60 per cent. For some of the Research and Development Projects, particularly those relating to agriculture, fisheries, and water-supply the Union Government is requested to negotiate financial aid from the World Bank, UNDP and UNICEF.

CHAPTER 29.

Statistics

IMPORTANCE OF STATISTICAL DATA

29.1. The importance of adequate and up-to-date statistical data in the formulation and evaluation of plan programmes needs no emphasis. During the successive Five-Year Plans the activity of the State Statistical Organisation has grown steadily and the Department has undertaken special investigations and has engaged itself in the collection of data needed for planning purposes in the State. In 1966, the Union Planning Commission suggested an integrated scheme for the collection of statistical data by the States. Realising the fact that non-availability of some basic statistics of a particular item in one State or region constitutes a gap in the national picture, it was recommended that all States should take up simultaneously the same set of selected schemes by adopting uniform standards to ensure comparability betweeen States. Keeping this aim in view, the Statistics and Surveys Division of the Union Planning Commission drew up a list of nine core schemes of immediate all-India importance for implementation as Centrally aided State Plan Schemes from 1967-68 onwards.

29.2. During the Fourth Plan period some of the core schemes were implemented. These were the schemes relating to small scale and Village Industries, Survey of Distributive Trade, Survey of Goods Traffic by Road, Improvement of State Income Estimates, Housing Statistics, Training Programme, Machine Tabulation Unit, Strengthening/Creating of a Unit for Statistics of resources for Planning and preparation of Municipal Statistics Year Book and District Statistics Hand Books. Economic Survey of Projects and evaluation studies of Plan projects were also implemented.

29.3. Statistical requirements for plan formulation and implementation have increased considerably in recent years. The position regarding the statistical requirements of the Fifth Plan was reviewed by the Officers of the Central Statistical Organisation (Department of Statistics, New Delhi) and the Directors of State Statistical Bureaus in September 1972 and January 1973, and guidelines were laid down by them to work out the technical details of core Statistical schemes of national and State importance. These Committees have, inter alia, recommended that the statistical machinery at the various levels be put into proper gear and the gaps in statistical information filled up.

GAP IN STATISTICS

29·4. Significant progress has been made in the State Statistical System ; yet, there are still deficiencies in the availability of data on a wide range of subjects and the seriousness of such gaps has become apparent in the context of formulating sectoral development programmes. The more important of these are listed below :—

Agricultural Statistics

29·5. There has been marked improvement in the agricultural statistics since the coming into position of District Statistical Units. Nevertheless, there is scope of further improvement. For example, precise data regarding the area under the different varieties of crops (High Yielding, Local, etc.) is lacking. The area under crops like certain fruits and vegetables, Niger seed, safflower, specific spices, etc., is not recorded and the production of most of these crops is not estimated accurately. Information concerning the extent of shift in the cropping pattern from time to time is also not available.

29·6. One important cause of the defects in agricultural statistics is that too much reliance is placed on the village karnams for collection of basic data. Because of the multifarious duties devolving on him, he is not in a position to bestow proper care and attention to the collection of accurate data. This defect can be rectified by introducing a periodical checking system so that the village karnam may be made duty-conscious in this matter. The present system of checking by Revenue Inspectors is not functioning satisfactorily

utilisation of equipment in the form of machinery, plants and tools increases returns without involving any proportionate increase in cost and hence contributes to larger savings and further investment. However, the extent of idle capacity is not known ; not have the factors leading to such under-utilisation been clearly identified. The extension of the coverage of the Annual Survey o Industries to all the industries, both organised and unorganised, will help in the improvement of industrial statistics. But in addition, special investigations will have to be conducted by the Statistics Department covering industries, in the private and public sectors on a sampling basis for estimating the value of capital equipment, the potential capacity and the value of actual output.

(c) State Income Data

29·22. The third important need is reliable state income data. It has been observed that in the preparation of estimates of State Income, basic data concerning most of the activities in the tertiary sector (viz., transport and communications, banking and insurance, other commerce and transport, public administration and local bodies, house property, professions and liberal arts and domestic services, etc.) are not readily available. At present the income estimates for these sectors are worked out by moving suitably, the base year estimates with reference to related economic indicators. For this reason only rough estimates of income at the sectoral level, can be attempted by allocating the state level estimates among the respective sectors on an appropriate basis. It is therefore, necessary to collect particulars in respect of such items in the tertiary sector by conducting special studies and surveys.

29· 23. Another gap in the state income estimation is the non-availability of information relating to money income flowing into the State from outside and income going out of the State. To get a complete picture of the income position of the state, its trends and composition, it is necessary to commence work on the collection of data relating to these flows. Equally serious is the lack of statistical information regarding the movements of goods out of and into the State by roads and railways. Preliminary work on this has been started, but it has to be speeded up and detailed particulars are to be gathered and the work completed by 1975-76.

29·24. Apart from improving the quality of the state income data, it is necessary also to recast its presentation in a form that would meet adequately the needs of economic planning. The classification of heads and sub-heads and the arrangement of statistical details should conform to modern social accounting methods. This obviously involves a great amount of work, but its need cannot be questioned. A complete revision and reform in this regard is essential for making use of sophisticated methods of planning involving flow of funds analysis, computation of an input-output matrix etc.

29·25. Closely allied to the collection of reliable state income data is the estimation of savings and capital formation. No attempt has so far been made in this area ; but data relating to these variables form the basis for making any estimate concerning the economy's potential for growth and for identifying the cause of stagnation or slow growth. These studies should cover rural and urban savings, investment in the different sectors of the economy, the rate of returns on investment, the sources of finance of different industries, institutional agencies which facilitate savings, etc.

29·26. Little is known about investment activity in the private sector. One important and noticeable form which investment activity takes, is construction of buildings. There is now in progress a project for the Collection of statistics of buildings activity in Tamil Nadu both in the private and public sectors but it does not cover buildings activity in respect of town panchayats with population of less than 10,000 and those with a population above 10,000 but in which the building Regulation Act is not enforced, and also building activity in village panchayats. These gaps are to be closed by extending the coverage.

29·27. In addition to the schemes suggested above, the following special studies are to be undertaken in the Perspective Plan period.

(i) A study to estimate the taxable capacity of the State ;

(ii) An estimate of the number of people below poverty line in rural and urban areas ;

(iii) Distribution pattern of income and wealth in the State ;

(iv) Statistical data for evaluating performance in respect of the development projects in the Perspective Plan; and

(v) Finances of local bodies.

STATISTICAL SCHEMES OF NATIONAL IMPORTANCE

29.28. Besides the above proposals for improving the quantity and quality of the statistical data relating to the State's economy, a list of schemes of all-India importance is given below. In view of their national importance, these schemes merit special central assistance.

1. *Setting up of a Data Bank*

29·29. The object of Data Banks will be to maintain comprehensive and up-to-date information on major areas of interest to Planning and Development and to make it available to all agencies concerned and, in particular, to State Planning Commission and State and Central Governments who will be the principal users of the Bank. The proposed Data Bank will form an integral part of the Statistical system and will be organised and managed by the Department of Statistics. The Statistical information emanating from districts and below will be passed on to the bank after necessary scrutiny, coding, pre-punching, etc. The State Statistical Bureau will be responsible for the subsequent processing and storage of information on computer. The primary data generated by the State Statistical Bureau on its own will also be handled by the Bank. The Bank at the State level will be the main source of supply to the Data Bank at the Centre (Delhi).

2. *Census and Surveys*

29·30. The object of the scheme is to conduct Economic Census once in five years, in addition to specific studies on selected topics from year to year to measure the trends of growth . Under the proposed census, the sectors for which data are being already collected or for which data are likely to be available through other sources will not be covered. Thus organised manufacturing, electricity, gas, railways and airlines under transport or postal and telephones services under communications will be outside its scope but the economic activities in non-household establishments run at residential places will be covered under the economic census. The first economic census will be taken up in 1974–75 followed by inter-censal year surveys during the remaining years of the plan. The census will be carried out on the basis of the concepts and definitions to be issued by the Central Statistical Organisation, Government of India.

3. *Improvement of Market Intelligence*

29·31. The object of the scheme is to strengthen the machinery for the collection, compilation and processing of market intelligence in Tamil Nadu Under the scheme, it is proposed to increase the number of primary reporters at important selected centres and extend the coverage of commodities with a view to have a sound Market Intelligence Service in Tamil Nadu.

4. *Sample Surveys of High Yielding Varieties of Crops*

29.32 Surveys are now conducted in four districts in respect of High Yielding Varieties of Crops. This has to be continued for a series of years to establish valid conclusions. Further, it is proposed to expand the coverage of the scheme and include other crops like Cumbu, Cholam, etc. Accordingly more crop estimation surveys under High Yielding programme will have to be organised.

5. *Survey for the estimation of cost of cultivation and consumption pattern of Coconut in Tamil Nadu*

29·33. The object of the scheme is to find out the consumption pattern of coconut and its by-products both in domestic and commercial sectors and to estimate the cost of cultivation and annual maintenance of crops. It is proposed to conduct the survey for the estimation of cost of cultivation in Kanyakumari and Thanjavur Districts which are the major coconut-growing districts of the State by adopting multistage random sampling technique. It is also proposed to conduct a survey for the estimation of consumption pattern of coconut in major

coconut growing centres and important cities and towns covering both rural and urban areas. The survey will be carried out in three years in the Fifth Plan period.

6. *Timely Reporting of Area and production of important crops*

29.34. A Centrally Sponsored scheme for the timely reporting of area and production of important crops with a view to obtain reliable estimates of area and production of important crops in Tamil Nadu was implemented in the State in 1972 at the instance of the Ministry of Food and Agriculture, Government of India. The scheme will be continued in the Perspective Plan period in Tamil Nadu.

7. *Scheme for strengthening supervision of area and yield statistics*

29.35. The machinery in existence for the supervision of the work connected with area and yield statistics in States is not adequate. To rectify this deficiency, Government of India have proposed to implement a centrally-sponsored scheme for strengthening supervision of area and yield statistics through the State Statistical Bureau in States during the Fifth Plan.

29.36. The estimated cost of the abovementioned seven schemes is given below. It is suggested that these schemes should be financed through central assistance:—

(*Rs. in lakhs*)

Scheme	*Estimated cost*
(0)	(1)
1. Establishment of the Data Bank	74.31
2. Census and Surveys	64.84
3. Improvement of Market Intelligence	36.62
4. Surveys of High Yielding Varieties of Crops	36.14
5. Estimating cost of cultivation and consumption of coconut	5.16
6. Reporting of Area and production of important crops	15.00
7. Supervision of Area and Yield Statistics	10.00
Total ..	**242.07**

REORGANISATION AND STRENGTHENING OF THE STATISTICS DEPARTMENT

29.37. For the efficient implementation of the various programmes indicated above, it is necessary to reorganise and strengthen the Statistics Department and streamline its activities. The stress here is that it should be of real use for economic planning and the major recommendation in this connection is that the Department of Statistics is to be reorganised as the State Statistical Organisation and brought directly under the State Planning Commission. This change has to be effected since the Planning Commission has to undertake the work of formulating, monitoring and evaluating the Plan.

29.38. The technical and administrative branches of the Department have to be strengthened and expanded to cope with the additional burden and responsibilities involved in the execution of the specific programmes. This would comprise of the setting up of separate divisions to take charge of compilation of income, savings and capital formation data ; preparation of the Index of Industrial production ; a Training Division to train primary, intermediate and professional level workers, viz., Assistant Statistical Investigators, Statistical Inspectors and Statistical Officers and a State Co-ordination division to co-ordinate and guide the statistical activities of the various departments of the Government. Also, the Statistical Units functioning in the taluks and districts of the State are to be strengthened under a phased programme. These agencies will be responsible for the co-ordination of the Statistical activities of the different departments at the district level ; maintaining an up-to-date record of progress of Plan schemes taken up in the district ; ensuring timelines in the 'submission of statistical returns by all Government and non-Government organisations ; improving the quality of data through field staff and on-the-spot investigation ; preparing District Statistical Hand Books and collecting data required by the State Planning Commission and District Planning Cells.

29.39. It is envisaged that a considerable volume of useful and reliable statistical information will become available when the Department is strengthened and reorganised.

29.40. So far, the Statistics Department has concerned itself only with the collection of data. The time has now come when it has to extend its activity to the field of processing and analysis of data along modern lines. For this purpose, the existing Research and Training Cell has to be considerably strengthened by recruiting competent persons highly qualified in Statistics, Mathematical Economics and Econometrics. In this field, specialists alone will be able to meet the requirements and mere seniority in service or experience in the department will not be and should not be accepted as a criterion for appointment. The functions of this Research and Training Cell will be fourfold : (1) Scientific analysis of statistical and economic data, (2) Suggesting proper sampling design for the surveys undertaken by the department, (3) Publishing a Bulletin containing the research findings and the results of the analytical work carried out by the Cell and (4) Organising training classes for the benefit of the existing staff as well as newly recruited members of the staff.

29.41. At present, considerable delay is caused in the printing and publishing of statistical material because of lack of adequate printing facilities in the department. It is, therefore, recommended that the existing facilities in the department for printing are augmented by providing a printing machine with the necessary supporting staff.

Implementation of the Schemes and the cost

29.42. Most of the Schemes for expanding the activities of the Statistics Department and improving the quality of data will be taken up for implementation at the commencement of the Perspective Plan period and a few projects will be completed before 1978-79. The state sector outlay in the first five years of the Perspective Plan will be about Rs. 3 crores and will be distributed as follows :—

(Rs. in lakhs.)

Scheme	*Outlay*
(0)	(1)
1. Scheme for State Index of Industrial Production	3·00
2. Study of crop pattern and land utilisation	35·00
3. Demographic schemes-Human resources	6·00
4. Quarterly sample survey of Civil Labour force	35·00
5. Collection of data relating to building activity	8·00
6. Improving quality and coverage of State Income data	10·00
7. Special Investigations	12·00
8. Scheme for strengthening the statistical Machinery at various levels (Training, Research, etc.)	200·00
Total ..	**309·00**

29.43. Some of these schemes would have necessarily to be extended to the latter five years of the Perspective Plan with their coverage widened. And new schemes will also have to be taken up as necessitated by the pattern of development of the economy and the new problems that may arise calling for special studies and investigations. It is not possible to foresee such needs and estimate their costs. However, in view of the rapid economic and social development of the State envisaged in the Perspective Plan, it is not unreasonable to presume that the outlay in the Sixth Plan period will be about double that of the Fifth Plan. Hence, a total allotment of Rs. 8 crores in the State sector is fixed for the ten-year period 1974-84

PART-VII.

Finance

CHAPTER 30.

Finance for the Plan

Resources for Aggregate Plan Outlay

30.1. Estimation of financial resources for plan implementation at the State level bristles with problems. The basic exercise is one of—

—assessing the megnitudes of savings that could be generated, given the expected growth rates in State income and the policy measures for raising the rate of savings, and

—defining the strategy and the mechanism for making the savings available in the desired magnitudes for planned investment in the public sector and the private corporate and co-operative sectors inside the State.

30.2. However, it is not possible for the State Government alone to undertake this exercise. Under the present constitutional arrangement, the major instruments of resource mobilisation are with the Union Government and its financial institutions, and the greater part of the resources mobilised inside the State directly accrue to the Union Government. As a consequence, even the implementation of that part of the State Plan which lies within the direct responsibility of the State Government is dependent on sizable transfers of resources from the Union Government notwithstanding the fact that the bulk of these resources are obtained out of the State income. Moreover, a good part of the public sector investment in the State, principally in basic industries, transport and communications is undertaken by the Union Government, and decisions in this regard together with the modes of financing these investments rest with the Union Government. Again, investment in the private, corporate and co-operative sectors are largely dependent on the support from the Union Government financial institutions and the outflows and inflows of private savings of the State.

Flow of Funds Approach

30.3. The Union Planning Commission has made an admirable beginning in presenting the resources picture of the National Fifth Plan, 1974-79 in the Flow of Funds Frame. The National economy has been divided into four sectors : (1) the public sector, (2) the private sector, (3) the financial institutions, and (4) the rest of the world. The institutional mechanism by which savings generated in one sector could be made available for investment in the other sector has been spelt out in fair detail highlighting the role played by financial institutions as intermediaries in this regard.

30.4. Although there is considerable need for effecting methodological improvements in this exercise that deals with all India magnitudes at the national level, it is only logical that a beginning should be made to attempt a similar exercise at the State level. There is no denying that the methodological issues involved in undertaking such an exercise at the State level are much more complex, given the present pattern of command over resource mobilisation by the Union and State Governments and the organisational frame of their financial institutions. The Union-State and inter-State flow of funds present many intricate problems. However, there is great merit in initiating studies towards resolving the methodological problems in this regard and launching on a study of savings in the State and their flows. Savings rate gives the flow rate of resources for planned development and no economic exercise on Perspective Plan can be complete without flow of funds analysis. This study will be of great help in suggesting the manner of restructuring the financial flows for planning at the Union and State levels with a view to achieving higher rates of savings mobilisation and more effective deployment of the savings mobilised.

30.5. In our federal framework, it is of significant interest for a State to have knowledge of the savings generated in the State, the manner in which these savings are being utilised for the economic and social development of the State, and the contribution of the savings of the relatively advanced States to the rapid economic progress of the country and the accelerated development of the less-advanced States. Such knowledge would help in promoting Union-State and inter-State co-operation in achieving growth with social justice.

RESOURCES FOR THE STATE SECTOR OF THE PLAN

30.6. For the present, however, the resources perspective exercise at the level of the State Government could only be fragmentary, in view of the meagre empirical knowledge of savings in the State, and the extremely limited powers that the State Government could exercise towards effective mobilisation of savings and their deployment for investment in the different sectors of the economy. One has to restrict oneself to attempting at a few projections relating to the resources availablity for the State sector of the Tamil Nadu Plan, on conventional lines that are being hitherto pursued. And even in this regard, the projections can be more meaningful only if the indications in respect of transfers of resources from the Union Government to the State are known sufficiently in advance and the Union Government's direct investment in Tamil Nadu is clearly identified.

AN APPRAISAL OF THE CURRENT RESOURCES

30.7. In attempting the limited exercise of resources projections over the ten-year period 1974-84 for the State Sector, it is only appropriate, as a background, to review the resources picture that has emerged over the Fourth Plan Period, 1969-74.

30.8. In 1968-69, the Government of Tamil Nadu had proposed an outlay of Rs. 624 crores for the State Sector of the Fourth Plan at prices of the same year. The outlay approved by the Union Government was only Rs. 519 crores. The actual plan expenditures over the five-year period (inclusive of the likely amount for the year 1973-74) *at current prices* add up to Rs. 552 crores, financed out of State's resources amounting to Rs. 355 crores and Union Government assistance of Rs. 197 crores. This would mean that a little more than one-third of the total Fourth Plan outlay was supported by Union Government assistance. (The details regarding the sources of plan finance are given in Table 30·2.)

30.9. Keeping in view the basic objectives of doubling the *per capita* income of 1970-71 and ensuring full employment by 1984, the Perspective Plan for the ten-year period 1974-84 envisages an aggregate outlay of Rs. 3,250 crores in the Fifth Plan and Rs. 6,510 crores in the Sixth Plan. The division of these total among the State sector, the Union Government (direct investment) and the private sector is shown below :—

TABLE 30·1.

Investment in the Perspective Plan period -

(Rs. in Crores).

Plan period.	*State sector.*	*Union Government (direct investment).*	*Private sector.*	*Total.*
(0)	(1)	(2)	(3)	(4)
Fifth Plan 1974–79	1,365	780	1,105	3,250
Sixth Plan 1979–84	2,734	1,562	2,214	6,510
Perspective Plan 1974·89	**4,096**	**2,342**	**3,319**	**9,760**

30.10. In the light of these estimated plan outlays, the resources exercise would consist of investigating the method of raising resources of the order of Rs. 1,365 crores for the Fifth Plan period and Rs.2,734 crores for the Sixth Plan period.

30.11 The State depends on the following sources for financing the development schemes under the Five-year plans:—

(*a*) Balance from current revenues;

(*b*) Contribution of Public Enterprises like the State Electricity Board, the Road Transport Corporation and other similar undertakings;

(*c*) Resources under capital account made up of:

(*i*) Loans from the market raised by the State Government (net), share of small savings, State Provident Funds, etc.;

(ii) Negotiated loans of the State Government from L.I.C. and R.B.I. and loans raised by State Enterprises from the open market and from L.I.C. and R.B.I.

(*d*) Withdrawal from Reserves and net inerease n floating debt.

(*e*) Additional resources mobilisation and

(*f*) Central assistance.

30.12. An idea of the relative significances o these six sources can be had from the amount which were realised under these heads in the pass few years. For the period 1964–65 to 1968–69 the balance from current revenues amounted to Rs. 27.95 crores. The corresponding figure estimated for the Fourth Plan period (1969–74) turns out to be a negative one of about Rs. 52 crores. It is therefore safe to presume that the resources available under this head for planned development are nil.* The proportionate contribution of the six items in the years 1964–65 to 1973–74 is as shown below.

* Howover because of the reintroduction of prohibition, power shortage, the oil problem and other factors the revenue receipts are likely to be seriously affected and recent estimates indicate a large deficit under the head 'Balance from Current revenue' for the Fifth Plan.

TABLE 30·2.

