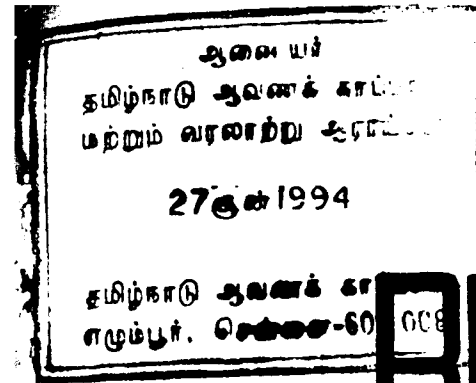




BULLETIN.

MADRAS DEVELOPMENT
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May-June 1994



**Natural Resources Management Using
Remote Sensing Technology**

**Study of Variations in Educational Participation
Based on Secondary Data : Some Suggestions**

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EDITORIAL HIGHLIGHTS

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Introduction

THIS May/June Editorial covers a rather wide area over the months of March and April. At the **State** level, there is a review and discussion of the state budget proposed and passed in the Assembly for 1994-95 and various problems it raises including a worrisome one of rising deficits and the difficulties faced in regard to increasing its revenue collections. There follows a detailed review of the power situation in the state including the private sector foreign firms which have entered this field. The development on solar energy, the power from sewage and garbage and the over drawal and low frequency caused by Andhra Pradesh and the Southern Gas Grid and its development are reviewed. In regard to women's development, the programme of vision 2000 and the report of the women's commission is briefly noted. In the transport field the slow progress of MRTS and the development of the Ennore Port are passed in review. The plan for development of Madras as a Mega city are noted as are the discussions on the Panchayati Raj Bill. In the water area, the speeding up of the Krishna water supply which should reach Madras by middle of 1995, the opening of Mettur on the due date, June 12, and the daily water supply in Madras city are taken note of. In the agricultural area, the state farm policy formulated by the government is examined along with the satisfactory paddy procurement from the increased acreage, and rice distribution which has resulted from increased central allotment; the developments in seri-culture and fisheries are also passed

in reviewed. In the industry field the problem faced by the Madras industrial park and the growth centre's are noted. The positive response of Bombay industrialists to the state's industrial policy, the single point entry announced by the government, the development of handloom and textiles, the Madras Refineries expansion and diversification, the value added granite programme, the UNIDO aid to the CIPET project, the problems faced by Arochem, the BIFR clearances, the KPIL SSL merger, the TIDCO copper project, the Penta Four entering the telecom centre, the extension of Madras Cements, and diversification of Lakshmi textiles, the problems faced by Tamil Nadu steel and Salem steel, EID Parry, B&C Mills and SMPL industrial relations problems, the Development of BHEL at Tiruchy, the expansion of TNPL and the power loom crisis are passed in reviewed. At the national level the two digit inflation with which the year 1994-95 begins is examined in terms of its impact on the economy. The promotion of products being manufactured in the slums is noted. In the power field the impact of the two MNCs which are about to take over power manufacturing equipment and the position of BHEL is examined along with the problems posed by the price of power. In the stock exchange area, SEBIs new format and its non relations with Badla deals are noted. In the economy field the affect of the budget on the economic reform process is discussed in some detail. The problem of budget deficits and the revision of tax proposals are noted.

The signing of GATT and the impact it has had in parliament, the capital goods policy, the definition of the primary deficit, the steps to curb government expenditure, the problem of Octroi, the impact of the budget on SSI, the corporate sector's plan to raise Rs.13,000 crores from the capital market, the procedural aspects of the finance bill, the shooting up in the foreign exchange reserves of the country and the advance payment of principal and interest to IMF, the state of rural credit and rural development, the problem of rural poverty, the postponement of the insurance sector reforms, the foreign investment proposals, and the various data on GDP growth in 1993-94 and the forecast for 1994-95 are all passed in review. In the agricultural field the prospects for 1994-95 as seen by CMIE, the effect of liberalisation on agriculture, the affect of the GATT treaty on agriculture, the grain output and the target for 1994-95, the development of fisheries and agricultural research during the two months are all reviewed. On the plantation crops the problems faced by the tea industry, the coffee growers and rubber prices together with the spices exports are examined. On industry the various industrial growth rates set forth by CSO and forecasts by NCAER, CMIE are examined. The effect of the excise duty on textiles, the steel output and the performance of SAIL, the approval of five private sector steel plants, the ONGC output and the collaboration of IOC and north sea oil, are examined. On the negative side the 177 central projects which are behind schedule, the lack of action on sick PSUs, and the great and growing gap between approvals of foreign investment and actual equity inflow into the country are noted with concern. In the export field, changes in the import/export policy, the effect of GATT agreement on Indian exports are discussed in some detail. The declining trade deficit, the effect of the double digit inflation on imports, the controversy over the import of consumer goods are passed in review. The good performers on the export front are sea food and marine exports, soft ware, textiles

and spices. 11 PSUs have been chosen for special attention in the matter of exports. In regard to loans and foreign aid India's contribution to GEF, ADBs stopping of the second tranche of its loan, IDA credit to the country and to Maharashtra, together with the UK and Germany loans are noted. In the Human Resources Development area adult education which started so well is facing problems which are discussed together with the possibilities of the closure of the National Institute of Adult education. The decline in the female literacy rate is noted along with the changes in technical education, the launching of an open university for Tamil Nadu, the removal of property tax on educational institutions are discussed. In the science area, the problems faced by science departments in universities and the lack of relation between R&D and Indian industry and the various attempts to attract scholars to science are passed in review. In the health field the declining disease among school goers in the state and the new health scheme for Tamil Nadu schools are discussed. In the employment area the problems caused by the capital intensive economic growth in regard to unemployment, the extension of Jawahar Rozgar Yojana for the entire state, the problems created by the absence of exit policy and lack of central government job cuts are discussed. In the international field the results of the spring meetings of the joint IMF/WB consultative committee particularly its important recommendations for restructuring the multilateral lending institutions with increased conditionalities are noted. The second conference in agriculture and bio-technology has made recommendation which are important. IMF's forecast of the trends in world economy, the affect of the GATT treaty in the South and the lack of relevance of G15 with regard to the economic development of the South, the trends in world trade particularly as seen by UNCTAD, ADB on the Asian economy and the Asian urban Population growing at a faster rate which will exceed the total rural population

is noted. Under other items, some 15 issues in which MIDS is involved are noted. These include the Tamil Nadu State Council for Higher Education, National Council for Industrial Harmony, the Industrial Economist anniversary, Asiatic Society of Bombay, the financing issues of the central universities and its relation to state universities, the seminar on development for communication, the India International Centre's panel discussions, seminar, meeting of Board of Trustees and Annual General Meeting, the meetings on housing of the Institute of Social Sciences, the meeting of MIDS Board of Trustees, the Tamil Nadu State Council for Science and Technology's activities in developing thrust area, and its regular executive committee meeting, the MANAR programme, the seminar on the development of Panchayati Raj institutions, the discussion on poverty and accountability, activities of Alliance Francaise, SRC and TNBCE Board meetings and the C N Mehta Memorial lecture.

State

State Budget 1994-95

The backdrop to the state budget presented to the Assembly in the Governor's address refers to the record food output despite the severe impact of the cyclone and floods. Foodgrain production reached a record 100 lakh tonnes in 1993-94, rice production peaking at 84.5 lakh tonnes, sugar cane 251.10 lakh tonnes, cotton 6 lakh bales, oil seeds 17 lakh tonnes, with planting oil palm on 2000 hectares. Farmers have profited from record prices for their produce particularly paddy and sugar cane. On the power front financial approval of the Rs.7500 crores, 1500 MW Jayamkondan Integrated Lignite Mining and Power Generation project is under way, as also the 120 MW Japan aided Basin Bridge gas based project and

the MOU to establish the Rs.800 crores first large scale Ocean Thermal Energy Conservation, 100 MW plant referred to in the last issue are to be noted. Also the Centre has approved a 250 MW Rs.1200 crores thermal plant to be taken up with the private sector at Neyveli for completion by 1997. It is noted that the state has now entered a crucial stage of economic development with the impact of the Centre's liberalisation policy. What is needed is acceleration of industrial development in the state for which steps like expeditious disposal of clearances, creation of good industrial relations and provision of adequate infrastructure are being emphasised. A sum of Rs.590 crores has been fixed as a small savings target in the state for 1993-94 which also brings out the many sided benefits of augmenting small savings. Madras Corporation has revised property tax on residential premises with effect from April 1993. This would net a total of Rs.100 crores for the state. An unfortunate development is that at mid March government announced lifting the ban on new recruitments at the entry level referred to in the last issue which it had imposed in December 1993. This was the decision taken as a result of response to protests by political parties and government employees organisation. Against this background the budget for 1994-95 introduced by the government in parliament is summarised in Table 1.

The budget presented summarised in table 1 shows the state's awareness of the imperative need to control the rate of growth of expenditure which is rising at 22.6 per cent during the last five years. The revenue expenditure for 1994-95 is a little above the revised estimate for 1993-94. Even this could have been avoided if the imposition to freeze fresh recruitment at all levels had been maintained and not lifted. There is no reason why the existing staff could not be deployed to take care of the increase in the volume of work which is anticipated.