Relative position of different sources of Finance

(Rs. in Crores)

Source	1964–65 to 1968–69	*Proportion as per cent*	1969–70 to 1973-74	*Proportion as per cent*
(0)	(1)	(2)	(3)	(4)
a. Balance from current revenues	27·95	6·5	—52·00	—9·4
b. Contribution of public enterprises ..	42·33	9·9	78·00	14·1
c. Loans raised by the State and State enterprises.	80·53	18·8	170·00	30·8
d. Withdrawal from reserves and floating debt (net).	22·69	5·3	..	..
e. Additional resource mobilisation ..	46·17	10·8	159·00	28·8
f. Central assistance	208·15	48·7	197·00	35·7
Total	**427.82**	**100.0**	**552.00**	**100.00**

Source: Assessment of Financial Resources for the Fourth and Ffth Plans, Government sf Tamil Nadu, 1969 and 1972.

30·13. The above set of figures indicate the realtive significance of the different sources of finance over the ten year period 1964–65 to 1973–74. Leaving out Central assistance which accounted for 7·48 per cent in 1964-69 and 35·7 per cent in 1969-74, the major item is "Loans raised by the State and State Enterprises", next in importance come "Additional Resources Mobilisation " and " Contribution of Public Enterprises".

A. Projections of Resources under Capital Accounts.

30·14. Since the balance from current revenues for financing the plan is likely to be meagre, the mainstay of Plan Finance has necessarily to be resources under capital account. These comprise of State's borrowing from the Open market as well as from the Life Insurance Corporation and the Reserve Bank of India, Small Savings and State Provident Funds and loans raised by State enterprises, from the open market, from Commercial Banks and from the Life Insurance Corporation.

I Market Borrowing by the State Government

30·15. In the matter of open market borrowing by the States, certain restrictions are placed by the Central Government especially in the form of an upper limit. For the Fourth Plan this limit was fixed at Rs. 67 crores. By September, 1973, the amounts raised in this manner was Rs. 60 crores. The estimated collections under this head in the Fifth Plan period are placed at Rs. 150 crores and in the latter five years of the Perspective Plan period Rs. 375 crores. In view of the fact that the bank deposits are likely to be more than double by the end of the Fifth Plan and that the requirements for bank investments in approved securities have been recently enhanced, these estimates should be considered as quite reasonable.

30·16. Subscription to open market loans of the Union Government and of the State Governments (subject to the permission of the Union Government under the existing constitutional arrangement) is principally from the Commercial Banks, Life Insurance Corporation and Employees' Provident Funds. With the nationalisation of Life Insurance and the larger part of commercial banking, subscription by these institutions is largely a matter of policy of the Union Government itself. Investment of employee's provident funds in Government securities has been made obligatory through parliamentary enactment. Presently, around 30 per cent of commercial bank deposits, 50 per cent of investible funds of the L.I.C. and 70 per cent of employees' provident funds are being held in the form of Government securities. However, Union Government market borrowing alone accounts for about three-quarters of the total market borrowing of the Union and State Governments.

30·17. Now the plea for larger direct market borrowing by the State Governments has to be viewed against the background of the present restrictions under which the State Governments are permitted to raise only limited amounts through market loans, and have to depend largely on the funds made available by the Union Government in the form of loan assistance. To the extent that domestic market borrowing constitutes the source of funds for the Union Government's loan assistance to the State Governments, the Union Government merely functions as an intermediary in mobilising the resources through this means which the State Governments could have done themselves (on identical terms), and in transferring the resources to the States under its own terms and conditions.

30·18. Capital transfers in the form of plan assistance to the States by the Union Government in the Fourth Plan period has been entirely in the form of loans extending over a period of 15 years bearing 5 per cent interest rate and repayable in annual instalments, beginning from the first anniversary of the loan.

30·19. The Union Government's market borrowing in 1971–72, for instance, was at 5·25 per cent interest for a loan maturing at the end of 15 years. Therefore loans (made out of these borrowings) to the State Governments at 5 per cent interest for a similar period imply only a marginal subsidy to the States. But as against this, one has to note the disadvantage to the State implicit in the obligation of repayment of the loan in annual instalments to the Union Government, when the latter has to provide for the redemption of the corresponding amount in a lump sum only at the

end of the 15 year period. The burden involved in the repayment of the earlier loans by instalments in the current plan periods can be eliminated if the State Governments were to have direct recourse to market borrowing for the same funds and plan their loan portfolios and maturity patterns accordingly.

30·20. Moreover, the present system of annual releases of Union Government loan assistance to the States often creates problems for completion of major investment projects according to schedule. Investment projects (such as power Generation plants) often necessitate bunching of project expenditure on technical considerations within a specific interval of time, and inadequacy of funds to meet these needs at the given time interval results in dislocation and delays in project implementation. Because of steady rise in prices such delays in taking up projects for execution result in high costs involving greater strain on the resources of the State. To avoid such a situation, it is suggested that a National Development Bank on the lines of the IBRD is set up. Capital outlays which result in tangible productive assets such as on power or transport development or on the building up of industries may be financed by loans from the National Development Bank. Removal of the restrictions placed on the State Governments in the matter of internal borrowing also appears necessary as a means to enable the State Governments to take up and execute development projects promptly and expeditiously. If they have direct access to market borrowing, the State Governments would be in a position to ensure the timely flow of funds to the project in conformity with the time pattern of project expenditure. In this connection, the view that since the advances deposit ratio of commercial banks tends to be high in Tamil Nadu, there is to be restraint in the matter of recourse to internal borrowing by the State, needs reconsideartion. The fact is that with the progress of industrialisation the development of banking habit and the expansion of banking facilities, the advances deposit ratio is bound to go up. There is need for a more rational way of regulating States' borrowings. It would be appropriate to fix the limits with reference to the growth of industries and trade in the State and the size of its population. It has to be made clear that the plea for wider access to market borrowing by the State is only in lieu of loans from the Union Government out of its domestic market borrowing. The total investment outlay on the State Government Sector of the Plan is predetermined conjointly by the Union and State Governments.

30·21. In the same order of reasoning, it follows that there is great urgency to establish sound principles for capital transfers from the Union Government out of its capital resources other than those obtained through domestic market borrowing for financing the planned State Sector investment outlays. External assistance, Union Government's own savings, and deficit financing (to the extent undertaken), are the principal sources in this regard. Terms and conditions under which external finance is obtained are tending to be softer on the whole, with the growing importance of the International Development Association in the total volume of assistance. The other two items involve no cost in terms of servicing and repayments.

II. Small Savings

30·22. The Government of Tamil Nadu has envisaged a significant increase in the Union Government's collections through small savings in the State in the Fifth Plan period. It is expected that the State's share in the net collections (on the basis of the existing arrangement) would be Rs. 100 crores as against Rs. 38 crores in the Fourth Plan period. These expectations have been based on the recent trends in the collections.

30·23. However, there are good reasons to believe that the potential available for additional mobilisation of resources through the small savings media in the State is larger than what has been envisaged. With vigorous promotional efforts based on a more active and closer association of the State Government with the Union Government's Small Savings campaign, it would be possible to tap this potential in full.

30·24. The Union Government's collections of small savings have lagged behind in the Southern States in general. This is evident from an analysis of the data available for the year 1970-71. The

following table shows the position of the Southern States in comparison with some other States of the Union.

TABLE 30·3.

Small Savings : Net receipts 1970-71

(in Rupees)

State	*Per capita Income*	*Per capita total net receipts*	*Percentage of (3) to (2)*
(0)	(1)	(2)	(3)
Tamil Nadu ..	654	1·28	0·20
Andhra Pradesh	545	1·20	0·22
Kerala ..	590	0·87	0·15
Karnataka ..	532	2·02	0·38
Maharashtra ..	775	6·34	0·82
Gujarat ..	778	4·79	0·62
Punjab	995	8·21	0·83
West Bengal ..	524	3·76	0·72

(Source : Based on Table III (P. 348 Reserve Bank of India Bulletin March 1972.)

30·25. The greatest part of the mobilisation of small savings is through the postal savings media. Out of the net receipts under small savings in the country for the year 1970-71 aggregating to Rs. 188 crores, the postal savings media alone accounted for Rs. 172 crores. The residual amount of Rs. 16 crores representing net collections through the issue of National Savings Certificates is obtained from the relatively affluent and educated sections principally in the urban areas who are attracted to this media because of tax exemption facilities.

30·26. In Tamil Nadu, the district-wise picture of small savings collections is as under :

TABLE 30·4.

Small Savings receipts (Net) in Tamil Nadu.
1972-73.

(Rupees in Lakhs)

District	*Amount.*
(0)	(1)
1 Madras	572·01
2 Chingleput	24·33
3 North Arcot	55·73
4 South Arcot	54·23
5 Thanjavur	181·57
6 Tiruchirappalli	92·34
7 Madurai	95·00
8 Ramanathapuram	54·63
9 Tirunelveli	65·57
10 Kanyakumari	12·38
11 Dharmapuri	17·97
12 Salem	71·80
13 Coimbatore	124·08
14 The Nilgiris	30·23
Total ..	1451·87

(Source : National Small Savings Organisation, Madras.)

30·27. It is seen that the city—district of Madras (with a population of 21 lakhs)-alone accounts for Rs. 5·7 crores out of the total net collections of Rs. 14·5 crores in the State in 1972-73. The scope for substantial improvement in small savings collections in the rest of the State is quite evident.

30·28. Growth in small savings receipts achieved in recent years has been largely due to the campaign of the State Government towards popularising pay roll savings schemes under which an employee gives an authorization in favour of his employer for deductions of savings regularly from his salary/wages for being credited to Cumulative Time Deposit accounts in the Post Office. Over the ten-year period 1962-72, the number of pay rolls savings groups in the Madras region (principally Tamil Nadu, with Pondicherry being only of marginal importance) rose from 2,120 to 8,207, with a rise in membership from 78,939 to 4,72,319 and corresponding rise in collection from Rs. 4·8 lakhs to Rs. 353·9 lakhs. An accelerated drive to popularise this scheme among the employees in the government and the organised private sector establishments should result in substantial increase in collections under this account.

30·29. The mainstay of small savings scheme is however the Post Office Savings Bank, which combines the ordinary banking functions for the mass of small households with encouragement to practice

thrift and accumulate savings for earning interest income. In 1970-71, out of the total net receipts of Rs. 5·29 crores under Small Savings in Tamil Nadu, Post Office Savings Bank Deposits alone accounted for Rs. 3·07 crores. It has been noted that the pace of mobilisation of small savings in the State outside the metropolitan area has been rather slow. In the semi-urban and rural areas, the strategy for achieving higher rates of mobilisation under Small Savings has essentially to be one based on a determined effort towards inducing the households to maintain post office savings bank accounts.

30·30. The virtue of thrift and the habit of earning income through holding family savings in time deposits could be inculcated into the rural and semi-urban households by initiating them into the practice of operating the household budgets through Post Office Savings Bank accounts. Once the habit of crediting the family money earnings into these accounts and withdrawing sums only when an important need is developed, the households get familiarised with the advantages of building up the balances in their accounts. As these balances improve, transforming a portion of these balances into time deposits becomes a smooth process. Educating the households in the rural and semi-urban areas in the value and advantage of this habit would be most rewarding in terms of substantial enlargement of net collections through Post Office Savings Bank Accounts (apart from performing an important welfare function).

30·31. At present, the measures instituted by the Union Government as incentives for canvassing rural savings consist of offering a commission of 1 per cent to the Branch Post Masters on all deposits in the Post Office Time Deposit Accounts (3 years and 5 years) passing through their offices, and giving incentive awards to Branch Post Masters for increasing balances in the Post Office Savings Bank. These measures have only a limited effect in popularising the savings habit through banking among the ordinary households.

30·32. An earnest attempt in this direction can be made by the State Government at the district and lower levels, drawing upon the active co-operation of the voluntary agencies under its auspices such as Women's Organisations, student and youth associations and Planning Forums.

30·33. It is important to institutionalise the arrangements for active association of the State Government and its voluntary bodies with the Union Government Postal Agency towards achieving substantially higher rates of small savings mobilisation in the rural and semi-urban areas.

30·34. It must be observed in this context that under the existing arrangement, only two-thirds of the annual net collections made inside a State through the Small Savings media of the Union Government is made over to the States (in the form of repayable loans). These receipts, however, constitute the savings of mostly people belonging to the middle and low income groups, and a mechanism that would ensure deployment of these savings for the direct benefit of the people who offer the savings would be most rational. The State Governments (and their local bodies) are charged with projects and programmes of direct local impact ; and it is only logical that the entire net receipts of small savings in the different States should be made over to the concerned State Governments.

(III) Life Insurance Investible Funds

30·35. Loans are raised both by the State Government and the State enterprises such as the Water Board and the Electricity Board from the L.I.C. The Government of Tamil Nadu has visualised substantially enlarged support from the Life Insurance Corporation for the State Fifth Plan. Expectations of loans from the Life Insurance Corporation over the Fifth Plan period are of the order of Rs. 50 crores to the State Government and another Rs. 50 crores to State Enterprises as against Rs. 8 crores and Rs. 30 crores respectively in the Fourth Plan period. The corresponding amounts tentatively fixed for the Sixth Plan period are Rs. 100 crores and Rs. 80 crores respectively.

30·36. Greater reliance on the Life Insurance Corporation for augmenting the resources for State Plans acquires added significance if note is taken of the potential that exists in respect of widening the coverage of life insurance operations and corresponding growth in investible funds of the L.I.C.

30·37. Evidence at the all-India level suggests that the business of the Life Insurance Corporation has been relying for its expansion largely on the well-to-do sections of the society. During 1972-73 the proportion of large policies assuring sums of over Rs. 10,000 to the total new business witnessed a marked rise while the proportion of smaller policies, especially for sums of Rs. 3,000 and less registered a decline. In 1972-73 total new business, booked by the L.I.C. amounted to Rs. 2,075 crores against Rs. 1,640 crores in 1971-72. Of this increase of Rs. 435 crores, policies assuring for sums of Rs. 10,000 and above accounted for Rs. 256 crores, or 60 per cent of the increase. On the other hand, policies assuring for sums in range of Rs. 3,001—5,000 accounted for an increase of only Rs. 51 crores. The increase in business of policies for sums less than Rs. 3,000 was only a nominal figure of Rs. 2·5 crores.

30·38. It is apparent that a large part of the middle and low income families are not being reached by the existing operations of the L.I.C., nor is there evidence of the spread of the facilities to the rural affluent. The growth in business dealing with the well-to-do sections appears to be predominently an urban phenomenon to no small extent due to the tax concessions afforded to policy holders, which are of considerable benefit to those with non-agricultural sources of income.

30·39. The spread of Life Insurance facilities to the rural areas and to the low-income groups in urban and semi-urban areas would not only fulfil an important social purpose of extending insurance protection to those sections of population that need it most but would serve also as an effective instrument of additional resources mobilisation, especially in the rural areas. Active association of the State Government (and the voluntary agencies under its auspices) with the Life Insurance Corporation would ensure a rapid expansion of insurance facilities and a corresponding increase in the mobilisation of household savings. Once again, it is vital that arrangements for effective co-operation between the L.I.C. and the State Government should be institutionalised.

30·40. To the extent the investible funds of the L.I.C. are augmented by the additional life insurance business in the State, there will be a corresponding increase in the possibilities for additional support of the L.I.C. in the matter of financing the development schemes of the State Government and State enterprises, out of the resources mobilised within the State itself.

(IV) Borrowing by State Autonomous Bodies

30·41. As in the case of the State Government, the State Enterprises and the Madras Metropolitan Development Authority will also have to rely increasingly on borrowing for financing their development schemes in the Perspective Plan period. Open market borrowing of State Enterprises in the Fifth Plan period is expected to be of the order of Rs. 200 crores ; and direct borrowing from the banking system (IDBI, Commercial Banks, etc.), another Rs. 100 crores. These will have to be raised to Rs. 500 crores and Rs. 200 crores respectively in the Sixth Plan.

30·42. The breakdown of the proposed aggregate market borrowings of Rs. 200 crores by the different autonomous bodies in the first five years of the Perspective Plan is as under :

(Rupees in crores)

(0)	(1)
Tamil Nadu Electricity Board	75
Tamil Nadu Industries Development Corporation	25
Tamil Nadu Water-Supply and Drainage Board	25
State Industries Promotion Corporation	25
Madras Metropolitan Development Authority	50
Total ..	**200**

30·43 Considering the nature and the cost of the schemes to be undertaken by these State agencies in the next five years, the loan targets indicated above would have to be regarded as the minimum limit. Moreover, with the nationalisation of banking, it is only reasonable to expect that the banking system should support the investment projects of the State Government and its autonomous bodies intended for collective benefit in the manner it is

currently supporting the private sector. Even from the purely commercial point of view there is no reason why these facilities should not be extended to the State Enterprises as long as they satsify the terms and conditions for borrowing laid down by the banking system. Certainly it is only reasonable that the banks apply approriate commercial and economic criteria in evaluating projects before a loan is sanctioned. But the point is that the facilities of Bank financing now available to undertakings in the private sector should be available on the same terms and conditions to the autonomous bodies of the Government engaged in providing basic inputs such as power. The greatest potential for additional resource mobilisation for financing the public sector projects at the State level as well as at the district and local bodies levels inside the State lies in a logical pursuit of his argument.

30·44 Financial institutions and the commercial banks, in particular, have the most crucial role to play in the financing of public sector investment at the various levels of the State economy, and the draft on financial institutions by the public sector is essentially an indirect draft on the savings of the household sector. Therefore, the extent of augmentation of resources for financing the public sector projects of the State largely depends upon the extent to which household savings are attracted into the commercial banking system. Funds mobilised by the Commercial banks can be canalised and made to flow in to the public sector projects through the agency of appropriate institutions designed for the purpose.

30·45 District Planning is expected to play a pivotal role in the Tamil Nadu State Plan and the public sector component of the district plans comprising of investment in economic and social infrastructure and in remunerative enterprises of local bodies (municipalities, panchayat unions, and panchayats) would be spelt out in detail. Therefore, a mechanism for financing the public sector component of the district plan, to the extent possible, out of the resources that could be mobilised in the district is of great importance. And commercial banking could be the king-pin in this mechanism.

30·46 That there is considerable potential for mobilisation of household savings in rural and semi-urban areas which have in recent years experienced and benefited by rapid agricultural programmes is a widely admitted fact. Empirical studies on the pattern of household income, consumption expenditure, and preference of the people for investing savings in physical assets would help in making a reasonably accurate estimate of the savings now available for mobilisations and the extent to which these savings would increase as a function of the expected growth in incomes. The point to stress at this stage is that the existing instruments of savings mobilisation are not effective enough in attracting the rural and semi-urban savings for financing public sector investment. Nor is there an adequate framework in the form of appropriate financial institutions for financing public sector investment at the district level.

30·47 When private borrowers who are outside the banking system offer rates of interest far in excess of the interest rates on deposits with the bank, it is only natural that individuals or groups in possession of loanable funds prefer to lend to such private borrowers instead of depositing the same sums with the banks. This explains why experiments to attract individual subscriptions to rural debentures floated by the land mortgage banks have met with little success. Obviously, public sector financing cannot be undertaken with funds borrowed at rates of interest offered by individuals who have no access to the banking system. The solution lies in the extension of commercial banking facilities in the rural areas in a manner that would meet the needs of the borrowers who are compelled to borrow from non-banking sources. To the extent these needs are met, the openings for private loanable funds to earn larger interest income outside the banking system dry up and the funds correspondingly flow into the commercial banks. With the accretion of desposits of the commercial banks, an appropriate portion of the additional deposits could be made available towards public sector financing at the State and district levels, on terms compatible with the borrowing rates of the State Government and its autonomous bodies.

30.48 In this context it is important to note that the commercial banks are able to invest around 30 per cent of their deposits in Government securities that yield just around 6 per cent interest and still make reasonable profits although the rates of interest to be paid to the depositors might average to the same figure. This is possible because the resdiual funds are lent for business purpose at rates of interest in the range of 10 to 12 per cent. An identical approach has to be evolved towards additional resource mobilisation in the rural and semi-urban areas for financing public sector investment at the State and District levels. Success in this regard depends upon the pace at which the commercial banks expand their operations in the rural and semi-urban areas.

(V) Rural Savings and Rural Money Lenders

30.49 Although the nationalised scheduled banks have made notable progress over the past three years in opening branches in the rural and semi-urban areas, the pace of growth in deposit mobilisation by the commercial banks in these areas of Tamil Nadu appears to be modest.

This is reflected in Table 30-5.

TABLE 30—5

Distribution of Deposits of Scheduled Commercial Banks, According to Population Groups

(As at last Friday of June, 1972) (Rupees in Lakhs.)

State	*Rural*	*Semi-Urba*	*Urban*	*Metropolitan*	*Total*	Population (in millions)		
						Rural	*Urban*	*Total*
Tamil Nadu	2014	10321	12254	20603	45192	28.7	12.5	41.2
Andhra Pradesh ..	1984	6768	7913	10796	17461	35.0	8.4	43.4
Karnataka ..	4792	8825	9207	13792	36616	22.1	7.1	29.2
Kerala ..	3114	9572	9572	..	22213	17.8	3.5	21.3
Punjab ..	7230	13949	15052	..	36231	10.3	3.2	18.5
Bihar ..	1090	25111	11624	..	37825	50.7	4.6	56.3

(Source: Supplement on Banking Statistics, RBI Bulletin, April 1973.)

30.50 The low level of deposit mobilisation in the rural and semi-urban areas of Tamil Nadu is apparent when one notes the performance in this regard in States with similar sizable agricultural activities such as Punjab and Gujarat. The principal reason for this phenomenon in the State is the existence of indigenous agencies such as rural private money lenders, chit funds and nidhis that account for sizable borrowing and lending operations outside the banking system in the rural and semi-urban areas. Under these conditions, successful spread of commercial banking depends upon the adoption of innovations in banking operations with a view to providing more economically and efficiently banking services to the people in the rural and semi-urban areas which are now being provided by the indigenous agencies. The net-work of branches of the nationalised banks in the State cannot be expected to adopt such innovations on their own, since they function according to a uniform pattern established at the national level. If appropriate innovations suited to the local needs are to be introduced, it is important that the State Government is actively associated with the banking policies in the State. The establishment of a Banking division in the finance department of State Government (in the manner the Union Government Ministry of Finance has done since the nationalisation of the major scheduled banks) merits serious consideration in this regard. Some of the non-nationalised scheduled banks inside the State such as the Madurai Bank have combined the chit fund operations wih their ordinary banking functions. An appraisal has to be made of their experience in strengthening the banking resources, and a strategy should be evolved for an accelerated

take over of the services currently rendered by the indigenous agencies by the commercial banking system in the State.

30·51 Setting up State level financial institutions specifically towards financing public sector remunerative enterprises in the Municipalities and Panchayat Union areas inside the State would fill a gap that exists at present in this domain. The banking system at present extends financial assistance to private individuals in building cinema houses, market centres, etc., in the urban and semi-urban areas but the banks are reluctant to extend similar facilities to local bodies for undertaking remunerative enterprises that are essentially of public benefit. State level autotnomous financial institutions could raise the resources for the purpose (and allocate to the local bodies in the frame work of district plans through market loans supported by State guarantee, if necessary) and direct loans from commercial banks.

30·52 The approach outlined in the tentative estimate of resources for the State sector of the Perspective Plan of Tamil Nadu commends itself, with its account on enlarged flow of resources through market borrowing and direct support from the Life Insurance Corporation and the Banking system. The realisation of the envisaged support depends however upon the augmentation of the resources of the L.I.C. and the banking system; and active association of the State Government in the activities of these institutions inside the State is a vital pre-condition for the enlargement of their resources.

(VI) New Agencies for Resources Mobilisation

30·53 The suggestions made so far relate to means by which the borrowing facilities for the State and State enterprises can be improved. However, financial mobilisation in the broader sense of the term would cover all measures which aim at mopping up the potential savings of the economy for purposes of investment both in the public and private sectors. Institutional changes which are mentioned below would contribute not only to the encouragement and effective mobilisation of savings, but also to the utilisation of such savings for investment within the State.

(a) Setting up Regional Boards of the L.I.C.

30·54 Tamil Nadu accounts for roughly about 10 per cent of the total new business of the Life Insurance Corporation each year. It is reckonede that the net annual premium income after allowing for payments against maturing policies may be as much as Rs. 20 crores annually, or even more, in respect of business in force relating to policy holders in Tamil Nadu alone. But not all this amount is available for investment puproses in the State. It is therefore worthwhile to consider the possibilities of increased use of the resources collected by the L.I.C. in Tamil Nadu area for financing plan schemes relating to housing, water supply and drainage, industrial and power development, etc.

30·55 The setting up of a Regional Board of the L.I.C. in the State will be of help in this direction. A Regional Board would be able to assess corectly and understand clearly the needs of the different classes of borrowers and their ability to make good use of the funds. It would also be possible for the Board to deal promptly with applications for financial assistance. To begin with, the Regional Boards may be given powers to take decisions in respect of proposals involving an outlay of Rs. 1 crore.

(b) Establishment of a State Investment Trust

30·56 The Unit Trust has become quite popular in recent years. In 1972-73 the Unit Trust of India established a new record in respect of sales of units of a value of a little over Rs. 23 crores. This experiment at encouraging and promoting the investment habit of the people especially of the middle and lower income group has demonstrated clearly that with a higher level of incomes and a better understanding of the advantage of investment in industrial securities, there will be need for promoting more Unit Trusts in different parts of the country. At present there is only one Unit Trust for the whole country, with headquarters at Bombay. But it is not possible for a single organisation to bring about the proper disposition of the funds at its disposal in a manner which would ensure best utilisation of funds region-wise. The value of sales of units in Tami Nadu is estimated at about Rs. 4 to 5 crores annually but the

sales will be much higher if a State Unit Trust is formed. The main advantage of such an agency in the State is that it will greatly assist in mobilising resources from new investors and promote the savings and investment habit among the rural classes as well. It would also contribute to the establishment of a proper relationship between savings raised in the State and the utilisation of hese resources in the State.

(c) District Rural Development Corporations

30·57. Mention has been made earlier about the need for setting up District Rural Development Corporations *. The major purpose of these Corporations is to consider the specific development needs of each district, assess its potentialities and concentrate the programmes of development on particular spheres of economic activity which would contribute to the rapid economic development of the district. In order to enable the District Rural Development Corporations to function satisfactorily, they are to be provided with adequate financial resources. Apart from the contribution to the share capital which the State Government would make these Corporations are to be invested with powers to raise resources by non-tax measures including borrowing. Since the activities of these Corporations are localised, it would be possible for them to enlist the co-operation and support of the people in the rural areas in the development effort of the State. For this reason the District Rural Development Corporations may be expected to function also as efficient agencies for mobilising rural savings.

(d) Special Security Schemes

30.58 A Pension Benefit Scheme has recently been formulated.** The scheme enables every citizen to earn a pension in his old-age by making a small contribution every month during his working years. While it provides security to those who do not have such a cover now, the scheme also provides a means of mopping up savings in the low income sector. It promotes thrift as the scheme gains popularity, it will be possible to mobilise for investment purposes, an increasing amount of resources, that might otherwise have been dessipated.

Overall estimate of receipts under capitl accounts

30·59. Projections of likely receipts under the various items of capital accounts show that the amount that would be available from these sources will be approximately Rs. 710 crores in the Fifth Plan and Rs. 1,592 crores in the Sixth Plan period. To these have to be added the resources of the State Electricity Board amounting to Rs. 30 crores and Rs. 12 crores respectively. This would make the totals Rs. 740 crores in 1974-79 and Rs. 1,604 crores in 1979-84. Since the expected outlay on the Perspective Plan in the State sector is Rs. 4,099 crores (Rs.1,365 crores in the Fifth Plan and Rs.2,734 crores in the Sixth Plan) there is an uncovered gap of Rs. 625 crores and Rs. 1130 crores respectively in the Fifth and Sixth Plans. These gaps will have to be closed to the extent of Rs. 450 crores and Rs. 850 crores by the Central Government assistance and Rs. 175 crores and Rs. 280 crores by means of additional resources mobilisation.

B. Requirements of Centrat assistance

30·60. The Central assistance envisaged for the Fifth and Sixth Five-Year Plans would work out to 33 per cent and 31 per ccnt of the plan outlay in the State sector. It may be pointed out in this connection that in the previous plans central assistance formed a large perentage but it has tended to decline steadily from plan to plan, as shown below :

TABLE 30-6.

TREND IN CENTRAL ASSISTANCE—FIRST TO FOURTH PLAN.

(Rupees in crores)

Plan	*Size of Plan Actual expenditure*	*Central assistance*	*Percentage of (2) to (1)*
(0)	(1)	(2)	(3)
First Plan ..	80·39	36·00	44·8
Second Plan ..	187·76	95·00	50·6
Third Plan ..	347·15	186·80	53·8
Annual Plans 1966-69	266·28	119·40	44·8
Fourth Plan ..	552·00	197·00	35.7

* Chapter 8—District Planning.

** Chief Minister's speech introducing the Budget for 1974-75 at the Legislative Assembly, March 4, 1974.

30·61 Also as a share of total Central assistance to all the States, the amount received by Tamil Nadu has progressively declined from 10·8 per cent in the First Plan to 9·0 per cent in the Second Plan, 7·4 per cent in the Third Plan, 6·8 per cent in the three Annual Plans and 4·6 per cent in the Fourth Plan. Over the years 1951-69 the per capita Central assistance for All India was Rs. 141. But Tamil Nadu received only Rs. 128. For the Fourth Plan period as a whole the Central assistance per capita for the country is Rs. 63 whereas for Tamil Nadu it works out to barely Rs. 50.

30·62 In determining Central assistance for the State's plans the main considerations are per capita income, population, tax effort of the State and special problems that may arise in the State. Application of this criteria, particularly average income per head, has worked to the disadvantage of Tamil Nadu resulting in a reduction of assistance from a promised figure of Rs. 250 crores to Rs. 197 crores in the Fourth Plan. The reason for this fall is that according to the State income data, per capita income of the State happens to be slightly above the national average. It should however be observed that given the statistical limitations it is difficult to estimate per capita income accurately. In fact, the State income series as revised recently show a per capita income figure which is slightly below the national average.* But apart from the accuracy of the figure pertaining to the State and question of its comparability with corresponding data for the other States, the proper method of determining this issue would be to take as the standard of reference the per capita income of the State where it is the highest and to fix the grant to the states below this level in proportion to their deviation from this maximum.

30.63. Economic backwardness is reflected also in other factors in addition to the average income per head of the population. Tamil Nadu faces special problem because of its poor endowment of natural resources. The extent of cultivable land per capita in the State is 0·22 hectares compared with the All India average of 0·33 hectares. The incidence of un-employment, particularly among the educated class, is quite high in the State. It is also worth noting that the per capita income figure does not give any idea of the proportion of people in the lower income brackets. It has been estimsted that nearly 50 per cent of the State's urban population and 56 per cent of the rural population are below poverty line.** This compares unfavourably with the estimate that about 40 per cent are below poverty line on an All India basis.

30·64. Apart from these factors, if tax effort is accepted as a point deserving special consideration in the matter of Central Assistance, then Tamil Nadu has admittedly a good claim for liberal aid from the Union Government. Over the past few plans, the State's performance in resources mobilisation through taxation has on the whole been better than that of most other States. Thus in the Fourth Plan period, out of the total resource mobilisation of about Rs. 1,060 crores by all the States, Tamil Nadu alone was responsible for nearlyRs.159 crores which works out to roughly 15 per cent. However, the grant of Central assistance to the State does not seem to have been based on a recognition of this fact ; rather, it has turned out to be in inverse proportion to the State's tax effort making it appear that the sharing of Central resources through gap grants and special accommodation is weighted in favour of States which perform less.

30·65. Mention should also be made of a particular development programme of the State—Metropolitan Development Scheme—the value and significance of which extend beyond its territorial limits. Madras in a sense,is the regional capital of the South into which the unemployed and underemployed from the neighbouring States of Kerala, Karnataka and Andhra, flock. The cost of maintaining the city services fall on the State Government. A twenty-year development plan drawn up for Madras

* State income date (revised series) Economic Appraisal of Tamil Nadu, 1973–Part II, pages 8 and 9 shows it to be Rs. 586 (Preliminary) for 1970-71 (Current prices). The per capita national income for the year 1969-70 (provisioual is Rs. 589

** The Union Planning Commission has defined the poverty line in terms of the minimum level of private consumption at about Rs. 20 per capita per month at 1960–61 prices for rural population and Rs. 25 for urban population. In estimating the position at present, an allowance has to be made for the rise in prices in the last ten years or so. "Poverty line" defined here is to be distinguished from nutritional poverty line' mentioned in Chapter VI.

city is estimated to involve a cost of Rs.938 crores. It is reasonsble to expect that Central assistance would be forthcoming towards meeting this cost along the same lines as in the case of cities like Calcutta, Bombay and Delhi.

30·66. Taking all these factors into account the estimated Central assistance of Rs. 450 crores in the Fifth Plan and Rs. 850 crores in the Sixth Plan appears quite realistic. On this assumption the resources gap in the two plans would reduce to Rs. 175 crores and Rs. 280 crores respectively or Rs. 455 crores for the entire Perspective Plan period. This amount has to be found by means of additional mobilisation.

C. THE SCOPE FOR ADDITIONAL MOBILISATION

30·67. It has been assumed in the past that to the extent there is a gap between current revenue receipts and expenditure it will be closed by means of grants under the Finance Commission awards. However, present indications are that this sort of assistance cannot be taken for granted. The Fourth Finance Commission of 1965 recommended a grant of Rs. 34·20 crores to cover non-plan revenue deficit for a period of five years from 1966-67 to 1970-71 and the Fifth Finance Commission .recommended an ad hoc grant of Rs. 22·82 crores for the five years covered by the Fourth Five Year Plan (1969-74).[1] But no such grant has been recommended by the Sixth Finance Commission mainly on the ground that the revenue receipts of the Government over the Fifth Plan period are likely to be more than what is anticipated.

30·68 This underlines the need for increased effort towards additional mobilisation of resources. In view of the nature of the tax resources allotted to the States under the Constitution—which are on the whole less elastic than the Union Government taxes-it will not be easy to extract more revenue by taxation. The prospects of any substantial increase in revenue receipts in the Perspective Plan period do not seem to be encouraging. The resources of the State Electricity Board are likely to deteriorate in view " of the high burden of interest on institutional loans which had to be resorted to for rural electrification and the increasing costs of thermal generation—both internally generated power and power purchased from Neyveli" . The decision to close arrack shops in 1974–75 in addition to the toddy shops which have already been closed will have a serious repercusssion on the resources position of the State$. The loss of revenue arising from the closure of arrack shops in 1974-75 has however not been considered by the Sixth Finance Commission in their computation of revenue receipts of the State for purchase of award of non-plan grants*. As against these trends, the recommendation of the Sixth Finance Commission to raise the divisible share of income-tax collection from 75 per cent to 80 per cent and to include the auxiliary excise duties also in the divisible pool of Union Excise duties with effect from 1976-77 will have only a marginal effect and will not substantially improve the resources position of the State.

30·69 On the basis of the past trends and making use of the estimates of the State Government it would be possible to give a general picture of the resources position in the Fifth Plan period ; however, as regards the latter five years of the Perspective Plan period the projection that can be made at this stage has necessarily to be a highly tentative one.

30.70 The State's own tax and non-tax revenue projections have been based on the trends in the recent past and the awareness that the limits have been reached in respect of rates of indirect taxation in the State. The reintroduction of total prohibition in 1974 would mean the disppearance of the largest single source of additional mobilisation since 1971-72 and it may not be possible to compensate this loss by enhancing the rates of other indirect taxes of the State.

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1 Page 203 of Budget Memorandum 1972–73, Government of Tamil Nadu.

@ Draft Fifth Five Year Plan, Tamil Nadu Memorandum to the Union Planning Commission, September, 1973 p. 14.

* Report of the Sixth Finance Commission, Government of India 1973, para 18, Chapter XV p. 71–72.

$ The receipts under tate Excise Duties are expected to decline from Rs. 45·00 crores in 1973–74 to Rs. 17·89 crores in 1974–75. Chief Minister's speech introducing the Budget for 1974–75 at the State Legislative Assembly on 4th March 1974.

POLICY INSTRUMENTS FOR RESOURCE MOBILISATION

30.71. Considering the limited scope for adding to the existing number of State taxes or even increasing further the present rates, reliance has perforce to be placed largely on regularising and streamlining the existing tax system by simplification of rules and procedure and by closing the loopholes. But in this attempt care has to be taken to restructure the tax system with a view to (*a*) reducing the effect of taxes on the prices of commodities consumed by the weaker sections of the society and (b) increasing the ability of the people to save more and invest more in productive enterprises. Equally important is the need for controlling and effectively tackling the growing problem of unaccounted money.

(1) Widening the coverage of Income Tax Administration

30·72. In the interests of additional resource mobilisation through tax effort that would benefit the Union and the State Governments, as well as contain the menace of black-money, there is the greatest urgency for consultation between the Union and State Governments on widening the coverage of the income-tax administration in order to reach the entire taxable income earning population.

30·73 Available evidence indicates that the Union Government Direct Taxes Administration has not been successful in spreading the tax-net sufficiently wide to cover effectively and fully the taxable middle and low incomes in the fields of trade, transport and professions. In many categories of income, the actual number of individual units assessed form only a small proportion of the potential number that should have been assessed for individual income taxation.

30·74. It is estimated that in Tamil Nadu nearly three-quarters of the total tax payable by non-corporate assessees (amounting to Rs. 269 crores) in 1966-67 was accounted for by the assessees with annual income above Rs. 25,000 constituting less than 10 per cent of the total assessments. In the case of companies and non-corporate tax payers with income above Rs. 25,000 income-tax assessments are made adequately and expeditiously. But both assessment and collection are unsatisfactory in the case of individuals with incomes below Rs. 25,000. While the costs of collection in respect of these assessees in relation to revenue is higher than in the case of the higher income class, the fact remains that a substantial part of the revenue is lost to the Government. Since a number of people whose incomes are liable to income-tax are also paying taxes to the Government in the form of sales-tax, it is worth considering whether the State Government and Union Government could have a satisfactory working arrangement with a view to maximise the resources mobilisation under this head. In order to get the fullest cooperation of the States in this effort incentives may be given by proportionate transfer of such additional mobilisation to the States.

(2) Rationalisation of the Commercial Taxes

30·75. The increases in indirect taxation principally in the form of Union Excise and States' sales taxes effected over the past two decades have brought the economy to a stage where there is little scope for further enhancement in these tax rates ; and the policy to be purused with vigour henceforth of ensuring adequate supplies of essential consumer goods for the weaker sections of the population at reasonable prices would inhibit additional taxation on these items of mass consumption. Stiffer rates of taxes on luxury and semi-luxury items would no doubt conform to the concept of social justice, but the additions to tax receipts on this account in absolute terms would be only marginal.

30·76. However, it is felt that (i) rationalisation of commercial tax policy and (ii) improvements in commercial taxes administration would result in some augmentation of net receipts even under existing rates. There is considerable scope for rationalisation and simplification of commercial taxes. In this connection, the State Government have taken some important decisions on the basis of the recommendations of the Special Officer appointed for rationalisation of procedures relating

to commercial taxes. Simplification of the procedure of taxation may result in some increase in yield but as a proportion of the total revenue of the State, the addition will not be significant. Nevertheless, simplification is bound to result in lowering the unit cost of collection. The collection from General Sales Tax shows an increase of about 15 per cent a year since 1964–65 and at present (1973–74) accounts for over 50 per cent of the tax revenue of the State. Simplification in respect of sales tax levy and administration would involve mainly reducing the existing number of rates and the transferring of a good number of commodities from multipoint tax to single point tax. A 3·5 per cent rate of tax levied at two or three stages amounts to an average rate of 7 to 10½ per cent. Keeping in mind the need for introducing a progressive element in this form of indirect taxation the Government have decided to add 59 more commodities under the single point system of taxation. By and large, the single point rate is kept below the level of 7 per cent but as regards certain luxury items the rates would vary in the range of 10,15,25 and 30 per cent. In line with this principle, the sales tax hitherto levied on fire wood, cattle feed and glass bangles under the multipoint system has been completely removed. Also, in order to benefit small traders the exemption limit has been raised from Rs. 25,000 to Rs. 50,000 To offset the expected loss of about Rs. 2 crores from this change and as a means of additional mobilisation of resources, the surcharge of 5 per cent levied on traders having a turn over of above Rs. 10 lakhs is raised to 10 per cent. It is estimated that apart from simplifying the system this improvement would also result in some addition to yield from this source.

30·77. Another indirect tax, the Entertainment tax, has shown an impressive increase in yield in the last few years. The collections from this tax increased from Rs. 1·79 crores to Rs. 10·87 crores or by about six times in the period between 1959-60 and 1972-73. However, there is an element of needless complexity in administration and collection. The Entertainment Tax is composed of three types—the taxes levied by the State Government, the surcharge levied by Municipalities and Panchayat Unions and another surcharge levied by the Government. It is now decided to integrate these three taxes and bring them under a single enactment. This simplification of procedure would not add to the tax burden or to yield but undoubtedly it would contribute to the streamlining of the general system of indirect taxation in the State.

30·78. These decisions taken by the Government in the direction of simplifying taxation procedure meet a long-felt need. But a continuous watch is to be maintained over the functioning of the system. As industries develop and trade and commerce expand, the yield from commercial taxes would go up and with that the strain on the tax machinery would also increase. It is an undisputed fact that commercial taxes are passed on with enhanced harshness to the consumer. In order to safeguard the interests of the consumers belonging to the lower income strata who generally are hit hard by indirect taxes and to maintain a more equitable distribution of the burden of State taxes, it would be necessary to review the operation of the tax machinery periodically. Such vigilance would also help in closing the loopholes that may arise and in increasing the efficiency of tax collection. This in turn would contribute to an augmentation of revenue resources.

(3) Motor Vehicles Taxation

30·79. The classes of vehicles which now come under the purview of this tax are buses or stage carriages, taxis and auto-rickshaws and public carriers or lorries and contract carriages. The rates of tax on motor vehicles are already very high in Tamil Nadu and there is scope for enhancement only in the case of public carriers. Here again an attempt is made by the Government to simplify the procedure of taxation. At present there are two types of taxes levied on Motor Vehicles. Under the Motor Vehicles Taxation Act, 1931 a tax is levied on the vehicles on the basis of seated and standing accommodation and permitted daily milage. Besides, under the Tamil Nadu Motor Vehicles (Taxation of Passengers and Goods) Act, 1952, a tax is levied on stage and public carriages and goods vehicles on the basis of the collection of fares and freight. A right decision has now been taken by the Government to consolidate these two taxes and rationalise the tax structure.