Table 1: Budget for 1994-95

Items	1992-93 Accounts	1993-94 Budget Estimate	1993-94 Revised Estimate	1994-95 Budget Estimate
(1)	(2)	(3)	(4)	(5)
I Consolidated Fund				
Revenue Receipts	₹ 70,16,33	69,89,89	72,15,13	75,44,87
Expenditure met from Revenue	₹ 85,42,53	83,00,57	84,07,40	90,83,88
Surplus or Deficit on Revenue Account	(-)15,26,20	(-)13,10,98	(-)11,92,28	(-)12,39,16
Capital Receipts	22,69,57	28,64,44	26,86,12	32,77,92
Expenditure met from Capital including Loans and Advances (Net)	** 16,23,65	24,38,41	24,13,94	26,76,60
Deficit or Surplus on Capital account	(+)16,45,92	(+)14,26,03	(+)2,72,18	(+)16,01,32
Total Consolidated Fund (Net)	(-)8,80,28	(-)8,84,95	(-)9,20,10	(-)16,17,84
II Contingency Fund (Net)	(+)78,24	---	---	---
III Public Account (Net)	(+)18,36,27	(+)5,25,00	(+)6,91,28	(+)4,36,61
Total-Transactions (I+II+III)	(+)34,23	(-)3,59,95	(-)2,28,82	(-)2,01,23
Opening Balance	(-)2.23	(-)2,75,94	(+)32,00	(-)1,96,82
Closing Balance	*** (+)32.00	(-)6,35,89	(-)1,96,82	(-)3,98,05

① Includes interest on loans to Tamil Nadu Electricity Board adjusted from Revenue Account Rs.82.15 crores.

② Includes adjustment to the extent of Rs.4,64,68 crores being the arrears of Tariff Compensation to Tamil Nadu Electricity Board against loans and Ways and Means Advances due from the Tamil Nadu Electricity Board.

** Includes adjustment to the extent of Rs.3,82,53 crores being the arrears of Tariff Compensation to the Tamil Nadu Electricity Board against Loans and Ways and Means Advances due from the Tamil Nadu Electricity Board.

*** This is after availing Rs.1,27,64 crores as ways and Means Advance and Over Draft from the Reserve Bank of India.

year ahead. In this context it is noted with appreciation that the estimated budget deficit for 1993-94 of Rs.935.89 crores has been reduced to Rs.198.82 crores. According to the revised estimates, further steps in this direction would involve limiting new recruitments to meet the demand of productivity which would leave more resources for the government for badly needed investments as well as some of welfare schemes. An economy drive on the expenditure in 1994-95, could net Rs.95 crores. The other positive side of the budget is that unlike most state budgets presented for 1994-95 Tamil Nadu is raising more resources. Here the budget states that the government is levying appropriate charges from the non poor for the services it renders to them in fields such as higher education, medical services and irrigation. This effort to charge user needs needs should be extended to other areas such as power, in addition a luxury tax of 5 per cent is levied on tobacco (except beedies), 40 per cent entertainment tax is imposed on gross receipts on cable TV operators, and higher entertainment tax is also levied on dubbed films. The rate of excise duty on premium and medium brands of MFS is rationalised to Rs.75 per litre, tax on light motor vehicles, tourists, tax cabs and omni buses have been increased as also the tax on goods carriages and stage carriages, electricity tax is rationalised at 5 per cent but agriculture, domestic and capital generation continue to be exempted. There is no reason why they should not pay the user charges like others. Most items are brought under Schedule VI to prevent more tax evasion in sales tax, concessional rates on input under Section 3(3) is extended to cover mineral oils and gases used as raw materials. The time limit for exercising compounding option on work contracts are extended to 30.6.1994, exemption are withdrawn on items other than goods used by the poor. For example a number of items of common use by house wives, students, farmers, and consumers besides inputs for the petro chemical industry

and licenses, computer soft ware have had the sales tax exemption removed. In agricultural income tax permissible deduction for our planting expenditure is increased and the restriction on admissibility of interest on working capital and restrictions on admissibility on expenditure on employees have been increased. These additional tax proposals will bring in Rs.48 crores to the exchequer along with a Rs.95 crore savings through expenditure control which helps to limit the net closing deficit in the 1994-95 budget at Rs.255 crores. The budget provides Rs.1599 crores for the social security net comprising: (a) food security and child welfare sub plan with a total outlay of Rs.697.45 crores (Rs.305.21 crores far reducing malnutrition, Rs.91.30 crores for supply of safe drinking water and sanitary facilities, Rs.81.32 crores for raising women's literacy and Rs.80.03 crores for liberating women from early and frequent child bearing), (b) every taluk will be provided with atleast one 32 bed hospital along with a new pediatric neo natal clinic; (c) the World Bank assisted blindness control project and AIDS control project is to be launched; (d) drinking water will be stepped up to Rs.387.72 crores. A new Veeranam project gets Rs.118 crores and the Krishna Water project another Rs.100 crores. With this the Krishna water budget is fully met so that Krishna water should be available to Madras in June 1995. 1239 habitations without a protected water source will be covered and the water supply scheme for Coimbatore, Salem and Madurai completed, a desalination plant of 1 million tonnes per day is to be installed at Naripalyur in Ramanathapuram district at a cost of Rs.10.5 crores; (e) the legislation provides compulsory enrolment of children in schools and provision is to be introduced in the current session of the Assembly for a new women's college to be started in Ramanathapuram, which is questionable. Two special incentive schemes to promote literacy among scheduled caste girls are to be launched in four districts (the who drop

out at standard II will receive a special incentive of Rs.500 each on completion of Standard III, IV & V) a monthly payment of Rs.100 will be made to all poor rural scheduled tribe girls, entering Standard VI, the scheme covering 30,000 scheduled caste girls through out the state at a cost of Rs.3 crores), the Human Resources Development project with an outlay of Rs.76 crores is to be launched with support from the World Bank to upgrade knowledge and skills in the agricultural university, veterinary university, forest and agricultural engineering and fisheries department; (f) the water resource consultation project with a total outlay of Rs.952 crores is to be launched during the year with a budget provision of Rs.40 crores, the Vadakku Pachaiyur project benefiting 8342 acres at a cost of Rs.27 crores are to be taken up; (g) a total area of 1.5 lakh acres will be covered under forestation. A forestry project for the protection of bio diversity at a cost of Rs.300 crores is to be launched; (h) a major growth centre is to be set up near Madras on a 1000 acre site to accelerate industrial development; (i) Tamil Nadu Corporation for Industrial Infrastructure Development will promote Tirupur development project with support from Infrastructure Leasing and Financing Services; (j) the Tamil Nadu Newsprint and Paper plant is to be expanded with an outlay of Rs.525 crores which will double its capacity from 90,000 tonnes; (k) in aquaculture two projects to cover 150 acres in the Palk Bay at a cost of Rs.13.58 crores and 50 acres at Tharuvenikulam in Chidambaram district at a cost of Rs.2.20 crores is to be implemented; (l) a new scheme for a health cover for a organised labour will be implemented through primary health centres and taluk hospitals, using the provision of Rs.1 crore for purchase of essential drugs, housing will be provided through a number of schemes to 1.25 lakh families; (m) a new state integrated programme for the urban poor will be launched to cover a lakh urban poor families, coordinating a number of schemes being

under taken by different ministries. The North Madras Thermal Power project with three units of 210 MW each will be completed in 1994-95. Work on four units of 30 MW each is being initiated to supplement the peak capacity in Madras. New wind farms with a total capacity of 20MW will be installed; (n) a road sector project at a cost of Rs.880 crores has been formulated for World Bank financing to completely upgrade the road system and to provide all weather roads to villages with a population of more than 1000. The compulsions of having to finance annual plan expenditure which has been stepped up by 30.89 per cent in the 1994-95 annual plan involving a plan outlay of Rs.2250 crores is one of the factors which has led to additional resources mobilisation. The budget raises the important issue of the state's share in the Corporation tax for strengthening the revenue position which the IX Finance Commission should once more examine carefully. There was also the wrong estimation of surplus by the X Finance Commission in non plan revenues account while the actual situation was one of large deficits. One general issue is that either the budget or the governor's address which sets forth the accomplishments and problems faced by the government should provide full information next year on how far the many projects proposed are or have not been carried out in full. This information is necessary to know where the state stands when planning the budget for the following year. The budget also states that the investments by the all India Development Financial Institutions amount to Rs.2270 crores. The Comptroller and Auditor General calls attention to the rising deficits, liabilities and expenditures disproportionate to the growth in the state's assets and receipts. Besides the meagre return on the capital employed, which has marked the financial performance of the state government in the past needs special attention, as the revenue deficit which emerge in the actuals are much higher than the budget estimates. In 1991-92 for instance the budget estimates

placed the revenue deficit at Rs.902.49 crores, the revised budget brought it down to Rs.650.05 crores while the actual deficit recorded when accounts were closed amounted to Rs.1903.85 crores.