30·80. Projections in respect of receipts through Motor Vehicles Taxation, would depend in the immediate context on (i) oil policy, (ii) motor vehicles production and use, and (iii) forecasts of the rates of levy on the transport services. Competition between Rail and Road traffic would also have a bearing on this issue.

(4) Agricultural Taxation

30·81. Preliminary studies on the recommendations of the Committee on Taxation of Agricultural Incomes have shown that there are no specific advantages in replacing the existing system of taxation of agricultural incomes in the State by the proposed Agricultural Holdings Tax. However it is an accepted fact that although there has been an appreciable growth of agricultural incomes, the contribution of the primary sector to total savings has been quite meagre and certainly not commens rate with the rise in incomes. Apart from this, the system of land taxation is outmoded and rigid, and has failed to take advantage of the significant changes that have taken place in recent years in land utilisation and methods of cultivation. There can be no dispute about the fact that the impact of modern scientific agronomic practices which have contributed to the " green revolution " have rendered the old settlement classification of soils according to " taram " rather meaningless.

30·82. It would however be possible to mobilise and transfer to the State Exchequer a part of the additional income generated in the agricultural sector and introduce an element of progression in agricultural taxation. This can be achieved through measures like cesses on commercial crops, betterment levies, upward revision and regularisation of water rates, etc.

30.83 Recently the Government of Tamil Nadu waived the collection of assessment on dry and manavari lands and the component of dry rates in the wet assessment up to five acres and less of wet lands irrespective of the size of the total holdings. The consolidated wet assesment is based on a notional dry assessment and a charge for water. There is however, a multiplicity of water rates, the rates varying considerably according to the irrigation projects, whether old or new, major or minor, the benefit to the ryots their capacity to pay, etc. The Board of Revenue of the Government of Tamil Nadu in its proposals (February 1974) for streamlining the system of water rates and water rate penalties, suggests the abolition of the present classification of dry and wet land and the charging of a basic land tax for all lands. Water rate will be in addition to the basic land tax and will be levied on the basis of the existing classification of irrigation sources and the nature of the crop. The Board feels that the ultimate objective should be to ensure that in respect of hoth the old and the new projects, the cost of maintenance for all the projects put together should be covered and there should be a reasonable return at least 4 to 5 per cent, on the aggregate capital invested. The value of the proposals of the Board consists in the fact that they indicate the lines on which the present system of water rates is to be reformed and simplified. However in making any innovations in this regard, as much consideration is to be given to administrative simplicity as to additional revenue yield. The latter is important for the simple reason that the present arrangements with regard to taxation of agricultural incomes are quite complicated and do not contain any built-in provision for securing larger collections from this source when its paying capacity of it increases.

(5) Urban Land Development as a source of revenue

30.84 Urban Land Taxation is a promissing field for resource mobilisation. With rapid industrial development of the State and increasing urbanisation, land values in and around cities and towns are going up fast. A suitable means of taxation by which a part of the unearned increment in property values may be mopped up, would not only conform to the principle of equity but would also be a productive source of revenue to the State.

30.85 Apart from the direct means of levying a tax on urban land there is also the possibility of revenue collection from this source in an indirect way. Growth of population and the movement of people from villages to urban areas have resulted in a great demand for houses in the cities, towns and their neighbourhood. It is estimated that

about one lakh acres will have to be made available during the Perspective Plan period for residential use alone. This has to be undertaken by the State and the required area of lands for the 30 major and 25 minor towns of the State can be acquired through the agency of the local bodies. After the lands are acquired by the Government, the development works can be entrusted to the respective local bodies or agencies like the State Housing Board, Metropolitan Authority, etc. The initial outlay on land acquisition and development has to be arranged through institutional agencies like the HUDCO, L.I.C., commercial banks and co-operatives. Once the land is developed and facilities are provided in the form of roads, drainage, water supply, lighting, etc., the developed plots can be sold with a margin of profit. A rough estimate shows that the cost of developing a lakh of acres of land in the urban areas of the State, i.e., value of land together with cost of development would amount to Rs. 390 crores and the total value at which the developed lands (deducting the area covered by roads, parks, etc.) can be sold will be about Rs. 448 crores leaving a margin of Rs. 58 crores. This would appear as a relatively small amount apart from its being in the nature of once for all capital receipts. But in reality, even from the narrow financial point of view this is an attractive proposition in so far as the initial investment financed out of loans would function as a revolving fund which can be made use of for further extending the scheme. Also, investment in land development by the State would be a continuing source of income to the Government since it provides scope for urban land taxation at progressive rates. The undertaking of this work by the State is in agreement with the socialist principle. It fits in well with schemes of planned spatial development, ensures proper distribution of population, helps to relieve congestion and overcrowding in cities and towns and facilitates balanced regional development.

(6) Revenue of Local Bodies

30.86 On a review of the existing pattern of the finaces of Local Bodies it is felt that augmenting the resources of the Panchatpats and Unions is very necessary. The duties and functions of these Local Bodies are increasing rapidly involving a corresponding increase in the strain on their resources. This is particularly marked in the case of elementary education and minor irrigation which are entrusted to Panchayat Unions. The strategy of development planning envisaged now lays considerable emphasis on district planning, and planning at the grass-root level. The translation of this principle into practice would necessarily involve greater responsibility on the part of Local Bodies, which in turn necessitates strengthening of their resources position. It is also worth observing that if the financial resources at the disposal of the Local Bodies are augmented, to that extent it would relieve the pressure on the State Government to transfer resources to them for non-plan requirements and thus indirectly make available larger resources for the State Plans.

30.87 The recommendations made by the Board of Revenue concerning regularisation of water rates and the transfer of additional resources to the Local Bodies are relevant in this connection and are to be considered for implementation.

30.88 Specifically, the Board of Revenue recommends :—

(*a*) the entire collection of basic land tax and 60 per cent of the water rate collections (based on the revised scheme) are to be assigned to the Panchayat Unions ;

(*b*) that Panchayats may be enabled to impose a land tax on the value of agricultural lands and Government may give a matching grant on a graded scale.

30.89 These recommendations are worthy of implementation and would add substantially to the resources now available to the local bodies.

A SUMMARY STATEMENT OF THE RESOURCES POSITION IN THE PERSPECTIVE PLAN PERIOD

30·90 The various proposals made in the preceding pages are nothing more than broad hints indicating the scope for adding to the revenue resources of the State. It is not possible to make any estimate, even of a tentative nature, of the amounts that can be realised by their implementation. Nor is the list exhaustive, for, the potentialities of tax receipts depend on the patern of development of the economy, the distribution of

income and the level of efficiency of the taxation machinery, the attitude and civic consciousness of the people, the economic policy of the Government and other similar factors. Moreover, the extent to which some of the suggestions can be put into practice depends on political and economic circumstances which cannot be visualised in advance. Possibly in the context of new developments such as rapid growth of new industries, or the decay of old ones or the higher rates of economic progress which may be attained in particular districts or regions of the State, it would be possible or necessary to introduce new taxes or devise new methods of mobilising resources. In view of these uncertainties and limitations, it can only be said that the targets fixed in regard to the collection of additional resources through taxation are realisable, and that with some efforts it would be possible to close the residuary resources gap in the Plan.

30.91 A summary statement of the resources position in the Perspective Plan period covering the Fifth and Sixth Five-Year Plans is presented in the following table. For purposes of comparison corresponding figures for the Fourth Plan are also given.

TABLE 30-7.

Resources projections for the Perspective Plan—State Sector

(Rupees in Crores)

Sources	*Fourth Plan 1969-74*	*Fifth Plan 1974-79*	*Sixth Plan 1979-84*	*Perspective Plan 1974-84*
(0)	(1)	(2)	(3)	(4)
Balance from current revenue.	—52	..	..	..
Resources of the State Electricity Board.	78	30	12	42
Open market loans (net) by the State Government.	60	150	375	525
Small Savings	38	100	260	360
State Provident Fund ..	22	50	61	111
Balance on capital Account.	—95	..	..	..
Negotiated loans by the State Government—				
(*a*) From L.I.C. ..	8	50	100	150
(*b*) From Reserve Bank of India.	6	10	16	26
Loans by State Enterprises—				
(*a*) From L.I.C. ..	30	50	80	130
(*b*) From commercial banks, the open market.	51	200	500	700
(*c*) From commercial banks, I.D.B.I., etc.	50	100	200	300
Total State resources ..	196	740	1,604	2,344
Central Assistance ..	197	450	850	1,300
Additional Resource mobilisation.	159	175	280	455
Total resources ..	**552**	**1,365**	**2,734**	**4,099**
Total Plan size	**552**	**1,365**	**2,734**	**4,099**

CHAPTER 31.

Public Debt

THE CONSTITUTION AND THE STATE'S BORROWING POWERS

31·1. The existing relationship between the Union Government and the States in the matter of borrowing and the arrangements by which the Union Government advances loans to the States are based on certain Constitutional provisions. The economic and financial provisions embodied in the Constitution of India are basically those conceived in an earlier period in the Government of India Act, 1935, by an Imperial power for its colonial rule in a so-called federal frame work, with no welfare obligations to the people of the country. And to this date these provisions have continued without any modification, although far-reaching changes in the Constitution have taken place in several directions to bring it in conformity with the Directive Principles of State Policy.

31·2. The provisions relating to the powers of the Union and the States in respect of public borrowing are stated in Articles 292 and 293 of the Constitution. The crucial element in so far as the States are concerned is contained in clause 3 of Article 292 (a verbatim reproduction of clauses 3 and 4 of the Government of India Act 1935) which precludes a State from raising loans without the consent of the Government of India if there is still outstanding a part of a loan made to the States by the Government of India (or its predecessor). On 15th August 1947, the debt of the Provincial Governments to the then Government of India stood at Rs. 43·67 crores. Between that date and 31st March 1951, the outstanding debt of the States to the Union in free India had gone up to Rs. 195·41 crores. Thus, although the spirit of the Constitution is deemed to be genuinely federal, yet no State has had any power of raising loans without the consent of the Union Government. And this is because of the technicalities of a clause the text of which had been reproduced from the Act of a colonial administration. The Union Government could borrow with ease out of the financial resources generated in the constituent States of the Union ; but no State Government could enjoy the benefit of borrowing, even to a limited extent, out of the financial resources available within its own State, without the permission of the Union Government. The experience in the past two decades or more illustrates the difficulties and problems that have arisen in the public debt operations as a consequence.

31·3. Two important results of these arrangements are :

(*a*) the capital receipts of the Union Government have increased at a faster rate than that of the States, and

(*b*) the States have become increasingly dependent on the Union Government for loan assistance.

(*a*) UNION GOVERNMENT'S COMMAND OVER CAPITAL RESOURCES

31·4. Annual mobilisation of capital receipts by the Union Government has risen from a relatively modest figure of Rs. 288 crores in 1955-56 (the final year of the First Plan) to the high level of Rs. 3,164 crores in 1972-73. In contrast, the growth in direct capital receipts of all the State Governments put together strikes modest with a rise from Rs. 120 crores in 1955-56 to Rs. 937 crores in 1972-73. Thus the Union Government's command over the total capital resources of the Governmental system (Union and States) is well over three-fourths of the total.

31·5. The figures in the table below show the relative position of the Union and the State Governments in the matter of capital receipts since 1961.

TABLE 31·1.

Direct Capital Receipts of the Union and State Governments—(Gross)

(Rupees in crores)

Year	Union	States	Total	Percentage	
				Union	States
(0)	(1)	(2)	(3)	(4)	(5)
1955-56	289	120	408	71	29
1966-67	2,473	312	2,785	89	11
1967-68	2,251	490	2,740	82	18
1968-69	2,078	622	2,807	74	26
1969-70	2,640	705	3,345	79	21
1970-71	2,550	695	3,245	79	21
1971-72	3,029	736	3,765	80	20
1972-73 Revised Estimate	3,164	937	4,101	77	23
1973-74 Budget Estimate	3,261	1,036	4,297	76	24

31·6. Whereas the Union Government enjoys a quasi absolute monopoly over the budgetary capital resources in the country, the States are in need of large resources for bringing about the economic and social development of the country, which is their responsibility. Consequently, over the plan periods, resource transfers from the Union to the States have been gaining more and more massive dimensions. What is of interest in this connection, is the manner in which the Union Government has been effecting these transfers.

31·7. The only statutory authority empowered to decide on resource transfers from the Union to the States is the Finance Commission, which came into existence through Parliamentary enactment in 1952. The First Finance Commission was constituted in 1952 to make recommendations in this regard for the five year period 1952-57. Subsequently, there have been five Finance Commissions in succession covering the periods 1957-62, 1962-65, 1965-69, 1969-74 and 1974-79. A review of the awards of the Finance Commissions shows that out of the total transfers of resources from the Union to the States, the portion effected through the Finance Commission has been averaging just around one-third of the total. The major part of the transfer operations is undertaken by the Union Executive on an arbitrary or ad hoc basis, invoking Article 282 in respect of grants to the States and Article 293 Clause (2) in respect of loans.

(*b*) Growth of States' Debt to the Union Government

31·8. The growth in States' indebtedness to the Union Government over the successive plan period is shown in tables 31-2 and 31-3.

TABLE 31·2.

Outstanding Debt of States Public Debt (as at the end of March)

(Rupees in crores)

Item	1951	1956	1961	1966	1969	1970	1971	1972.	1973. *Revised Estimate*	1974. *Budget Estimate*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1 Loans from the Union Government	196	819	2,014 (77·3)	4,410 (77·7)	5,584 (78·9)	5,987 (79·5)	6,365 (77·5)	6,756 (75·5)	8,010 (79·5)	8,380* (78·4)
2 Permanent Debt			500	827	1,047	2,134	1,233	1,332	1,462	1,661
3 Floating Debt			42	189	241	182	375	600	296	304
4 Other Debt (Loans from autonomous bodies)			50	162	201	229	239	258	302	342
Total Public Debt (1 to 4)			**2,606 (100)**	**5,288 (100)**	7,073 **(100)**	**7,529 (100)**	**8,212 (100)**	**8,946 (100)**	**10,070 (100)**	**10,687 (100)**

* As estimated by the Sixth Finance Commission (Government of India 1973) page-321.

TABLE 31·3.

Loans Outstanding of the Government of Tamil Nadu (as at the end of March)

(Rupees in crores)

Item	1970	1971	1972	1973	1974
(0)	(1)	(2)	(3)	(4)	(5)
Permanent Debt	142	155	168	180	192
Floating Debt	22	36	83	7	10
Loans from the Centre	331	351	339	416	424
Other Debt	51	40	34	39	36
Unfunded Debt	28	31	35	41	48
Total	**574**	**613**	**659**	**683**	**710**

31·9. The outstanding debt of the States to the Union Government just prior to the launching of the First Five-Year Plan was Rs. 195 crores. Over the successive plan periods, this figure moved up to Rs. 819 crores at the end of March 1956, Rs. 2,014 crores at the end of March 1961, Rs. 4,410 crores at the end of March 1966 ; and now on the eve of the Fifth Plan, the outstanding debt of the States to the Union Government has reached the staggering amount of Rs. 8,380 crores*. And this amount forms nearly four-fifths of the total public debt of the State Governments.

31·10. The capital transfers from the Union Government to the States may be classified under three broad categories (i) Plan Assistance (ii) Share of Small Savings (iii) Non-Plan Loans.

(i) Plan Assistance

31·11. Right from the beginning of the " Planning era ", a rigid compartmentalization was introduced between Resource transfers for meeting the so-called continuing or committed revenue expenditure of the States (based on the conception of the

* Report of the Sixth Finance Commission (Government of India 1973) Page-321

earlier colonial epoch of grants-in-aid of revenues to the Provinces essentially for maintaining law and order), and resource transfers for the so-called plan expenditure intended for new projects and programmes to be undertaken by the State Governments in "the overall framework of national planning". The latter was scrupulously kept out of the scope of intervention of the Finance Commission.

31·12. For this reason, the State's indebtedness to the Union Government has been determined mostly by the Union Government's 'Plan assistance' to the States. Plan loans account for the bulk of the indebtedness, the other components, viz., share in small savings and non-planl oans, for relief operations, ways and means, advances etc., being relatively of minor importance, until recently.

31·13 The Union Planning Commission started off with a great deal of central intervention in the matter of assistance to the States so that even tiny schemes of wholly local impact such as supply of drinking water to a village needed clearance by the Union Planning Commission and the concurrence of the concerned Union Ministries to qualify for assistance. Patterns of assistance were defined by the planners at the summit extending over a wide gamut of schemes (centrally aided and centrally sponsored) ranging from those that qualify for100 per cent grant to those that merit "Plan assistance" only in the form of loans depending upon the conception of the nature of the scheme by the planners. The Planning Commission assumed for itself the power of decision over each and every scheme for which assistance was sought by the States, irrespective of its dimensions or area of impact. Although some efforts were made to simplify the procedure in the early part of the Second Plan, this meant hardly any improvement. The largest segments of plan assistance relating to irrigation and power projects were treated as "miscellaneous development loans" repayable in 7 years time.

31·14 At the insistence of several State Governments at the time of the formulation of the Fourth Plan, this form of assistance to the States, tied up scheme-wise was replaced by block grants and block loans constituting 30 per cent and 70 per cent respectively, of the total plan assistance to each State. Although this marked a great improvement over the earlier system, the irrationality still persists in the arbitrary fixation of the ratio between grants and loans and in treating all capital transfers for planned development, regard less of the nature of the project, as loans to be repaid in 15 annual equal instalments (from its first anniversary) bearing 5 per cent interest rate.

(ii) Small Savings

31·15 Small Savings collections by the Union Government (essentially through postal savings deposits and savings certificates bearing tax concessions) have shown a significant rise in recent years, largely through the vigorous campaigning in this regard by the agencies of the State Governments.

31·16. Under the existing arrangement, broadly two-thirds of the annual collections made in a State through these media are made over to the States in the form of loans repayable in 20 annual instalments (commencing from the sixth anniver, sary of the loans of small savings, that is. net of withdrawals and encashments over the year). Therefore, these sums are in effect loans given by the people to the Union Government in perpetuity. As such, it is doubtful whether the practice of the Union Government in treating the portions transferred to the States as repayable loans, can be justified. The States should have their shares in the form of unfunded debt. However, the Sixth Finance Commission have treated this part of the central loans along with State's share in centralised open market borrowings as outside the scope of their debt relief proposals.

31·17 The magnitude of relief that would accrue to the States put together by converting the debt due for repayment on this account over the Fifth Plan period into an unfunded debt, could be gauged by the fact that the Government of Tamil Nadu alone would have to repay a sum of Rs. 29·81 crores on this account over the five year period 1974–79.

(ii) Non-Plan loans of the Union to the States

31·18. It is well known that the largest component of the non-Plan loans consists of transfers from the Union Government to the States to meet relief expenditure necessitated by the occurrence of natural calamities and to finance emergency measures for immediate augmentation of food production. The element of productive asset formation in such relief expenditure is at best negligible. And yet a sizable part of the transfers made for relief operations is being treated as loans with terms stiffer than those accorded to loans for plan purposes.

31·19. In this context, it is pertinent to draw attention to the fact that in meeting the national problem of looking after the Bangla Desh refugees in 1971-72, the Union Government transferred massive sums as grants for the purpose to West Bengal (non- statutory non-Plan grants in 1971-72 amounted to Rs. 142·42 crores as against Rs. 12·83 crores in 1970-71). On the other hand, in respect of a similar national problem of providing relief and rehabilitation to Indian nationals returning from Burma and Ceylon in 1969-70 and 1970-71, the financial transfers from the Union Government to Tamil Nadu for the purpose consisted of loans repayable in annual instalments with interest rate of 5 to $5\frac{3}{4}$ per cent.

The burden of the accumulating debt

31·20. With the cumulative, increase in the debt burden of the States to the Union, the annual payment obligations of the former in the form of principal and interest also pile up. Consequently, the difference between the receipts by way of loans from the Centre and the repayment obligations of the States, which is the net amount available for investment for the States, has progressively declined from year to year. This is seen in Tables 31-4 and 31-5.

TABLE 31-4.

Net availability of Financial Resources from the Union Government for Capital formation by the States

(Rupees in crores)

Period	*Loans from the Union to the States*	*Loans repaid by the States to the Union*	*Interest charges paid to the Union*	*Total loan repayment and interest* (2) + (3)	*Net availability of financial resources* (1) — (4).
(0)	(1)	(2)	(3)	(4)	(5)
Third Plan—					
1961-66	3,101	950	454	1,404	1,697
1966-67	920	281	185	466	454
1967-68	878	385	200	585	293
1968-69	895	574	241	815	80
Total Annual Plans	2,693	1,240	626	1,866	827
1969-70	1,030	638	281	919	111
1970-71	1,005	665	259	924	81
1971-72	1,192	843	324	1,167	25
1972-73 (Revised Estimate)	1,924	725	329	1,054	870
	(1,413)	(635)		(964)	(459)
1973-74 (Budget Estimate)	1,295	850	374	1,224	71
Fourth Plan—					
1969—74	6,446	3,721	1,567	5,288	1,158
	(5,935)	(3631)		(5,198)	(737)

Figures in brackets in column (1) exclude Rs. 510·7 crores received by the states to clear their overdrafts with the Reserve Bank of India, and those in columns 2, 4 and 5 exclude Rs· 90 crores already repaid to the Union Government during 1972-73.