Power

The government in early March announced increase in power tariff for industrial and domestic consumers as from March 1. The increase is by 40 paise for HT consumers and an increase ranging from 10 paise per unit to 25 paise for domestic consumers. From this, it is expected that a total of Rs.120-Rs.130 lakhs per annum will have to be paid to the State Electricity Boards. A 5MW garbage based power station is coming up at Perungudi on the Mahabalipuram road, TIDCO is using a private firm to put up the plant at a cost of Rs.19 crores. The garbage bought by TIDCO from Madras Corporation at the rate of Rs.10 a tonne is to be fed into a plant to remove the ceramics, glass, plastics, leather and other degradable elements. The resulting biodegradable product is to be dried to bring down the moisture content and then made into pellets to fire the conventional power plant. The heat which is lost in power generation is also to be used for the drying. Though over 2000 tonnes of garbage per day is generated in Madras only about 600 tonnes will be used by this plant. It will also use 2 lakh gallons of treated sewage water for its cooling water and boiler make up needs. An equally interesting but much larger project on similar lines by the Maharashtra State Electricity Board was launched in mid March in a 240 MW combined cycle waste heat recovery plant at Uran built at a total cost of Rs.840 crores. The plant is a part of the integrated plan of the Maharashtra Board to use waste heat emanating from its gas turbine plant. The project is being executed by Siemens of Germany. Following the success in the field of tapping of wind power for generating electricity the Tamil Nadu Energy

Development Agency is putting up a power plant based on solar energy at the wind farm in Kayathar in Chidambaram district. The 15 KW plant consisting of 442 panels of photo voltaic cells covering an area of 300 sq miles will be ready by mid April. This Rs.35 lakh plant is being put up by Bharat electronics. The demonstrative project will feed the grid with electricity for 8-10 hours a day. The Southern Power grid comprising the four southern states is facing a low frequency condition, MAPPS has been expressing concern over this condition specially because of the cracks in its turbine. Similarly the Neyveli and Ramagundam authorities have expressed concern. The SEBs therefore have agreed that the frequency should be maintained at 48.5 HA and above. This means that the Andhra Pradesh Electricity Board should draw power within its share in order to avoid its over drawing leading to lower frequency. Since it continues to over draw the Tamil Nadu Electricity Board isolated itself from the southern region grid for a week. This affected both Kerala and Karnataka. Andhra Pradesh which has been drawing 300 MW above its entitlement needs to be disciplined to restrain itself from this over drawal. The government also announced that a Rs.290 crores Japanese assistance sewage treatment plant is to be set up at North Madras to supply treated sewage for industrial use. Many industries in North Madras including MRL and Tamil Nadu Petro Chemicals and UB Petro Chemicals are interested in the project and so a consortium of user industries is to be set up and treated water supplied to them. The southern gas grid project is to become operational in 1998 according to the minister of power's statement in the Lok Sabha in early March. He reported that a MOU has been signed in Oman for natural gas and the feasibility study report has also been prepared. The concept of laying a gas pipe line in the western off shore in the southern region has been approved, he reports. An interesting development in April is the announcement that Carborandum

Universal has commissioned a 12 MW project in Maniyar which is the state's first private sector hydel project. It has been synchronised with the Kerala grid and provides around 40 per cent of the power for the company's three plants. In the discussion of the budget for 1994-95 the minister called attention to the cost to the Electricity Board of granting free power to agriculture which would amount to Rs.1106 crores in 1994-95. He also points out that the benefit of the concession goes to the rich farmers and not to small farmers. Hence one suggestion is that rich farmers with five acres or more should either not be given free power or be required to pass on the benefit to the landless labourers working on their farms.

Women's Development

The state has in March drawn up a programme for the development of women called Vision 2000 for Women. The plan is to support and expand the role of women as decision makers in both public and private domains. Vision 2000 has nine other objectives: ensuring equitable participation of women in socio political and economic processes and structures; facilitating equitable participation of women in development planning, development process and development programmes; identifying areas of exploitation, oppression and violence and that there is no suitable legislation and evolving pragmatic solution through voluntary efforts where ever possible; promoting the elimination of discriminatory practice and barriers against women through promoting self awareness programmes among women; improving access to literacy and education opportunity and work for compulsory primary education for atleast five years for every girl child; quality and access in resource such as land, capital, institution support; health and improved income levels through training and development and better employment opportunities and helping in the designing of labour savings devise that will reduce the

drudgery of daily chores of women and improved access to basic health and family welfare services; promoting the Tamil Nadu Cooperation for Development of women as part of the institutional frame work to strengthen the existing machinery for the advancement of women; in addition the government will commission a report on the status of women in the state to facilitate design of projects for their improvement. The report would take into account the disparities between women and men as well as between women and women in different communities and in different parts of the state.

Transportation

With the increased allocation of Rs.30 crores in the railway budget set forth in the last issue for 1994-95, the Mass Rapid Transit System for Madras should be completed by mid 1994-95. This will mean that Madras would have the only elevated railway system in the country. The work on the satellite port at Ennore which is to handle the coal supply for the upcoming North Madras Super Thermal plant is now nearing completion. The state government has released two quarries at Karaikal and Bodaperai to provide the construction with 21 lakh tonnes of stones which would be transported by road to Arkonam and then by train. This extension of the port involves a tie up between the port trust and the railways.

Water

With the budgetary allocation of Rs.30 crores for the Krishna Water project the infrastructure in Tamil Nadu will be completed and the Krishna water should be available to the state by July this year as stated also in the governor's address or well before the on set of the monsoon. This will transform water situation in the state. The work on the second canal for taking water from the Poondi reservoir to the Chempapakkam lake is also nearing completion.

The government announced that water from Mettur Dam will be released for irrigation this year on June 12. This means that the desilting and deepening of the distribution channels in the Cauvery delta costing Rs.1.20 crores would be complete before that date. The daily water supply in Madras was introduced from April 1, the combined storage in the city three reservoirs at that time was 4717 mcf which would ensure daily supply of 57 million gallons till next January. The fleet of 150 tankers will also supplement the water supply during summer months to the distant parts of the city.

Panchayati Raj Bill

The April session of the Assembly also passed the Tamil Nadu Panchayati Raj Bill which both gives up the two tier system of Panchayati and the system of direct election to the office of the chairman of Panchayat union. This ensures that the state bill confirms to the mandatory provision of the 73rd constitutional amendment.

Mega Cities

The government is undertaking a Rs.887 crores mega cities programmes to improve the state's basic facilities through the Metropolitan Infrastructure Development Corporation. The scheme which has been approved by the National Development Council and the Union Planning commission, involves the centre and the state each meeting 25 per cent of the total cost, the balance been raised through the institutional finances. The Mega Madras project is to be implemented during the 8th Plan with spill overs being taken up in the 9th plan by the Madras Metropolitan Development Agency.

Agriculture

For the first time, the state has formulated an agricultural policy which will ensure integrated sustainable agricultural development. The highlights of the policy

are: 1. Thrust areas for agricultural development in the state are identified to meet the challenges of globalisation of farming, along with the agricultural production system and extension network being upgraded. 2. Agricultural planning is moving from the present agricultural approach to area specific agro climatic regional planning. 3. Based on the report of the Tata Consultancy services a computerised agricultural information management system is being introduced located initially in the directorate of agriculture, district headquarters and laboratories like the soil testing laboratories. 4. A prescriptive soil health scheme on a pilot basis in three blocks in being introduced during 1994-95. 5. To bring more waste land into cultivation a Rs.380 crores cashew development project drawn up by the agricultural finance corporation to cover over 2,155 hectares is to be launched in Pudukottai this year. 6. Micro irrigation system for sugar cane cultivation is also being launched. 7. For horticultural crops the subsidy for micro irrigation is being increased from Rs.1.95 crores to Rs.6.75 crores. Paddy procurement in the state reached 20.48 lakh tonnes during 1993-94 including procurement in 1993 samba season (12.26 lakh tonnes) and kuruval season (3.22 lakh tonnes). Having crossed the targeted expansion of 21 lakh hectares of paddy the department is planning to expand the area under the navarai crop which will make up the loss in areas and productivity suffered from the rain and cyclone in the samba season. The actual coverage under paddy has touched the record level of 23 lakh hectares. Further an additional 30,000 acres are being brought under mulberry under the seri culture project which will accelerate seri-culture development in the state. The Union government has increased the Tamil Nadu allotment of rice by 30,000 tonnes from March 1994 which is an increase from 70,000 tonnes to one lakh tonnes. A problem here is that this is a short term increase (4 months) so that the state has to be careful in using this additional allotment. On the

fisheries front despite the government's increased expenditure of Rs.8086.92 crores between 1985-86 and 1991-92, fish production and the condition of fishermen in the state have not improved, the central assistance during this period remains unutilised. According to the report of the Controller of Auditor General fish production at the end of 1991-92 was 3 lakh tonnes against the target of 3.10 lakh tonnes, marine landings were even poorer during the 7th plan period. Farm area for production of fish seed through induced spawning method replaced a marginal increase of 2.53 hectares during 1986-87 to 1991-92. The CAG report says that of the five chinese hatcheries sanctioned during 1985-86 one was not completed, one abandoned and two hatcheries construction were defective. The production of fingerlings is about one fourth of what is needed. (47 million to 60 million against the needed 170 million). Thus both the state schemes and the central scheme are languishing and require special attention, according to the CAG report.