TABLE 31-5.

Net availability of Financial Resources from the Union Government for Capital formation by Tamil Nadu

(Rupees in crores)

Item	1969–70	1970–71	1971–72	1972–73	1973–74 (RE)
(0)	(1)	(2)	(3)	(4)	(5)
1 Loans from the Union to the State ..	63·65	51·34	83·49	124·67	58·25
2 Loans repaid by the State to the Union	50·54	31·74	95·27	48·40	49·29
3 Interest charges paid to the Union ..	15·37	11·95	21·74	16·68	20·34
4 Total : Loan repayment and interest	65·91	43·69	117·01	65·08	69·63
5 Net availability of financial resources (1) minus (4)	—2·26	7·65	—33·52	59·59	—11·38

31·21. The reverse flows from the States to the Union in the form of debt repayment and interest charges have already assumed such enormous proportions that although the loan assistance from the Union to the States over the Fourth Plan period is shown to be nearly Rs. 6,000 crores (exclusive of loans given for clearing overdrafts with the Reserve Bank of India), the net availability to the States in this regard is only of the order of Rs. 737 crores. It may be seen from Table 31·5 that in 1972-73 loans from the Union Government to Tamil Nadu aggregated to about Rs. 125 crores. Deducting from this, repayment and interest charges, net availability of financial resources on this account was a little less than Rs. 60 crores. As for 1973-74, according to revised estimates, the position appears to be a negative one of the order of more than Rs. 11 crores.

31·22 As early as in September 1967, the Study Team of the Administrative Reforms Commission commented that it was improper for the Union Government to deal with the States in the matter of loan repayments as a bank deals with its customers, especially when the States are, in fact, heavily dependent on the Union in fiscal matters. And the Study Team advanced some constructive recommendations in dealing with the accumulated debt of the States to the Union. Among the specific measures which it recommended are:

(*a*) A repayment programme should be drawn up for each State for the productive part of its outstanding Central loans keeping in view the returns expected;

(*b*) As regards the remaining part of the debt against which no financial returns can be expected, the burden may be apportioned between the Centre and the States and a method devised for writing it off to revenue over a period of time; and

(*c*) Because of the complicated nature of the subject it is suggested that it should be referred to an expert body*.

The Sixth Finance Commission and Debt Relief

31·23. The increasing burden of the States indebtedness to the Union Government has involved a growing strain on their finances. The obligations on account of their debt would necessarily involve a drain on their resources which otherwise could

* Report of the study Team on Centre-state relations, ARC, September 1967, Vol. I, Chapter III.

have been utilised for financing their plan schemes. Hence the Sixth Finance Commission was required to undertake " a general reveiw of the States debt position with particular referene to the Central loans advanced to them....and suggest changes in the existing terms of repayment"@

31·24. The Commission have not accepted the plea made by many of the States including Tamil Nadu for the writing off of a good part of the entire amount of the outstanding debt or the converting of any of the loans of an unproductive nature into grants. The contention of the Commission is that such a step, apart from benefiting the advanced States to a greater extent than the backward ones, would also reduce the resources available for the Centre for advancing fresh loans to the financially weaker States. Hence the Commission confined itself to suggesting measures of debt relief to the States. They set about this task by first estimating the outstanding loans of the States to the Centre as on the last day of March, 1974, classifying the loans and working out reasonable methods of re-scheduling and spreading repayment over a longer period of time than envisaged in the original terms of the loans. The extent of relief, so far as the Fifth Plan is concerned will therefore be the difference between what should have been payable according to the original terms of the loan in the years 1974-79 and what will actually have to be paid after re-scheduling by the Commission.

31·25 The total loans from the Centre to the States outstanding as on 31st March, 1974, have been worked out as Rs. 8,379·97 crores and the amount of repayment according to the original terms in the 5 year period 1974-75 to 1978-79 would be Rs. 3,899·03 crores. Of these loans, two viz., loans towards share of small savings and loans in lieu of open market borrowings are left outside the scope of debt relief. It is estimated that the amount outstanding under the first on 31st March, 1974, will be Rs. 1,090·04 crores and the amount falling due for repayment in the Fifth Plan Rs. 462.26 crores; the corresponding figures for loans in lieu of open market borrowings are Rs. 111·47 crores, and the entire amount is to be repayable during 1974-75. These two will thus account for 14·3 per cent of the total loans outstanding.

31·26. Two other items of States' loans from the Centre have been treated as special cases. One is pre-autonomy debt, a legacy of the fiscal arrangements between the Government of India and the provincial governments dating from 1937. It is estimated that at the end of 1973-74 this amount would be about Rs. 10·32 crores of which Rs. 5·91 crores would fall due for repayment over the Fifth Plan period. The Commission's recommendation is that this outstanding loan is to be written off. The second category comprises of loans for relief and rehabilitation which include loans to goldsmiths, loans to displaced persons from Pakistan, loans to repatriates from Burma, Sri Lanka, etc., and other relief and rehabilitation loans. The terms and conditions of repayment relating to these loans have undergone many changes. Moreover, a good part of these loans appears irrecoverable. Hence with regard to these loans the Commission have decided that the States need repay to the Centre only such sums as they recover from the beneficiaries. Even of this, half of the principal they recover and the whole of the interest payments which may be received may be retained by the States. The Commission point out that the loss for the Centre because of this concession will be "largely notional because very little of the amounts due is being recovered at present".* The total amount of loans of this category from the Centre outstanding as on 31st March, 1974, is estimated at Rs. 86·48 crores.

31·27 On the basis of the principles indicated above, and according to a formula drawn up by the Commission for rescheduling of the debt, the payments to be made by the States in the five years 1974-79 are calculated. The amount due for repayment according to the original conditions of repayment is as mentioned earlier, Rs. 3,899·03 crores. As a result of the cancellation of pre-autonomy debt and concessions, in respect of loans for relief and rehabilitation, and extension of the period of payment of other loans, the amount

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@Report of the Sixth Finance Commission (Government of India 1973) Para. 5, Chapter I, P·2

*Report of the Sixth Finance Commission (Government of India 1973) Para 25, Chapter XVII, P.89.

payable in the Fifth Plan period works out to Rs. 1,929·41 crores. The relief will, therefore, be Rs. 1,969·62 crores.

PUBLIC DEBT POSITION OF TAMIL NADU

31·28. It is against this background that the debt position of Tamil Nadu, especially its relation to Central Government in this regard, has to be examined.

31·29. The sources from which the State Government raises loans are the following :—

(1) Open market borrowings and loans raised by the issue of Land Compensation Bonds. These constitute the 'permanent debt' of the State.

(2) Funds raised by the issue of treasury bills and cash credit from the Reserve Bank of India, for short-term, come under the category of ' floating debt'.

(3) Other loans from autonomous bodies such as National Co-operative Development Corporation, Khadi and Village Industries Commission, Life Insurance Corporation of India, Commercial Banks, etc.

(4) Funds raised from the State's provident fund, sinking fund and reserve fund, deposits of local funds, depreciation reserves of Government Commercial concerns, etc. These are featured as 'deposits and advances net' in the budget statements.

(5) Loans from the Union Government consist of (a) share in small savings distributed on predetermined proportions, (b) Plan loans, (c) Loans for Centrally sponsored Schemes and (d) non-plan loans and others.

31·30 Of these, the last mentioned item—loans from the Union Government—constitute the most important one accounting for more than 50 per cent of the total state debt. Outstanding loans from the Centre rose from Rs. 269·51 crores at the end of March, 1966, to Rs. 397·22 crores at the end of March, 1973, and are expected according to the State Governments calculations to amount to about Rs. 424 crores by March, 1974.

Extent of relief to Tamil Nadu

31·31 According to the Finance Commission's estimate, the amount of the Central loans outstanding from the State as on 31st March, 1974, is Rs. 418·19 crores. This difference between the State's estimate and the estimate of the Finance Commission is due to the fact that the latter was made a few months earlier than the former. Of the total of Rs. 418·19 crores, the amount falling due for payment in the period covered by the Fifth Plan is Rs. 216·97 crores. This includes Rs. 42·81 crores on account of the loans comprising of the State's share in small savings and in centralised market borrowing. Since the Finance Commission has treated these as outside the scope of debt relief measures, the entire amount of Rs. 42·81 crores will have to be paid before 1978-79. Leaving out relief and rehabilitation loans for which no definite repayment is stipulated, the relief under the remaining items is in the form of extension of repayment beyond the five year period—generally 15 to 25 years. Thus in all, the amount recommended for payment in the Fifth Plan period is Rs. 129·92 crores as against the amount of Rs. 216·97 crores repayable according to the original terms of the loans. Thus, the total relief is Rs. 87·05 crores (216.97-129·92). The details of this relief in respect of the different items of loans are presented in Table 31-6.

TABLE 31-6.

Debt relief to Tamil Nadu according to the recommendations of the Sixth Finance Commission.

(Rupees in lakhs)

Loans	*Amount out-standing*	*Due for repayment in the Fifth Plan period*	*Payment recommended by Sixth Finance Commission*	*Extent of relief (2)—(3)*
(0)	(1)	(2)	(3)	(4)
I. NON-DEVELOPMENTAL LOANS—				
1 Share in Small Savings	6369	2981†	2981†	..
2 State's share in centralised market borrowing	1300	1300†	1300†	..
3 Loans for strengthening of police and provision of amenities.	496	158	101	57
4 Relief and rehabilitation	1191	..	..	..
5 Loans on account of natural calamities	1218	962	406	556
6 Pre-autonomy debt	66	38	..	38
7 Special Accommodation Loans	700	350	233	117
8 Loans for clearance of over-draft	4183	4183	1394	2789
II. DEVELOPMENTAL LOANS—				
1 Agriculture and allied programmes	2643	1972	881	1091
2 Industrial development	793	506	192	314
3 Housing Schemes	443	100	89	11
4 Water-supply, drainage, slum clearance	1008	224	202	22
5 Education	462	24	21	3
6 Medical and Public Health	1062	342	212	130
7 Community Development, N.E.S. and Co-operation	702	567	234	333
8 Transport	315	128	63	65
9 Employment Schemes	61	21	12	9
10 Welfare of Backward Classes	1	1	..	1
11 Miscellaneous Development Loans	2156	2156	719	1437
12 Irrigation and Power	4196	955	839	116
13 Block Loans	12289	4674	3074	1602
14 Miscellaneous Loans	165	55	41	14
Total	**41819**	**21697**	**12992**	**8705**

† Outside the scope of Debt relief.

Source: Based on Tables 4 to 40—pages 302—349 Report of the Sixth Finance Commission (Government of India—1973

TABLE 31-7.

Debt Relief to the States as recommended by the Sixth Finance Commission

(Rupees in lakhs)

State	*Repayment required under original terms*	*Repayment recommended by Commission*	*Relief* (1)—(2)	*Percentage* (3) *to* (1)	*Percentage of total*
(0)	(1)	(2)	(3)	(4)	(5)
1 Andhra Pradesh	30898	11778	19120	61·9	9·7
2 Assam	21450	5201	16249	75·8	8·2
3 Bihar	27642	12307	13335	48·2	6·8
4 Gujarat	14076	10451	3625	25·8	1·8
5 Haryana	9831	6517	3314	33·7	1·7
6 Himachal Pradesh	6496	3039	3457	53·2	1·8
7 Jammu and Kashmir	17259	3916	13343	77·3	6·8
8 Kerala	20059	9082	10977	54·7	5·6
9 Madhya Pradesh	19405	10689	8716	44·9	4·4
10 Maharashtra	30863	24205	6658	21·6	3·4
11 Manipur	1847	324	1523	82·7	0·8
12 Meghalaya	891	127	764	85·7	0·4
13 Mysore	24480	11776	12704	51·9	6·4
14 Orissa	22352	6620	15732	70·4	8·0
15 Nagaland	967	383	584	60·4	0·3
16 Punjab	10305	8787	1518	14·7	0·8
17 Rajasthan	35532	9718	25814	72·7	13·1
18 Tamil Nadu	21697	12992	8705	40·1	4·4
19 Tripura	2007	572	1435	71·5	0·7
20 Uttar Pradesh	39275	24198	15077	38·4	7·6
21 West Bengal	32571	18259	14312	43·9	7·3
Total	**389903**	**192941**	**196962**	**50·5**	**100 0**

Source: Compiled from tables 4 to 43. Report of the Sixth Finance Commission (Government of India, 1973)

31·32 As a proportion of the total relief for all the States namely Rs. 1969·2 crores, what Tamil Nadu gets is only 4·4 per cent. The relief expressed as a proportion of the amount repayable according to the original terms of the loans is 40·1 per cent in the case of Tamil Nadu compared with the average of 50·5 per cent for all the States. On the whole, the relief which the States get is inversely proportional to their levels of development. In this sense, the award is fair and equitable. Comparative figures are given in Table 31-7.

31·33 But even with the relief of Rs. 87·05 crores, the burden of the remaining repayment obligations appears quite heavy. Since loans on account of share in small savings and in centralised market borrowing are untouched, the total transfer of resources from the State to the Centre on account of loan obligations, excluding interest payments in the five years 1974-75 to 1978-79 will be of the order of about Rs. 130 crores, which is 31 per cent of the total outstanding loan liability of the State to the Union Government.

Need For Basing Capital Transfers On Rational Principles

31.34 The lasting solution for the problems arising from State-Centre loan relations has to be found in the establishment of basic principles acceptable to both the Union and State Governments for the transferring of capital. The principles of financing capital formation in the framework of planned economic development of the country are the same regardless of whether such capital formation is undertaken by the Union Government or State Governments. The realities in the country in this regard are, however, different. The pipelines of public finance as laid in the existing Constitution essentially feed the Union Government reservoir while substantial responsibilities for economic and social development of the country rest with the State Governments. As a consequence, the Union Government has the role of a financial intermediary in channelling development finances to the State Governments in addition to financing the development projects under its own auspices. The Union Government adopts suitable patterns of financing the development projects under its own auspices-grants, loans of varying duration and interest rates, and equity participation broadly dictated by the nature and purpose of the project. But, the capital transfers made to the State Governments as assistance to the State Plans are all being lumped into an omnibus form of repayable loans in annual instalments bearing interest, regardless of the nature and purpose of the constituent projects in the State Plans. The soundness of this policy is questionable in view of the fact, that the two layers of the Governmental system are identically engaged in the same enterprise of capital formation, deploying the resources supplied to the two layers, by the same people of the country.

31.35 Mention must be made in the context of the substantial magnitudes of assistance that is being made available to the country by the International Development Association of the World Bank system. The Bank and International Development Association commitments have been of the order of 1,739 million dollars over the period 1969-73, of which, the International Development Association component is as high as 1,529 million dollars. The International Development Association credits are free of interest and repayable in 50 years, carrying only a service charge of 3/4 of 1 percent. Sizable part of the International Development Association assistance on these soft terms has been extended to projects such as rural credit, agricultural marketing, and water supply and sewerage, which are executed by the State Governments. It is only logical that the terms on which the Union Government transmits these credits to the State Government for their use should be in conformity with the terms under which the Union Government receives the International Development Association assistance.

31.36 The time is opportune to consider the possibilities of establishing a statutory authority charged with the function of deciding upon national allocation of capital resource mobilised by the Governmental System and bringing the Union Government and the State Governments under a common discipline in this regard. The organisation and functioning of the Australian Loan Council deserve attention in this context. This Council

consists of the Prime Minister of the Commonwealth of Australia and the Premiers of the States with voting powers for both. The loan programme of the Common Wealth and each State is submitted to the Council each year. If the States and the Common Wealth do not agree on the portions of the amount to be allocated to each borrower, allocation will be made according to a formula set out in an agreement between the Common Wealth and the States on the borrowings of each State during the preceding five years. The feasibility of setting up a similar body to regularise and streamline the arrangements for the division of the capital resources between the Union and State Governments in our country has to be considered.

CHAPTER 32.

Fiscal Policy and Union-State relations

32.1 Fiscal policy occupies a strategic position in the policy measures of the Union and the States for bringing about rapid economic development with social justice. The fast expanding role of the Government both in terms of direct participation in infrastructure and production sectors and enlargement of economic and social services to the community calls for a corresponding increase in resources. This is possible only if the rate of resource mobilisation is stepped up and greater restraint is practised in the utilisation of resources for non-developmental purposes. Further, in the framework of a mixed economy, it is vital to ensure that the private sector has adequate incentive to fulfil its assigned role in planned economic development. And above all, a reasonable degree of price stability is a pre-requisite for a smooth process of development, which implies a high rate of savings generation and its utilisation for planned investment. Coupled with stability and growth is the objective of social justice which demands that fair measure of re-distribution of wealth and income must be built into the development process. Fiscal policy has to address itself to a successful realisation of all these objectives. In essence, the policy instruments are taxation, expenditure and debt management.

The Need For An Integrated Approach

32.2. Although resource mobilisation and utilisation for planned development ought to be based on an integrated approach involving the collective responsibility of the Union and State Governments, the realities of the present constitutional arrangement are such that the powers of resource raising as well as the powers of decision-making in respect of the deployment of resources rest predominantly with the Union Government.

Current Fiscal Policy and Raising of Revenues

32·3 The pattern of gross command over Bobilisation of resources exercised by the Union and State Governments through the instruments of taxation is reflected in the tax revenues shown in Tables 32-3 and 32-4.

32.4 It is seen that the Union Government accounts for around 70 per cent of the aggregate tax revenues, while all the 21 State Governments together account for the remaining 30 per cent. This is because excise, customs and income taxation are of over-riding importance in the tax system in terms of revenue yielding capacity ; and the powers of taxation in respect of all the three items rest exclusively with the Union Government (with the exception of excise on liquor and narcotics and taxation of agricultural income).

32.5. It is also evident that the largest part of the aggregate tax revenue is realised through taxes on commodities and services, principally excise, sales tax and customs. However, the stage is reached in the economy at which there is hardly any scope for further raising of the rates on commodities and services of mass consumption.

32.6 Hence, if additional mobilisation of resources through taxation is the objective, then fiscal policy has to aim at mostly augmenting the receipts through direct taxes. And in this regard, there is the most urgent need for co-operative efforts by the Union and State Governments. It has been already pointed out in Chapter 30 that by co-ordinating the individual income tax administration with the State Government Commercial Taxes administration, substantial augmentation of receipts through individual income taxation could be realised.

32.7 Another important fiscal measure for raising additional resources which entails co-operation of the Union and State Governments is in respect of urban immovable property. It has been again pointed out in Chapter 30 that there are handsome possibilities of augmenting revenues in the form of once-for-all gains by the sale of

urban residential land for purposes of house construction and by the levy of urban property tax at progressive rates. This, however, presumes that the Union and State Governments have a clearly defined policy concerning ownership of urban immovable property.

FISCAL POLICY AND NON-DEVELOPMENT EXPENDITURE

32.8 The extent to which resources mobilised through tax and non-tax revenues are made available for plan expenditure depends upon the degree of restraint exercised in non-development expenditure. In this regard, attention needs to be drawn towards the steady rise in public expenditure in general, and on police, in particular. The rate of growth of expenditure on police of the Union Government has been much faster than that of the State Governments, including Tamil Nadu Government. The annual growth rate of expenditure on police in the ten years 1960-61 to 1970-71 for the Union Government was 23·9 per cent compared with 10·6 per cent for all the States and 9·6 per cent for Tamil Nadu. The details are given in Table 32-1.

TABLE 32-1.

Expenditure on Police—Union and State Governments.

(Rupees in crores)

Union/State	*Expenditure*		*Annual growth rate* %
	1960–61	1970–71	
(0)	(1)	(2)	(3)
Union Government ..	12	102	23·9
All States	83	227	10·6
Tamil Nadu	6	15	9·6

32.9 Law and Order being a State subject, it is essential that there should be a machinery for consultations between the Union and States to bring about cost-effectiveness in police expenditure, and to keep the expenditure under restraint.

EXPENDITURE ON DEVELOPMENT AND SOCIAL SERVICES

32.10 The tendency that has grown over the earlier plan periods of proliferating the so-called centrally sponsored schemes in certain spheres of activity which are within the responsiblity of State Governments such as education, health, agriculture, rural development, and social welfare, was held under check at the time of finalising the Fourth Plan, but during the course of the Fourth Plan period the tendency again manifested itself in incresing measure.

32.11 Fiscal policy in respect of governmental expenditure on development and social services should be such, as to ensure that the expenditure incurred in individual directions is relevant in the total context. Therefore, disjoined expenditure by the Union Government on schemes in the areas that are the responsibility of the State Governments but are outside the State Plan will have little meaning, and defeat the very purpose of integrated approach to development. The Union Government should transfer the resources which are currently being utilisesd for Union Government sponsored and Union Government schemes to the State Governments towards a more meaningful realisation of the purposes for which such expenditure is intended.

32.12 There has been a marked uptrend in expenditure on social and development services also. This is illustrated in Table 32-2.

TABLE 32-2

Union Government—Current Expenditure on Development and Social Services.