Industry

As part of the state plan for mega projects in high tech industries, the Madras Industrial Park is receiving a great deal of attention. It is to be developed with private participation ensuring international standards of industrial and social infrastructure to attract capital flows and state of the art technologies in developing countries. The state proposes to set up a major growth centre near Madras over 1000 acres implemented by the Tamil Nadu Corporation for Industrial Infrastructure Development at an estimated outlay of Rs.550 crores. One encouraging factor in the state's industrial development is the response of the Bombay industrialists to the package of facilities provided for setting up new units in the industrial park. These industrialists have come forward to set up a refrigerator manufacturing unit in Hosur, a desalination plant near Cuddalore, with close investor interaction in all these projects. The

union government has asked the state to revise its proposal for the park in conformity with the existing policy guidance. During the 20th Annual General meeting of CII southern region, the chief minister announced the setting up of a core group consisting of industry and energy department and TNEB to monitor and ensure speedy clearance of new application for industry for power connections. The handloom sector has been facing a series of ups and downs. It received a boost when the union minister of state of textiles announced in early April that handlooms will be given a one time exemption from having elected managers to implement a major central handloom development scheme. The scheme which involves setting up of 3000 handloom development centres and 500 quality dyeing units over four years has now an attractive grant component along with loan facilities from primary cooperatives. On the other hand, the handloom industry and trade association announced stopping production from April 3 as a protest against the increase in hank yarn prices. This increase has been steadily moving up from January. The hike puts about three lakh weavers out of employment. This is in addition to the strike of 1.89 lakh tiny and small scale industries to protest against the centre's move to bring them under the central excise net. They demand that the Rs.30 lakh exemption limit be raised as that limit was fixed in 1988. Though SSIs comprises 50 per cent of the country's total industries, duties collected from them account only for 6 per cent of the total revenue of Rs.32,000 crores in industry. That is the reason for their being brought under the excise net. The industry points out that countries like China and Pakistan have banned the export of cotton yarn from their countries and so have an advantage over India. This is a serious case, Tirupur alone accounts for textile exports of Rs.2000 crores annually. Hence this issue should be settled soon if production and export are not to be disrupted. Other industrial developments in the state include proposal to set up export oriented granite industry

which will promote value added uses of granite, TIDCO exploring the feasibility of setting up a major industry in Tiruvannamalai using the iron ore deposits available in the district, the promotion of consumer products made in slum areas and the financing of these producers, concern over affluent discharge from Tamil Nadu Newsprint and Paper Ltd at Pudukur, the Kothari Sugars plans for Rs.100 crores investment in sugars, chemicals etc, the Mega project, National Aromatic and Petro Chemicals Corporation (AROCHEM) being placed now on hold because of its disagreement with its cosponsor Madras Refineries, (there is now some thought about the project being developed solely by SPIC), TIDCO collaborating with a London based copper smelting company, METHDIST to set up a Rs.1200 crores project. The project envisages import of copper concentrates for refining in Madras to service the domestic market and to provide backward integration with the METHDIST units in Malaysia, due to a one lakh tonne projected output, 50 per cent is been earmarked for the Malaysian unit, the steel sector in the state is in a tight corner with a new excise provision in the union budget bringing rerollers under the MODVAT system. Most of the arc furnaces in the state have closed down and as a result of this budget proposal, the other melting units will also shut down. The positive development here is TIDCO teaming up with Lakshmi Machine Works to promote a Rs.25 crore steel complex. For manufacturing foundry products, pig iron, speciality steels and PG grade core. The joint ventures, Southern Iron and Steel Company (SISCO) is setting up a 1.5 lakh tonnes pig iron project at a cost of Rs.90 crores to meet local demands. But liberalisation, steel decontrol and import duty have brought about a change in the project prospects. now SISCO has acquired 203 acres in the Salem district and expects the steel plant to be ready by March 1995. The project will have advantages from the broad gauge railway line for transporting iron ore and water supply of 5 million gallons daily

through the 15km pipe line from Mettur. Other industrial development are the EID Parry plan to expand with a capital expenditure of Rs.275 crores and diversify in activities like sugar, fertilisers and pesticides where markets are large in terms of volume. In regard to B and C Mills the high court has stayed further proceedings both of the management the labour union pending the decision of BIFR, the crisis in Standard Motors products, with its management declaring a lock out for the third time, the ability and resilience of 16,000 strong workforce being tested. BHEL, Tiruchy which has enabled the public sector undertaking to weather successfully the world wide recession in the power sector during the past two years, the encouragement given by the environment department of the World Bank for the expansion of Tamil Nadu Newsprint Ltd whose problems of effluent treatment earlier referred to are being handled in accordance with the bank guidelines, all the problems and crisis being faced by the powerlooms sector of the state resulting from the rise in yarn prices and the power tariff, production has come to a stand still in Periyar district and reduced to one third in Salem and one seventh in Coimbatore districts. The Assembly was informed that investment proposals totalling Rs.1119 crores under 12 projects have been approved during the year and that Rs.2678 crores of TIDCO projects are at various stages of implementation. It is reported that a large Rs.1400 crores is being invested in the state's small scale industries since June 1991. The investment has been in 64,952 SSI units that have been accorded permanent registration in the state against the target of 1 lakh small units to be set up over the five years from 1991-92. This is good for the state's employment programme. TIDCO reports that it is planning to participate in a joint sector venture to establish an oceanarium near Madras. The project will also bring in the Tamil Nadu Fisheries Development Corporation as well as the private entrepreneur.