(Rupees in crores)

Services	1960–61	1970–71	1973–74
(0)	(1)	(2)	(3)
1 Education and Scientific Research	65	159	211
2 Medical and Public Health	14	28	36
3 Agriculture and Allied Services	43	32	70

Education, health and agriculture are the fields of activity which have a direct impact on the social and economic well-being of the mass of the population, and the State Governments have the greatest functional responsibilities in this regard. It is pertinent, therefore to question the justification for the fast rising direct expenditure of the Union Government on payment of salaries to personnel in these departments. The earlier methods of administering scheme-wise plan assistance and the proliferation of Union Government—sponsored schemes have been responsible for the growth in the number of technical and administrative personnel in the Union Ministries concerned with these subjects. It is, however, surprising that although the Fourth Plan introduced the system of block assistance to the State Plans, the growth in expenditure of these Union Ministries has not slowed down.

32.13. There is no denying the importance of the role of the Union Government in matters such as education, health and agriculture. But the role lies essentially in undertaking projects and programmes of national dimensions and all-India importance laying down standards of excellence for adoption by the State Governments, communicating the latest developments of interest in science and technology to the State Governments, and co-ordinating the policies of the State Governments in the framework of national policy. The present size of the Union Ministries and the range of their functions are far in excess of what is needed for the purposes cited.

32.14. An evaluation of the present pattern of Union Government expenditure on development and social services and elimination of all those items of expenditure which have no rational functional justification should result in the release of substantial resources from the Union Government, which could be most meaningfully utilised by the State Governments for strengthening the development and social services in the integrated frame work of State Plans.

Plan and Non-plan Current Development Outlays

32.15. The progressively expanding plan outlays on development and social services over twenty-three years of planning have already led to a significant cumulative growth in the continuing expenditure on the completed plan schemes in education, health, rural development services, social welfare, etc. At the end of the Fourth Plan period, the size of continuing expenditure on development and social services, which is termed as non-plan current development outlays, has reached such large dimensions that the outlays on fresh plan schemes in these sectors in the ensuing plan periods would tend to be more and more modest in comparison, in states like Tamil Nadu.

32.16. The concern of the State Governments, therefore, is to supplement their own resources with adequate resource transfers from the Union Government as much for ensuring smooth and efficient continuity of development and social services already in operation as for undertaking new schemes. Hitherto the practice has been that resoruce transfers towards financing the outlays on the on-going (non-plan) development and social services are brought within the purview of the Finance Commission whereas, outlays on fresh schemes are treated as a part of the overall State Plan and National Plan independently by the Union Planning Commission. The Finance Commission undertakes a detailed review of the expenditure on the on-going development and soical services and assesses the progress achieved in specific items in relation to the needs in each of the States. Hence, it is the most competent authority to determine, in consultation with the State Governments and the Union Planning Commission the new schemes in these sectors to be taken up for the five-year period under its reference. It can also decide upon the principles of devaluations taking into account the on-going expenditure as well as the fresh (Plan) outlays on development and soical services.

Fiscal Policy and Financing Public Sector Capital Formation

32.17. Fiscal policy is of crucial importance in generating the desired rates of savings in the economy and in mobilising and canalising the savings into public sector investment. Also, it is vital that the methods of financing the public sector projects have a bearing on the nature and purpose of the concerned projects.

32.18. The experience over the plan periods so far, demonstrates that lack of sound and coherent

policies as well as the absence of effectively institutionalised forms of co-operation between the Union and State Governments have been responsible for low rates of savings generation, inadequate mobilisation of savings for public sector investment, and largely irrational methods of financing public sector projects.

32.19. It has been argued in Chapter 30 that although the major instruments of resources mobilisation are exclusively in the hands of the Union Government under the present constitutional arrnagements, joint operation of these instruments by the Union and State Governments would result in substantially higher rates of resource mobilisation. Effective steps towards institutionalising the participation of the State Governments in the Union Government's efforts for mobilisation of household savings through the small savings media, life insurance, and spread of commercial banking in the rural and semi-urban areas are of great urgency.

Fiscal Policy and Price Stability

32.20. Recent years have witnessed an unprecedented rise in prices eroding the economic fabric of the country and imposing severe constraints even with regard to the execution of priority projects. The greater part of the rise in non-development expenditure of the Government has been due to this phenomenon necessitating increase in emoulments of government employees notwithstanding the payment of subsidies for food-grains distribution. This sharp up-trend in prices has frustrated all attempts at raising the rate of government savings in spite of impressive increases in revenues. Inflationary forces essentially emanate from the monetary and fiscal policies of the Union Government but, the consequences are all-round with an adverse impact on the development projects of the State Governments and the private sector. The world oil crisis and the prospects of steep rise in import prices of crude petroleum are likely to aggravate the cost inflation.

32.21. The Fifth Five-Year Plan of India drawn up by the Union Planning Commission and the State Plans prepared by the State Planning Commission are at prices prevailing at the commencement of the plan period, and the prices are expected to remain constant over the plan period. In the light of past experience, there is evidently great scepticism regarding the validity of this assumption. The present inflationary situation has already led to successive revision of resources estimates in the course of drafting the Fifth Plan. Monetary and fiscal discipline over the Fifth Plan period would have to satisfy the most stringent conditions if the assumption of constant prices during the plan period were to have any meaning at all. It is of the greatest importance to ensure that an integrated and national approach to the problem of prices, wages, profits and taxes be evolved and implemented. It is pertinent to reproduce in this context the observations of the Chief Minister of Tamil Nadu at the time of presenting the memorandum on the Draft Fifth Plan of Tamil Nadu to the Union Planning Commission :

"Early decisions based on discussions on issues of national economic importance are vital in determining the future of the Plan and the country. There may not be much use in finalising the Plan unless these issues are resolved. The Governments of the States have a right to request that these issues be resolved early. A national conference of State Governments should be called and facts regarding the economic crises placed before the Chief Ministers. Their views should be obtained on various alternatives to handle the present critical situation. Only then can a final decision be taken on the shape and size of the Fifth Plan."

Research and Development

32.22. Fiscal Research should pertain to some of the issues raised above and particular importance should be given to the flow of funds analysis and its applications to certain fiscal categories like resources utilisation under current and capital accounts, and resources mobilisation. The re-classification of public expenditure into developmental and non-developmental, social development and material development would also pose issues of methodology and analysis. The aims, operation and results of public sector enterprises in terms of capital formation and production of economic infrastructure and social goods, need to be examined. Fiscal policy and price stability in the context of monetary policy and non-monetary policy require particular attention from the standpoint of Research.

TABLE 32-3.

Revenues of the Union and State Governments—1969-70 to 1973-74.

(Rupees in Crores)

Union /State Government	*Period*				
	1969-70	1970-71	1971-72	1972-73 *Revised Estimate*	1973-74 *Budget Estimate*
(0)	(1)	(2)	(3)	(4)	(5)
UNION GOVERNMENT					
1 Taxes on Income other than the Corporation tax.	449	473	537	602	651
2 Corporation Tax	353	371	472	558	608
3 Income and Corporation tax (1+2) ..	**802**	**844**	**1,029**	**1,160**	**1,259**
4 Customs	423	524	696	810	976
5 Union Excise Duties	1,524	1,759	2,061	2,428	2,741
6 Others	74	80	86	140	138
Total ..	**2,823**	**3,207**	**3,872**	**4,538**	**5,114**
STATE GOVERNMENTS					
7 Sales Tax	656	755	839	930	1,000
8 State Excise Duties	174	194	234	266	283
9 Motor Vehicles	94	105	113	128	136
10 Tax on Passengers and Goods	57	68	84	101	107
11 Stamps and Registration	113	122	137	134	143
12 Land Revenue	103	113	101	100	124
13 Electricity Duties	58	67	72	74	80
14 Entertainment Tax	50	58	63	75	73
15 Agricultural Income Tax	14	11	13	12	12
16 Urban Immovable Property Tax	4	4	4	4	4
17 Others	33	31	35	49	50
Total ..	**1,356**	**1,528**	**1,695**	**1,873**	**2,012**
Grand Total—Union and States	**4,179**	**4,735**	**5,567**	**6,411**	**7,126**

(*Source* : Reserve Bank of India Bulletins, April and June 1973.)

Revenues of Union and State Governments expressed as percentages

Union/State Government.	*Period.*				
	1969–70	1970–71	1971–72	1972–73 *Revised Estimate*	1973—74. *Budget Estimate*
(0)	(1)	(2)	(3)	(4)	(5)
Union Government	67·6	67·7	69·6	70·8	71·7
States	32·4	32·3	30·4	29·2	28·3
Total ..	100 0	100·0	100·0	100·0	100·0

(*Source* : Reserve Bank of India Bulletins, April and June 1973)

TABLE 32-4.

State Government receipts from different taxes 1971—72

TAMIL NADU'S POSITION COMPARED WITH OTHER STATES

(Rupees in Crores)

Serial number and Source (Tax)	*All Indian States*	*Percentage of Total*	*Tamil Nadu.*	*Percentage of Total*
(0)	(1)	(2)	(3)	(4)
1 Sales Tax	839	49·5	99	51·5
2 State Excise duties	234	13·8	22	11·5
3 Motor Vehicles	113	6·7	18	9·4
4 Tax on passengers and goods	84	5·0	5	2·6
5 Stamps and Registration	137	8·1	18	9·4
6 Land Revenue	101	6·0	5	2·6
7 Electricty duties	72	4·2	9	4·7
8 Entertainment Tax	63	3·7	10	5·2
9 Agricultural Income Tax	13	0·8	2	1·0
10 Urban immovable Property Tax	4	0·2	1	0·5
11 Others	35	2·0	3	1·5
Total ..	**1,695**	**100·0**	**192**	**100·0**

PART VIII

PLANNING—A CONTINUING PROCESS

CHAPTER 33

A Rolling Plan

Continued Refinement of the Perspective Plan

33·1. The Tamil Nadu Perspective Plan set forth in this document should be subject to continuous review and refinement in accordance with the changing profile of Tamil Nadu Society. Such revision and refinement should be based on periodic studies of the five varibles on which the Plan is based. The studies should be completed and the revised Perspective Plan published before the start of every Five Year Plan.

33·2. The five variables on which the Perspective Plan is based are :

(*a*) Resources and Institutions as secular trends,

(*b*) Goals as heirarchical controls,

(*c*) Strategies as configurations of preferences,

(*d*) Models as causative anticipations, and

(*e*) Popular participation as the Perspective base.

33·3. There has to be a continuous study of the secular trends in the State's resources and institutions. What is easy to compute and update are the trends in demography, the age and sex distribution, the work participation, the land surface, the water, minerals and power availabilities and potentials. Where studies are needed are the changing role of our physical and human resources on development and welfare, the motivational forces for growth in the neglected sectors of Society-the small farmer women, youth–the factor ownership relations, in other words, all the exogenous factors that will influence and determine the rolling Perspective Plan.

33·4. The goals also need continuing review and re-examination. The seven goals set forth in this Perspective Plan are control points for strategies and programmes. That relationship should be subject to study in the light of both the decisions with regard to the goals made by the political authority over time and the actual realisation of the goals in terms of formulated strategies and, achieved or underachieved programmes. Further, the seven goals in the Plan are arranged in an heirarchical order of controls. This heirarchical control can and will change over time and the Perspective Plan refinement must reflect these changes.

33·5. The strategies proposed in the Perspective Plan are an optimised series of configurations of preferences as seen today. These consistent set of policies and preferences will change over time, and the full or more probably partial realisation of certain goals will make for new preferences and combinations of policies. The increasing complexity and uncretainlty (viewed from the present) of the economy will make for new structural principles and preferences. The optimum as a consequence is a fluid not a fixed point. These in turn will interact with the goal setting imperative of Prespective Planning. The strategies built into the Perspective Plan must therefore be revieved as a part of a total systems review.

33·6. The models on which the Perspective Plan are based are firm and certain in their methodological frame and provisional and tentative in their data content. The model on which the doubling of per capita real income, aggregate State income and investment, marginal rate of investments, etc., are based is the generally accepted consistency model frame. Its data series relating to the net State domestic product, however, is under continuous modification and what was used to feed the model has been changed in the most recent provisional estimates published by the Department of Statistics. As the estimates are finalised, there will no doubt be further changes in the data. The incremental capital output ratio series used in the model has been based on the empirical studies of the behaviour of Tamil Nadu economy in the years 1960–70, with some guidance derived similar from studies conducted by the Union Planning Commission. This series needs

to be updated and the calculation of future series has to be based on similar empirical studies of the economy in the Fifth and future medium term plans. There is need for continuous and detailed studies of income distribution in the urban and rural sectors of the State, as well as investigations of rural and urban unemployment and under-employment in order to build a firmer data bases for these two programmes and to establish appropriate methodological constructs for the future Plans of the State. Again the financing of the Perspective Plan can only deal with broad orders of magnitudes but that too must be subject to review in the light of actual achievement and future strategies.

33·7. Finally, the base of the Perspective Plan is popular participation which means the delineation of perspectives at the lowest possible popular level—the region, the district, the block and the village. Perspective Planning at this effective popular level overcomes the double constrains faced by medium-term and short-term planning—the time lag and leadership gap. The Perspective Plan presented in this document is based on a first effort at such planning in the 23 development districts, 8 regions and 4 backward areas. Such efforts at the base levels should be systematised, intensified and democratised in refining the State's Perspective Plans.

33·8. Continuing work on the five variables as outlines above will provide the basis for "the continued refinement of the Perspective Plan". The evaluation of proposed programmes and monitoring of running projects are a part of the on-going machinery of medium term plans, not of the Perspective Plan. But the results of such evaluation can also be fed into the programmes of the Perspective Plan which must be revised to reflect the revised goals and strategies and the achievement records.

APPENDICES

APPENDIX I.

Copy of the Government Order constituting the State Planning Commission.

GOVERNMENT OF TAMIL NADU.

ABSTRACT.

State Planning Commission—Constitution of—Orders issued.

[*G.O. Ms. No.* 773, *Finance* (*Planning*) *dated* 25*th May* 1971.]

ORDER :

One of the directive principles of State Policy enunciated in the Constitution of India is to promote the welfare of the people and to achieve this, the State Government have undertaken planned development in the State through the various Five-Year Plan and Annual Plans. In allocating resources for implementation of the Plan, the State Government have been guided by the following principles and policies :—

(*a*) to promote the welfare of the people by securing and protecting, as effectively as possible, a social order in which justice, social, economic and political is ensured ;

(*b*) to achieve a rapid rise in the standard of living of the people by an efficient exploitation of the resources of the State, increasing production, enhancing opportunities to all for employment in the services of the community ;

(*c*) to ensure that the ownership and control of the material resources of the community are so distributed as best to subserve the common good ;

(*d*) to ensure that the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment.

2. In furtherance of these principles and in order to help Government implement its policies effectively by more efficient utilisation of the material, capital and human resources within the State and outside, it has been decided by Government to constitute a State Planning Commission.

3. The Planning Commission will—

(i) make an assessment of the material, capital and human resources of the State, including technical personnel. and investigate the possibilities of augmenting such of these resources as are found to be deficient in relation to the State's requirements;

(ii) formulate a long-term plan for the most effective and balanced utilisation of the State's resources ;

(iii) indicate the factors which are tending to retard economic development, and determine the conditions which, in view of the current social and political situation, should be established for the successful execution of the Plan ; and

(iv) make such interim or ancillary recommendations as appear to it to be appropriate either for facilitating to discharge of the duties assigned to it, or on a consideration of the prevailing economic condition, current policies, measures and development programmes; or on an examination of such specific problem as may be referred to it for advice by this Government.

4. The Planning Commission will be purely an advisory body and it will make its recommendations to the Cabinet. The responsibility for taking and implementing the decisions will rest with the Government.

5. Perspective Plan :—

(i) The immediate objective of the State Planning Commission will be to prepare a Perspective Plan covering the decade 1971-81. In preparing this Plan, the Planning Commission will start by setting desirable and feasible goals for State

income and its distribution between different sections of the people. It will also keep in view the declared social goal of achieving a socialistic society.

(ii) The Perspective Plan will draw up an estimate of the investments needed in various fields of economic activity to achieve the desired target of rate of growth. These investments will cover the private and public sectors, the Central and State Government, the co-operative sector and various financial institutions. The Perspective Plan will spell out the resources required in terms of manpower, materials and equipment besides finances needed to implement the programmes.

(iii) The Perspective Plan will discuss and place before Government for their consideration alternative strategies for achieving the goal of growth. Such alternative strategies will include for instance, relative importance to be accorded to industry or to agriculture, small industry or to heavy industry. The Perspective Plan will also indicate in terms of broad orders of magnitudes the phasing of investments and benefits arising from adoption of different strategies.

(iv) In preparing the Perspective Plan, the Planning Commission will utilise the best available talent in the country either by directly engaging experts for or on a consultant basis. The Planning Commission will also establish a basis for continued refinement of the Perspective Plan. Thus, the Planning Commission will initiate studies with a view to, drawing up an input-output model for the State. This will enable the updating of the Perspective Plan from time to time.

(v) The Planning Commission will set up advisory groups consisting of Government Officers both of the State and the Centre as well as others to assist the Commission in drawing up the Plan.

(vi) The responsibility for drawing up the Annual and Five-Year Plans and discussing them with Government of India will continue to vest in the Finance (Planning) Department of the State.

(vii) The review of progress of Plan Schemes will continue to vest in the State Development Committee of the State Cabinet.

6. The headquarters of the Planning Commission will be at Madras. The Planning Commission will be composed of the following :

CHAIRMAN : CHIEF MINISTER

DEPUTY CHAIRMAN

MEMBERS (FULL-TIME AND PART-TIME).

SECRETARY

DEPUTY SECRETARY

Government will be the appointing authority for the Deputy Chairman, Members, Secretary and the Deputy Secretary. The terms and conditions of their services will be such as may be specified by the Government.

(By order of the Governor.)

S. VENKITARAMANAN,
Secretary to Government.

APPENDIX II.

TASK FORCES AND WORKING GROUPS SET UP BY THE COMMISSION.

1. TASK FORCE ON URBAN DEVELOPMENT, REGIONAL, PLANNING AND TOURISM :

Working Group on Urban Development and Regional Planning.

Working Group on Tourism.

2 TASK FORCE ON LARGE INDUSTRIES :

Working Group on Transportation—All Industries associated with Transport and Automobiles.

Working Group on Raw Materials, Finance and Infrastructure.

Working Group on Agro-Industries, Sugar, Alcohol, Vanaspathi, Paper Board, Rice Mills, Vegetable processing and Fruit processing.

Working Group on Metal-based Industries, Machinery and Machine Tools.

Working Group on Chemicals—Organic, Inorganic, Petro-chemicals, Synthetic Fibres, Fertilisers, Plastics, Pharmaceuticals and Dyes.

Working Group on Electrical and Electronics.

Working Group on Cement, Glass, Clay products, Glass products, Refractories and Ceramic.

Working Group on Textiles.

Working Group on Handlooms.

3. TASK FORCE ON SMALL INDUSTRIES :

Working Group on Raw materials.

Working Group on Coir and Handicrafts.

Working Group on Marketing, Quality Control and Research.

Working Group on Ancillary Development and Sub-contracting.

Working Group on Infrastructure, Land, Water, Power and Testing Facilities.

Working Group on Finance and Hire purchase of Machinery.

Working Group on Industrial Co-operatives.

Working Group on Sericulture.

4. TASK FORCE ON EDUCATION, SCIENCE AND TECHNOLOGY :

(*A*) *University Education*

1. Working Group on Documentation Centre and Libraries.
2. Working Group on Collegiate Education.
3. Working on College Management.
4. Working Group on University Education.
5. Working Group on Women's Education.
6. Working Group on Research and Advanced Studies.

(*B*) *School Education* :

7. Working Group on Pre-Primary Education.
8. Working Group on Primary Education.
9. Working Group on Secondary Education.
10. Working Group on Teacher Education.
11. Working Group on School Buildings, Library and Equipment.
12. Working Group on Education of the Handicapped.
13. Working Group on Education of Anglo-Indians.
14. Working Group on Evaluation.
15. Working Group on Administration, Supervision and Inspection.
16. Working Group on Adult Education.
17. Working Group on Science and Technology.
18. Working Group on Internal Assessment and Semester system.
19. Working Group on Commerce Education.

5. TASK FORCE ON HEALTH AND NUTRITION

Working Group on Health and Family Planning.

Working Group on Nutrition Plan.

Working Group on Sanitation and Drainage.

Working Group on Voluntary Contribution to Health Services.

Working Group on Professional Training and Research.

Working Group on Indigenous Medicine and Homeopathy.

6. TASK FORCE ON FORESTRY :

Working Group on Evaluation of demand for Forest Produce.

Working Group on Evaluation of the achievements of the Forest Department in the last 15 years.

7. TASK FORCE ON HUMAN RESOURCES AND SOCIAL CHANGE FOR ECONOMIC DEVELOPMENT :

Working Group on " Social Change ".

Working Group on Industrial Relations and Labour Welfare.

Working Group on Professional Man-power.

Sub-Group on Man-power in Organised Sector.

Sub-Group on Man-power in Unorganised Sector.

Working Group on Employment.

Working Group on Printing Industry.

Working Group on "Social Change and Social Laws ".

Working Group on Economic Management and Plan Administration.

Working Group on Role of Voluntary Agencies and employment.

8. TASK FORCE ON RURAL DEVELOPMENT INCLUDING RURAL HOUSING :

Working Group on Programmes, Resources and Outlay.

Working Group on Rural Industries and Rural Employment.

Working Group on Rural Housing.

Woking Group on Organisational set up.

9. TASK FORCE ON AGRICULTURE :

Working Group on Crop Production.

Working Group on Plantation Crops.

Working Group on Irrigation.

Working Group on Agriculture Finance.

10. TASK FORCE ON ANIMAL HUSBANDRY :

Working Group on Dairy Development.

Working Group on Livestock Planning.

11. TASK FORCE ON FISHERIES :

No Working Group.

12. TASK FORCE ON MINERAL RESOURCES :

No Working Group.

13. TASK FORCE ON FUEL AND POWER :

No Working Group.

14. TASK FORCE ON TRANSPORTATION :

Working Group on Roads including Metropolitan Transport.

Working Group on Inland Waterways.

Working Group on Railways.

Working Group on Airways.

Working Group on Ports.

Working Group on Administration and Policy Measures.

15. TASK FORCE ON MOBILISATION OF FINANCIAL RESOURCES :

Working Group on Growth Rate.

Working Group on Corporate Sector Finance.

Working Group on Small Industries Finance.

Working Group on Fiscal Policy (Taxation).

Working Group on Local Finance.

APPENDIX III

DECLARATION ADOPTED BY THE SEMINAR ON PLAN IMPLEMENTATION

INTRODUCTORY

1. The Seminar on 'Plan Implementation' meeting in Rajaji Hall, Madras on October 26th and 27th expresses its thanks to the Chief Minister, Dr. M. Karunanidhi, also Chairman of the State Planning Commission for the clear guidance given and major implementation issues demanding solution placed before the Seminar; places on record its gratitude to the authors of the thirteen Seminar documents; felicitates the Madras Institute of Development Studies and the Institute of Techno-Economic Studies for the timely organisation of this meeting on the eve of the start of the Fifth Plan, a meeting which brought together planners, administrators, academicians, district and panchayat union leaders and voluntary bodies; and adopts the following declaration on Plan Implementation as a guide to the Union Government authorities, State Planning Commission, the Administrative Reforms Commission, the Departments of the Government of Tamil Nadu, the District and Panchayat Union authorities, the Universities and Voluntary agencies who are participating in the formulation and implementation of the State Fifth Five-Year Plan.

THE STAKES

2. The Fifth Plan stakes derived from the Perspective Plan objectives—doubling per capita real incomes, providing full employment, reducing poverty, assuring social justice, accelerating social change, humanising development and decentralising planning—are high. They are no less than the welfare of the common man in Tamil Nadu. These stakes have now been embodied in sectoral programmes and new and continuing projects in the Fifth Plan. Whether or not this Plan with its programmes and projects will lead to a growing economy, a more just social order and a less unhappy and less discontented poor majority in our State will, in part, depend on the rate, manner and style of the implementation of the Plan and the execution of its programmes and projects. Here our past experience with the four Plans provides a clear warning ; the Plans were good ; the planning was not unsound. The failure lay in not implementing the Plans fully and in not executing the projects adequately. Notably the failures have been failures in achieving social justice. The gap between Planning and Implementation, like that between pledges and performance, has been wide and is widening. Alongside of the Fifth Plan that is now formulated, the forces making for failures or shortcomings in the implementation of the Plan must be provided against.

CAUSES FOR FAILURES

3. The causes for the failures in the implementation of the Plan are multiple. Some of them are built into our pluralistic democratic society with its governance by consensus and compromise, which blunts the sharp choice and focus of development issues and delays implementation, and its tendency to intervene at the execution and operational stage in addition to the decision on Plan policies and options which is its rightful field of interventation. But there are three remediable major causes for plan implementation failures. The first is that we do not have adequate managerial, technical and expert staff as we do the administrative cadres to implement the fast growing development functions, programmes and projects of the State and the public sector. Administratively we are still living in the pre-independence, regulatory sociotal stage and have not equipped ourselves with the necessary expert staff, training pogramme for the administrative and technical staff and their being located in projects for their full duration. Second, we do not have the machinery and procedure which can ensure the full implementation of our Plan and its programmes and projects. Our administrative system needs periodic review to meet the changing face of the economy; our budget procedures including the lapse doctrine need revision, simplification, rationalisation, new meaning

and co-ordination. There is no information system to help the staff face new factors which arise, and there is an inadequate monitoring system to send up warning signals of implementation delays or errors. We are trying to execute the Plan with procedures never meant for economic development and we fill the gaps by creating a confusing array of adhoc institutions and programmes to meet each new situation. Third, the whole system of plan formulation and implementation is highly centralised and for the second most populous country in the world and for a State whose size would place it tenth among the 132 members of the United Nations, such centralization is by itself enough to defeat all realistic planning and effective implementation. The unclear and over-lapping responsibilities for programme execution and project approval as between the Union and the State Governments, the lack of delegation of responsibilities to the local authorities for executing projects within their competence, the absence of annual operational district plans and machinery to execute them, the inadequate participation of universities, the private industrial and agricultural sectors, voluntary agencies and people generally in the execution of programmes and projects contribute to the growing short-falls between plan targets and physical implementation.

REMEDIAL ACTION

4. In light of these factors inhibiting adequate and full implementation of the Five-Year Plans, it is recommended that Union, State and local authorities take into consideration the suggestion made in this declaration for corrective action on both a short-term and long-term basis. A continuing repuirement is for political authority including political parties to require its technical organs to place before it, and through it to the public, in clear and sharp focus the various plan options and implementation alternatives in light of which it can decide on plan policies and strategies. Having so decided on policies and strategies, the political parties should develop a convention not to intervene in project formulation and execution. The other remedial actions refer to restructuration of the planning levels, district plan implementation, administrative reforms, monitoring and evaluation, peoples participation and a programme of training.

PLANNING LEVELS

5. The Plan should evolve from the district level, to the regional level, State level on to National level. The start made in Tamil Nadu to develop district and regional plans simultaneously with the State Plan is commendable and should be followed for the Sixth Plan by starting with the first two levels, so that the State Plan is an aggregation of the Plans at these two levels. To some areas such as power, water and perhaps higher education, which should be treated as assets of the nation as a whole there could be a further level of Planning between the State and National Plans. For the Sixth Plan and even for the Fifth Plan, as resources and needs in these areas cut across State boundaries and make the Southern Zone a natural zone, zonal plans in these sectors should be developed and jointly financed and executed by the States through zonal bodies. The National Plan should set forth the National goals and objectives as established by the National Development Council and should be essentially a co-ordination and integrating instrument of plans developed at the various levels referred to above. The central projects to be undertaken in a State should be notified to it so that they may be programmed in an integrated manner in the State Plan. This will also enable the States to contribute to their effective implementation. The Plan and non-Plan resources available to the State (if this distinction is maintained) should be fixed by legislation, so that the Planning exercises though accompanied by applying the legislative provision to particular conditions is freed from bargaining for resources. The machinery and procedures for Plan implementation are those used for the execution of the State's entire development programme. The responsibility for such implementation is that of the State Council of Ministers and its various subsidiary organs.

DISTRICT PLAN IMPLEMENTATION

6. Plan implementation requires that district plans become the basis for execution of the Plan. For this purpose, the Perspective District Plans should be translated into operational Annual District Plans. It has even been suggested that the Constitution may be amended to establish a list of subjects which are within competence of local bodies. Without going so far, the operational Annual District Plans should establish physical and output targets

for its programmes and projects, co-ordinate the functioning of the several agencies involved in each project and draw on all local agencies, the voluntary bodies and the people in the implementation of the plan. This will involve delegating implementation authority, for the annual operational district Plans, once they are reviwed and approved by the Government to a District Authority. This authority could be the District Rural Development Corporation Authority. Its functions, membership, secretariat, financial resources and relations with the Panchayat Union Councils and District Development Councils will have to be worked out in detail by the Government with the assistance of the State Planning Commission and the Administrative Reforms Commission. In this connection, some of the suggestions for consideration by them include the follwing : The question of making the existing districts smaller in size, with which the Administrative Reforms Commission is already seized should be pursued. The District Authority while being the executive body composed of District officials headed by the District Collector should rely for advice and review of its operations on the District Development Councils. The functions of the District Authority may include drafting the operational district plan and the supervision of its execution which is the responsibility of the departmental officers and the Panchayat Union Commissioners. The financial resources accruing to the authority must be examined with care in relation to any tax and local mobilisation of resources responsibility given to it. It may also act as banker to the Panchayat Union Councils and be helped financially through making available to it a part of the resources mobilised locally under the Small Savings Scheme and through an apex body like the proposed State Investment Trust. All these may also involve authorising the District Authority to make project changes and transfers within certain limits, developing district allotments in the State budget and equipping it with the necessary Secretariat including accounting services. To begin with, the Authority aided by the District Development Council may be entrusted with implementation of a category of rural development programmes. The entrustment of the functions to cover the rest of the District Development Programme can be considered in the light of the experience.

ADMINISTRATIVE REFORMS

7. Plan implementation calls for large investment and manpower with new and varied skills, requiring new organisations and new lines of control, adoption of new techniques of decision making and quicker and more effective lines of communication.

Successful Plan implementation thus means that the Administrative machinery must be under continuing review for its renovation and renewal through a Standing Administrative Reforms Commission or department which should also be vested with responsibility for monitoring the execution of its approved recommendations. The immediate administrative reforms should include (*a*) recruiting technical experts who will have the freedom to analyse and advise on problems from the technical point of view and finding and placing the bestmen required for each job, (*b*) making the secretariat and executive heads of Departments function as a single self-contained unit for implementation, (*c*) adjusting the budget process and administrative cycle, to the agro-climative requirements of the State involving in particular early notification of budget allotments/sanctions to the district officers and replacing the lapse doctrine by monthly letters of credit, (*d*) freeing the Finance department from day-to-day expenditure sanctions so that it can concentrate on recommending investment priorities, and undertake performance audit, cost-effective and cost-benefit analyses, (*e*) the system of audit and evaluation to take into account also the importance of speeding decision-making process and accepting the risks involved in that context, (*f*) simplifying and reducing industrial licensing procedures, for large and medium industries by the Union Government and for all industries by the State Government, (*g*) co-ordinating the functioning of the Deparment of Agriculture and the Department of Panchayat Development at the State, district, block and village levels, (*h*) re-organising in a phased manner the department of Agriculture and the Department of Panchayat Development at the State, district, block and village levels, (*i*) strengthening the personnel and devising other means of increasing the efficiency and profitability of public sector enterprises and (*j*) continuning the seperation between overall Planning and administration.

MONITORING AND EVALUATION

8. A continuous monitoring of the rate and quality of the implementation of all Plan projects

should be undertaken by both the head of the Department concerned and a central non-executive organ, preferably in the State Planning Commission, using the services of the Data Processing Centre and the performance budgets of the Departments. Both bodies should report to the State Development Committee on the progress of plan implementation every quarter. The reform of the treasury system referred to earlier for simplifying procedures for remittances, payments, and vesting departments with financial authority will also facilitate implementation and monitoring. A core sector comprising of industrial production, irrigation, agricultural production, power generation and transmission and public transportation should be established for the preparation of production-oriented or economically viable projects. Special cells of competent persons should be established in these departments to prepare project reports and evaluate their execution. A spot evaluation by a non-executive body like the State Planning Commission of selected projects be as a double check is also necessary.

Participation in Plan Implementation

9. To ensure the widest measure of popular participation in plan implementation it is necessary for the Universities, the proposed State Council of Education, Research and Training, and other research bodies to contribute through their research, and research and development programmes, particularly in the neglected social sciences area to both defining plan projects and improving their implementation. For this the financing of research must be increased. Similarly in the industrial sector, the identification of new entrepreneurial talent, the limitation to 5 per cent of the equity capital required of new enterprises and the setting up with the help of Government of innovative arrangements such as a construction material, assessment and development agency to overcome the problems of industrial raw materials and infrastructural shortages will improve implementation. The agricultural sector should be regarded as aim integrated farm sector involving cultivation, including water management, pure seed supply and grain banks, use agro-industries to promote particular crops with floor prices, farm-forestry and animal husbandry, and should intensify its use of the co-operatives and SFDA, MFAL and other institutional arrangements to ensure effective execution of agricultural programmes. Voluntary agencies can act as catalytic agents in the villages and undertake innovative programmes to speed the realisation of Plan targets. Their financing should be increased and except for financial accounting they should be independent of Government control and management. The task of implementation is so vast and urgent that there is a question which should be given further consideration. If there can be consensus on the Plan among the political parties, could their cadres be mobilised in the implementation of some of the Plan programmes, particularly those involving land reform, housing sites for landless, adult education and literacy, family planning, distribution of essential goods to the poverty sector ?

Training

10. Trainging programmes in management Institutes, Universities research institutions and on the job are needed to provide the competence, developing aptitudes and update the knowledge of persons involved in Plan implementation. In this connection, the proposal to set up an Institute of Management in this State is timely. Priority in training should be given to the senior staff, using all venues of training in the State and Country Such training should be both pre-service and much more post-service and in-service, for training like education is a life-long imperative in face of the exploding rate of knowledge, information and technology growth and change. The sponsors of the Seminar, the Institute for Techno-Economic Studies, and the Madras Institute of Development Studies could organise structured training programmes for planners at various levels-the Panchayat Union, the districts and the State as a contribution to improve Plan Implementation. In the last analysis, implementation of plans depends on motivation and the only adequative motivation is service to the people. That is what implementation depends on. And that is its own reward.

APPENDIX IV.

List of persons who served in the Task Forces.

Task Force on Education, Science and Technology

Chairman

1 Dr. Malcolm S. Adiseshiah, Member, State Planning Commission, No. 74, Second Main Road, Gandhi Nagar, Madras-20.

Members

2 Thiru K. Diraviam, I.A.S., Secretary to Government, Education Department, Fort St. George, Madras-9.

3 Dr. A. Ramachandran, Director, Indian Institute of Technology, Madras-36.

4 Dr. V. Shanmugasundaram, Member, State Planning Commission, Madras-5.

5 Thiru K. Venkatesan, I.A.S., Joint Secretary to Government, Finance Department, Fort St. George Madras-9.

6 Prof. M. V. Mathur, Director, Asian Institute of Educational Planning and Administration, Indraprastha Estate, New Delhi-1.

7 Thiru G.R. Damodaram, Director, P.S.G. Industrial Institute, Peelamedu, Coimbatore-4.

8 Thiru S.V. Chittibabu, Director of School Education, Madras-6.

9 Thiru V.T. Titus, Director of Collegiate Education, Madras-6.

10 Thiru P. Sivalingam, Director of Technical Education, Guindy, Madras-25.

11 Miss. E. Mathews, Principal, Ethiraj College for women, Egmore, Madras-8.

Secretary.

12 Thiru K. Venkatasubramaniam, Secretary, Task Force on Education, Science and Technology, State Planning Commission, Madras-5.

Task Force on Forestry

Chairman

1 Dr. Malcolm S. Adiseshiah, Member, State Planning Commission, Madras-5.

Members

2 Thiru P. N. Vedanarayanan, I.A.S., Secretary to Government, Agriculture Department, Madras-9.

3 Thiru K. Venkatesan, I.A.S., Joint Secretary to Government, Finance Department, Madras-9.

4 Thiru K.A. Bhoja Shetty, I.F.S., Chief Conservator of Forests, Administrative Buildings, Madras-6.

5 Thiru A. M. Mohamed Hussain, I.F.S., Principal, Southern Forest Ranger's College and Research Institute, Coimbatore-2.

6 Thiru S. Viswanathan, Managing Director, Seshasayee Bros., Ltd., "Sreyes", Madras-41.

7 Thiru V.P. Appadurai, Secretary, South India Viscose, Ltd., Coimbatore-18.

8 Thiru V.M. Narasimhan, Secretary, Task Force on Forestry, Ezhilagam, Madras-5.

Task Force on Health and Nutrition

Chairman

1 Dr. Malcolm S. Adiseshiah, Member, State Planning Commission, Madras-5.

Members

2 Thiru K. Venkatesan, I.A.S., Joint Secretary to Government, Finance Department, Fort St. George, Madras-9.

3 Dr. S.A. Subban, 63, Angappa Naicken Street, Madras-1.

4 Dr. (Tmt.) Rajammal P. Devadoss, Principal, Sri Avinashilingam Home Science College, Coimbatore-11.

5 Dr. P.R. Balakrishnan, Director of Health Services, Government of Tamil Nadu, Madras-6.

6 Dr. A. Venugopal, 464, Poonamallee High Road, Madras-10.

7 Dr. V. Shanmugasundaram, Member, State Planning Commission, Madras-5.

8 Thiru J.A. Ambasankar, I.A.S., Secretary to Government, Health Department, Fort St. George, Madras-9.

9 Brig. S. Kesavalu, 132, Thambu Chetty Street, George Town, Madras-1.

10 Dr. K.S. Sanjivi, 56, St. Mary's Road, Madras-18.

11 Dr. N.R. Ratnakannan, Director of Medical Education, Madras-5.

Secretary

12 Dr. K.P. Sarathy, Secretary, Task Force on Health and Nutrition, State Planning Commission, Madras-5.

TASK FORCE ON ANIMAL HUSBANDRY.

Chairman

Dr. B. Natarajan, Member, State Planning Commission, Chepauk, Madras-5.

Members

1. Thiru P. N. Vedanarayanan, I.A.S., Secretary, Agriculture Department, Madras-9.

2. Dr. C. Krishna Rao, Animal Husbandry Commissioner, Government of India, Krishi Bhavan, New Delhi.

3. Dr. G. Venkatachalam, Director of Animal Husbandry, Madras-6.

4 Dr. V. Rathnasabapathy, Director of Veterinary Education and Research and Dean, Madras Veterinary College, Madras-7.

5. Dr. S. Sethuraman, Superintendent, District Livestock Farm, Hosur.

6. Dr. J.N. Panda, Deputy Commissioner of Poultry, Ministry of Food, Agriculture, C.D. and Co-operation, Government of India, New Delhi.

7. Thiru D. Daniel Sundararaj, Principal, Agricultural College, Coimbatore.

8. Thiru S.P. Yagi, No. 5, Sait Colony, Egmore, Madras-7.

9. Thiru A.R. Subbiah Mudaliar, M.L.A., Edaikal (via) Tenkasi, Tirunelveli district.

10. Thiru G. Ramachandran, Deputy Secretary to Government, Finance Department, Madras-9.

11. Thiru L.M. Menezes, I.A.S., Commissioner for Milk Production (in-charge) Madhavaram, Madras-51.

12. Thiru Unnikrishna Menon, Director, Milk Colony, Madhavaram, Madras-51.

13. Dr. K.S. Shanmugasundaram, Joint Director of Animal Husbandry, Madras-6.

14. Dr. M. N. Menon, Regional Manager, Indian Dairy Corporation, Madras-2.

15. Thiru M.S. Palaniappa Mudaliar, Chairman, Co-operative Milk Supply Corporation, Raja Street, Coimbatore.

16. Dr. L.R. Muthuswamy, Erode, Coimbatore district.

17. Thiru M.K. Gomethagavelu, I.A.S., Commissioner, Milk Production, Madras-51.

Secretary

18. Dr. T. Ananthapadmanabhan, Secretary, Task Force on Animal Husbandry, State Planning Commission, Madras-5.

TASK FORCE ON FISHERIES.

Chairman

Dr. B. Natarajan, Member, State Planning Commission, Madras-5.

Members

1. Thiru K. Chidambaram, Director, Marine Export Development Authority, Cochin.

2. Thiru T.V. Venkataraman, I.A.S., Director of Fisheries, Madras-6.

3. Thiru S. Ambrose Fernando, President, Fish Exporters' Chamber, Tuticorin.

4. Thiru M.C. Perumal, Director, Central Institute of Fisheries Co-operatives, Dewans Road, Ernakulam, Cochin-16.

5. Thiru M.P. Haran, Deputy Director, Marine Export Development Authority, Cochin-16.

6. Thiru Vijiam Joshua, Technical Director, Steel Trawlers Limited, 350, Anna Nagar, Madras-40.

7. Thiru P.I. Chacko, Deputy Director of Fisheries (Retd,.) 6, Menads Street, Madras-7.

8. Thiru I.K. Rajah, Managing Director, Vanguard Investment Limited and Oceanic Delicacies-11/22, Second Line Beach, Madras-1.

9. Thiru R. Srinivasagopalan, Deputy Secretary, Finnce Department, Madras-9.

10. Thiru M.A.K. Tayab, I.A.S., Director of Fisheries, Madras-6.

11. Thiru G. Ramachandran, Deputy Secretary to Government, Finance Department, Madras-9.

Secretary

12. Thiru N.V. Choodamani, Secretary, Task Force on Fisheries, Madras-5.

TASK FORCE ON AGRICULTURE.

Chairman

Dr. B. Natarajan, Member, State Planning Commission, Madras-5.

Members

1. Dr. S. Rengaswamy, Vice-Chancellor, Agricultural University, Coimbatore.

2. Thiru N. Hari Bhaskar, I.A.S., Director of Agriculture, Chepauk, Madras-5.

3. Thiru V. Karuppan, Joint Director of Agriculture, Chepauk, Madras-5.

4. Thiru N. Sankaranarayana Reddy, Joint Director of Agricultural Engineering, Madras-5.

5. Dr. V. Santhanam, Project Co-ordinator and Head, Indian Agricultural Research Institute Regional Station, Coimbatore.

6. Thiru V.M. Kailasam, Commercial Director, Sakthi Sugars Limited, Erode.

7. Dr. (Mrs.) R. Thamarajakshi, Agricultural Economist, Ministry of Agricultre, New Delhi.

8. Thiru L. Bakthavatsal, Singanallur, P.O, Coimbatore District.

9. Thiru Arur Muthu (Ex. M.P.). Arur, Dharmapuri District.

10. Thiru P. M. Muthukumarappa, Multigrow Farm, Palambakkam, Chingleput District.

11. Dr. M. Srinivasan, Agricultural Economist, Raja Annamalaipuram, Madras-28.

12. Thiru G. Ramachandran, Deputy Secretary, Finance Department, Madras-9.

13. Thiru A.K.D. Balaramaraja, Rajapalayam, Ramanathapuram District.

14. Thiru A.R. Subbiah Mudaliar, M.L.A., Member, Administrative Reforms Commission, Idaikal P.O., (via.) Tenkasi.

15. Thiru J. Dayanand Rao, Secretary for Agriculture, Auraville, Pondicherry.

16. Dr. B. Appala Naidu, Director of Extension, Andhra Pradesh Agricultural University, Rajendra Nagar, Hyderbad-30.

17. Thiru M. N. Meenakshisundaram, Joint Director of Agriculture (Intensive Agricultural Development Programme), Madras-5.

18. Thiru V. Selvaraj, I.A.S., Deputy Secretary, Institutional Finance, Madras-9.

19. Thiru S.P. Namasivayam, Chief Engineer, (Irrigation), Madras-5.

20. Thiru U. Ananda Rao, Retired Chief Engineer, Madras-17.

21. Thiru S. Panchanathan, Director, Ground Water Directorate, Madras-17.

22. Thiru N. Kothandapani, Chief Engineer, Tamil Nadu Electricity Board, Madras-2.

23. Thiru K. Keshav Kini, Additional Registrar of Co-operative Societies, Madras-5

24. Thiru C.D. Datey, Chief Officer, Agricultural Credit Department, Reserve Bank of India, Bombay-18.

25. Thiru G. Lakshminarayananan, Custodian, Indian Bank, Madras-1.

26. Thiru Rudramurthy, Agricultural Finance Corporation, Bombay.

27. Thiru R. Kanakashabhai, President, Tamil Nadu State Co-operative Bank Limited, Madras-1.

28. Thiru Mannai P. Narayanaswamy, M.L.C., President, Tamil Nadu Co-operative Markeingt Federation Limited, Madras-10.

29. Thiru M. Shanmugam, M.L.A., President Tamil Nadu Co-operative Union, Madras-9.

30. Dr. P. Natesan, General Secretary, Tamil Nadu Co-operative Land Development Bank, Madras-4.

31. Thiru R. Srinivasagopalan, Deputy Secretary, Finance Department, Madras-9.

32. Thiru T.N. Palaniswamy, Presdient, Thudiyalur Co-operative Agricultural Services Limited, Coimbatore.

33. Thiru O.R. Krishnaswamy, Principal, Sir Ramakrishna Vidyalaya Rural Institute, Sri Ramakrishna Vidyalaya, Coimbatore.

34. Prof. Y.W. Blessed Singh, Head of the Department of Economics, Bishop Heber College, Puthur, Tiruchirappalli-17.

35. Thiru G.J. Raja Singh, .I.F.S., Conservator of Forests, Government Rubber Plantations, Nager-, coil.

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42	4.13	Heading	Sector	Sectoral
43	Table 4.3	Column 0.	Todal	Total
43	Table 4.4	Total Column 3, 4	4.0, 6.1	4.9, 5.9
46	Table 4.5	Foot Note 1	Scource.	Source.
47	Foot Note		1974-79	1974-79,
50	Table 4.8	III Column 4	(1971-72).	Column 3 (1971-72.).
50	Table 4.8	Foot Note 1.	ota	eita
51	Table 4.8	Item No. 6 Heading	Good.	Goods.

(1)	(2)	(3)	(4)	(5)
51	Table 4.8	Item No. 6/4 Column 2.	tonnes	pieces.
51	Table 4.8	Foot Note	in to	into
52	Table 4.8	Item 6 VII c, d, e.	Number of Students, Number of Teachers, Number of Students, Percentage of Adult literate.	Students, Teachers, Students, Adult literate.
54	5.8	9	0.6636 / 3763V	~~0.6636~~ ₹0.6636 , 3763V
56	5.16	8	head	per head.
57	6.1	7	Form	From
57	6.1	16	is	was
57	6.1	16	line	line in 1969-70.
57	6.1	18	includs	includes.
57	6.2	29	sources	sources.
57	6.3	3	essentiai	essential
57	6.3	5	thl	the
57	6.3	18	Rs. 0.8	Rs. 0—8
59	7.5	13	workin	working
59	7.5	14	cons truction	cons-truction
60	7.7	56	peoples',	peoples'
61	7.10	4	biases,	biases
61	7.12	2	disparities,	disparities
61	7.12	10	Artisan clubs	Artisan clubs,
62	7.14	8	persuation	persuasion
62	7.16	12	n	in
62	7.18	Heading	Humansing	Humanising
63	7.27	Heading	Training'	Training
63	7.28	6	recommended	recommended.
63	7.28	7	Created	Created.

(1)	(2)	(3)	(4)	(5)
67	8.1	1	hav	have
67	8.1	2	leve	level
70	8.12	5	Distrit	District
70	Foot Note	6	Pregramme	Programme.
71	8.19	11	obacco	tobacco
71	8.22	19	als ade	also made
71	8.24	4	a	at
72	8.28	13	Deve-enopur, husbondry, fishters,	Development, husbandry fisheries.
73	8.32	21	existance	existence
73	8.34	7	primarv	primary
77	9.4	7	availabl	available
77	Table 9-1	Heading	Capacity	Capacity of
77	Table 9-1	Column 5 heading	tota	total
78	9.5	7	59·00	59.0
79	9.10	14	meet the	meet
79	9.11	4	factors	factors—
79	9.11	11	Power	power
80	9.19	8	lants	Plants
80	9.21	4	Sectors	Sector
80	Foot Note	3	70C	~~70C~~ 70°C
82	9.30	18	sector	sectors
83	9.34	8	*i*	*is*
83	9.35	14	as X.3=215.768+1.760 as X_1+1.419 as X_2 (R^2=0.975)	$X_{1.23}$=215.768+1.760X_1 +1.419X_2 (R^2=0..9775)
83	9.35	15	0.586X	0.586X_1
83	9.35	16	$X_{.23}$	$X_{1.23}$
84	9.35	17	X	X_2
84	9.35	23	X	X_1
84	9.36	4	industry is	industry—is
84	9.37	7	i n	in

(1)	(2)	(3)	(4)	(5)
85	9.40	7	1983 84	1983-84
85	Table 9.11	Heading	(in mw)	(in MW)
85	Table 9.11	Heading	-L	C.L.
85	~~Table 9.11~~	~~Column 7~~ Column 7		
86	9.42	8	generation capacity	generation Capacity
88	9.60	2	pistrict	District.
89	9.62	13	Rs. 35,12	Rs. 3, 5 12
90	9.70	3	Amavarathy	Amaravathy
91	9.74	7	Rs. 11.90	Rs. 1,190
92	9.87	7	Tuticorin	Tuticorin.
93, 94	Table 9.13	Column 2.	Power generation	Power generation (in MW)
93, 94	Table 9.13	Column 4.	(in MW)	*delete.*
95	9.96	Heading	sehemes	schemes
96	9.104	6	Mangalapattl	Mangalapatti
96	9.104	8	with	with.
96	9.107	5	susbtantially	substantially
96	9.108	1	th	the
97	9.112	8	shoul	should
97	9.113	2	Five year	Five-Year
97	9.117	Heading	1983-84	1983-84,
98	9.119	10	crises	crises,
99	9.120	19	purcahse	purchase
99	9.121	2	installtion	installation.
99	9.124	7	for	four
99	9.124	24	repurcussions	repercussions
100	9.127	12	ghats	Ghats
101	9.129	18	of	delete
102	9.136	Heading	Developments	Development
106	10.6	3	lenght	length
106	10.7	heading	Compàrision	Comparison
106	10.7	10	affic	traffic

(1)	(2)	(8)	(4)	(5)
106	10.7	11	a	as
107	10.9	12	standards	standards,
110	10.22	14	improvemesnt	improvements
111	10·27	Heading	Capacites, Prspective	Capacities, Perspcctive
112	10.28	Heading	Board	Broad
114	10.38	9	chang	change
117	10.58	1	cana	canal
117	10.58	3	ne	near
117	10·58	5	movemen	movement
117	10.58	6	crores	crores.
118	10.66	10	interin	interim
120	10.75	1, 2	t, alai	It, Salai
131	12.3	21	functiona	functional
134	12.20	4	Abstrat	Abstract
134	12.20	5	i the two bles be w	in the two tables below
138	12.36	Heading	Higer	Higher
139	12.41	6	attenon	attention
140	12.48	13	ts	its
142	12.59	8	significance is	significance. Its
142	12.61	15	informatio	information
143	12.61	19	enduvaaluate	and evaluate
145	12.73	(a) 8.	rising	raising
147	12.89	7	ths	the
148	Table 12–4	(A) 5 column 2	57.00	56.00
149	Heading	1	Health	Health,
150	13.4	9	would be	was
152	13.21	20	ar	are
152	13.21	23	till end	till the end.
152	13·21	29	on	one
152	13.21	70	from	form
153	13.22	2	populat	popula·

(1)	(2)	(3)	(4)	(5)
153	13.22	10	integraet	integrate
153	13.22	54	is	was
153	13.22	54	orde	order
153	13.22	57	occur	occurred
153	13..22	58	occur	occurred
154	13.24	34	tions	ions
156	13.30.	19	aracrobic	anaerobic
156	13.30	21	soakag	soakage
156	13.31	9	plau	plan
156	13.31	10	wate,	water
156	13.32	21	a	at
157	13.35	7	indegenous	indigenous
157	13.38	2	32	35
157	13.38	9	1,175	175
158	13.39	2	sterilization	sterilizations
168	13.45	7	an	and
158	13.45	8	adequa.,	adequ-
158	13.45	9	unit	unit,
158	13.46	1	t units	the units
159	13.51	1	vaccina on	vaccination
159	13.51	2	childcren	children
159	13.52	8	guipance	guidance
160	13.66	4	sc sce	sciences
160	13.66	5	ne	new
160	13.67	5	couse	course
160	13.67	10	accepatable	acceptable
169	14.15	9	uay	way
170	14.24	14	oan	loan
171	14.26	19	pumptess	pumpsets
172	14.36	4	the	the proposed
174	15.6	46	ttractive	attractive

(1)	(2)	(3)	(4)	(5)
175	15.13	11	simplica-	simplifica-
175	15.13	27	are-	a re-
178	15.30	2	8	6
179	15.34	13	follo-	follow-
180	15.39	9	implement	implementing
185	16.1	Heading	Groth And Distrbrution	Growth and Distribution
188	16.9	5	acquistion	acquisition
188	16.12	Heading	Porspective	Perspective
188	16.12	24	efficietn	efficient
189	16.17	1	abou	about
190	16.24	3	rehablitation	rehabilitation
195	17.2	32	th bac	the above
195	17.2	33	Persfective	Perspective
196	17.6	13	specia	special
199	Item 34	Total, column (1)	30 00	30.00
201	18.2	14	Industria	Industrial
201	18.5	10	Maha	Mahalir
202	18.9	5	apprecialy	appreciably
202	18.9	6	gerratric	geratric
202	18.9	9	menta	mental
202	18.9	13	selectad	selected
202	18.9	16	founds	funds
203	18.13	24	Correctional Administration	Correctional Administration. The approach to correctional administration will be preventive rather than curative.
203	18.15	1	Correctiona	Correctional
203	18.15	2	fo	fol-
203	8.17	Heading	scheduld	scheduled
207	18.41	2	propely	properly
207	18.41	10	r oe	role

(1)	(2)	(3)	(4)	(5)
208	18.46	4	houses	houses to
208	18.46	5 and 6	to their	delete
209	19.1	23	exent	extent
209	19.4	10	poxs	poses
210	19.6	20	letailed	detailed
210	19.8	3	101	for
210	19.9	2	01	of
210	19.9	3	Sta	State
210	19.9	9	Co tribution to nationa	Contribution to national
211	19.12	16	grahite	graphite
212	19.20	14	chrome-magncsia	chrome-magnesia
213	19.26	19	surve,	survey
215	19.34	1	variou	various
215	19.34	2	tn year	ten years
215	19.34	7	geologica	geological
220	20.5	2	;trategy	strategy
220	20.8	6	lto	to
220	20.9	2	form	from
220	20.9	15	nanced	financed
221	20.15	4	seven	eight
221	20.19	2	alreaey	already
222	20.24	8	Out Door	Out look
222	20.26	3	an he	and the
229	20.69	6	exparsion	expansion
229	20.69	7	ro ghly	roughly
229	20.70	15	B cycles	Bicycles
229	20.71	11	T actors	Tractors
229	20.72	2	mate	mated
229	20.72	5	instal ed	installed
229	20.72	6	ducec	duced

(1)	(2)	(3)	(4)	(5)
229	20.72	10	Capac ty	Capacity
229	20.72	11	Inten	Intent
229	20.72	13	Iidia	India
229	20.72	17	ul	up
229	20.72	19	abou	about
232	Table 20.3	10	reuq red	required
232	20.94	16	egard	regard
232	20.94	17	prod ictoion	production
232	20.94	18	li ences	licences
232	20.94	21	1 ite	rate
232	20.94	23	183-84	1983-84
232	20.95	1	mag iitude	magnitude
232	20.95	3	a	a
232	20.95	4	re(eivers	receivers
232	20.95	7	nanu —	manu—
232	20.95	10	suitid	suited
232	20.95	11	killed	skilled
232	20.95	12	Irivate	private
232	20.95	13	ele(tronic	elcectronic
232	20.95	14	reieivers	receivers
232	20.95	15	don ;	done
234	20.105	1	productio	production
234	20.105	2	one	zone ,
234	20.105	8	tota productio	total production
234	20.105	9	igure	figure
234	20.105	12	ir excess o	in excess or
235	20.107	11	drough	drought
235	20.111	2	fib e	fibre
235	20.111	19	polyste	Polyster
238	20.128	18	p roduetion	production
238	20.131	8	expenditu e	expenditure

(1)	(2)	(3)	(4)	(5)
238	20.132	8	a cohol	alcohol
239	20.134	2	set ing	setting
239	20.134	3	pocket	pockets
239	20.141	7	1, rict	district
239	20.141	8	ava lable	available
244	21.10	1	21,10	21.10
244	21.11	1	21,11	21.11
244	21.12	1	21,12	21.12
246	21.22	15	unregistere/	unregistered
247	21.24	7	particulars	particular
247	21.27	3	it	in
248	21.31	15	or h	worth
249	21.35	12	manufactur	manufacture
250	21.45	5	urgenf	urgent
250	21.46	7	o	of
251	21.48	4	pecific	specific
251	21.48	8	brough	brought
251	21.51	12	cal	can
251	21.51	12	furture	future
252	21.54	21	Sericulture	Sub-Heading
255	22.6	1	seasona	seasonal
256	22.10	1	protec	protec-
256	22.10	2	no1	not
256	22.10	7	extention	extension
257	22.20	1	streng	streng-
258	22.23	3	euqal	equal
258	22.23	7	gorwing	growing
258	22.24	3	bu iness	business
259	22.25	11	er	per
259	22.26	5	983-84	1983-84
261	22.35	14	n	in

(1)	(2)	(3)	(4)	(5)
262	22.44	2	estimate	estimated
263	22.46	6	10Rgs.	10 Kgs.
264	22.55	4	heir	their
264	22.55	5	hould	should
264	22.55	6	he	the
264	22.55	7	seel	seed
265	22.60	6	production	protection
265	22.61	8	establishec.	established.
265	22.61	8	Integ ted	Integrated
268	22.88	7	1 oductivity	productivity
269	22.103	4	cove	cover
281	23.4	4	about	delete
281	23.6	20	insk	skin
282	23.8	2	n	in
282	23.10	7	toal	total
283	23.13	4	dis ases	diseases
285	23.30	2	conering	cornering
288	23.59	6	to ex-	to be ex-
288	23.62	1	33.62	23.62
288	23.62	5	amilies	families
289	24.4	8	comp red	compared
291	24.7	30	Eucalyputs	Eucalyptus
291	24.7	33	Ecualyputs	Eucalyptus
291	24.7	33	Ramanatha	Ramanatha-
292	24.7	85	wortk	work
292	24.7	90	n	in
292	24.7	91	adioining	adjoining
292	24.7	92	agricul	agricul-
292	24.7	127	intitiated	initiated
293	Table 24.2	12	adyus	sandy
294	Table 24.2	32	plans,	plans

(1)	(2)	(3)	(4)	(5)
294	Table 24.2	33	11	III
295	24.10	5	Eucalyputs	Eucalyptus
295	24.11	3	Nilgirs	Nilgiris
297	25.7	5	rice	rise
298	25.12	9	dessemination	dissemination
298	25.15	2	re-orientaion	re-orientation
299	25.21	3	fifshschmen	fishermen
299	25.23	1	porvision	provision
300	25.40	6	fields	field
302	25.60	10	Turicorin	Tuticorin
302	25.60	11	Harbow	Harbour
302	25.62	1	Tamii	Tamil
303	25.71	4	Turicorin	Tuticorin
304	25.73	18	ouli	outlay
309	Table 26.1	21,column (2)	411.0	412.0
309	Table 26.1	21, column (3)	653	651
309	Table 26.1	22	Dtrectorate	Directorate
309	Table 26.1	23	Madraa	Madras
309	26.12	14	tras-	trans-
310	26.15	8	eveloped	developed
310	26.16	1	indus'—	indust-
311	26.20	2	proprotionate	proportionate
313	26.29	9	infrastructual	infrastructural
323	28.8, S.H.14	8	growch	growth
323	28.9	32	guidancc	guidance
324	28.11	3	54.98	54.07
327	29.14	17	waste".	waste
327	29.17	12	sector	sector
328	29.21	11	o	of
328	29.24	10	sophis,	sophis-
328	29.26	10	building	Building

(2)	(2)	(3)	(4)	(5)
329	29.31	3	Nadu	Nadu.
330	29.36	5	Estimaied	Estimated
335	30.1	4	megnitudes	magnitudes
336	Table 30.1	5 (column 1)	4,096	4,099
337	30.10	22	n	in
337	30.12	3	pass	past
337	30.12	14	factors	factors,
337	30.12	14	revenne	revenue
337	Table 30.2	10	Reseurces	Resources
337	Table 30.2	10	Ffth	Fifth
337	Table 30.2	10	sf	of
338	30.13	2	realtive	relative
339	30.20	33	reconsidearation	reconsideration
340	30.24	5	tollowing	following
342	30.42	5	n	in
344	30.50	33	wih	with
344	Table 30.5	2	17461	27461
344	Table 30.5	4	22213	22258
344	Table 30.5	6	56.3	55.3
345	30.51	12	autotnomous	autonomous
345	30.54	9	puproses	purposes
345	30.55	3	corectly	correctly
345	30.56	18	Tami Nadu	Tamil Nadu
346	30.56	9	hese	these
346	30.57	14	make these	make, these
346	30.59	20	Centrat	Central
346	30.60	6	perentage	percentage
347	30.63	7	date	data
347	30.63	7	Apprajsal	Appraisal
347	30.63	10	provisioual	provisional
347	30.65	12	linc	line

(1)	(2)	(3)	(4)	(5)
347	30.65	18	nutritional	'nutritional
348	30.70	15	tate	state
351	30.83	13	hoth	both
352	30.86	5	Bod;es	Bodies
352	30.86	5	rapidlp	rapidly
352	30.90	7	potentiatlities	potentialities
352	30.90	8	patern	pattern
356	Table 31.1	Column 1	289	288
356	Table 31.1	Column 2	622	729
356	Table 31.1	Column 3	2740	2741
357	Table 31.2	Column 4	4410	4110
357	Table 31.2	Column 6	2134	1131
358	31.12	6	planl-oans	plan loans
361	31.27	8	As....result	As a result
363	Table 31.6	Column 3 (18)	3074	3072
363	Table 31.6	28	(Government of india—1973	(Government of India—1973)
364	Table 31.7	Column (2) (3)	12307	14307
367	32.3	2	obilisation	mobilisation.
372	Table 32.4	1	Government	Governments'
372	Table 32.4	Column (4) (1)	51.5	51.6
375	33.5	8	uncertainlty	uncertainity
375	33.5	14	revieved	reviewed
379	1	11	ffectively	effectively
384	6	6	ist	list
385	7	45	Continuing	Continuing
386	9	21	s..d	seed
386	10	23	depend	depends
387	Task Force on Forestry	18	Forc	Force
387	Task Force on Heath and Nutrition	20	TASH	TASK

(1)	(2)	(3)	(4)	(5)
389	9	21	Finnce	Finance
389	15	26	Auraville	Auravillee
390	25	4	G. Lakshminarayanana	G. Lakshminarayanan
390	28	11	Markeingt	Marketing
390	36	2	Nadanam	Nandanam.
390	6	2	Elecrcity	Electricity
390	11	2	Pl-nnin.	Planning
396	13	4	Volume	Volume I