National

Inflation

The inflation rate based on the whole sale price index in April crossed the double digit mark at 10.21 per cent during the last week of the financial year 1993-94. The new fiscal year thus opens with prices rising at 10 per cent + from 8.2 per cent in January. The steep increase in administered prices of foodgrains, sugar, energy and rail transport accelerated the inflation. These high prices hurt the low income groups who now pay 15-18 per cent more for foodgrains and cloth. Inflation is specially hurtful when the per capita income grows for successive years by less than 2 per cent in real terms with no correspondence between the price rise and the inflation rate. This means that in time prices will stabilise at the current high rate. According to the Economic Survey the pressure from the high fiscal deficit starting from the last quarter of 1992-93 was a contributory factor. Another disturbing factor is the wide disparity in the inter/state inflation rates. The consumer price index for agricultural labourers is 10.2 per cent in February but on this there are wide variations among the states. In Rajasthan the price rise was as high at 28.4 per cent in February, 26.8 per cent in Uttar Pradesh and 22.4 per cent in Punjab. But in Karnataka prices actually fell by 4.4 per cent between February 1993 and February 1994, the actual inflation rate working out to 0.5 per cent in AP, 3.5 per cent in Maharashtra, 5 per cent in Tamil Nadu and 5.1 per cent in Orissa. Thus the inflation impact is varying.

Plan

The increasing revenue deficit makes it difficult to justify some parts of 10 per cent increase in next year's central plan over the original budget estimates for 1993-94. The increase in the central plan outlay is to be funded from both budgetary and extra-

budgetary sources in accordance with the on going reforms. The solvent PSUs should be able to raise funds from the capital market while the poor loss making ones will go under. However actual extra-budgetary resources for funding central plan was considerably short of the budget estimates in 1993-94 because the capital market in bonds was dead in the first half of the year. This has not changed and there is no money available for the PSUs. Under these circumstances the government's delay in granting PSUs permission to raise funds in the market through bonds or equity is inexcusable. The target for 1994-95 will be met only if the PSUs are given great lee way in raising resources. A negative feature is that the centre's plan spending on fixed capital is declining. This is not compensated by the small increase that are provided in the anti-poverty or social spending sectors. The suggestion that centrally sponsored schemes should be reduced deserves our attention because they are the source of much of revenue plan spending and the revenue deficit. The RBI occasional paper published in March states that the planning mechanism in the country has resulted in a balanced growth of the major sectors of the economy - agriculture, forestry and fisheries, manufacturing and infrastructure. The paper analyses the linkages among 10 major industrial sectors in an inter-temporal context and shows that forward and backward linkages of the infrastructural sector have increased significantly providing a larger scope for investment in this area. It was found that changes in financial demand are changes if technical efficiency constituted the major factor in the decline. The changes in output and the low rate of technological absorption in the country has resulted in constraining the growth rate.

Power

The power sector shows slippages both in capacity extension and energy generation. Resulting in a sharp decline in power

availability which is predicted by the ministry of programme implementation which forecasts the all India Energy shortage vis a vis the targeted 9 per cent at 20.7 per cent and against the 8th Plan target of generating 30538MW including 2810 MW in the private sector. The current trends indicates that less than 20,000 MW will be created during the plan period. This is in contradiction to the department's report that power generation during 1993-94 was 2 per cent higher than the target and stood at 323 billion units. The actual situation needs to be clearly set forth. Meanwhile it is disturbing to note that the private sector entry raises some serious questions with regard to the level playing field vis a vis BHEL. The two biggest BHEL rivals along with the liberalisation which opens the power sector to private enterprises are the transnational firms, the Asea Brown and the US Power Giant General Electric. Electrical equipment forms on the whole 40 per cent of the total investment of any power project and with these two giants out of the 7 private sector projects cornering the electrical equipments contracts, BHEL faces a real crisis. Another interesting development is the government decision to set up a national energy commission under the chairmanship of the prime minister to evolve an integrated energy policy to ensure balanced development in an environmentally and socially sustainable fashion. This was the recommendation of a parliamentary standing committee on energy which the power ministry has accepted. Whether the commission will deal with the questions faced by the local power manufacturing plants is an important issue to be watched. The cost of power projects is another area which needs study. The national working group on power has highlighted the glaring disparity in the cost estimates of the ministry and central electricity authority. This covers very serious problems of over runs and the extent to which the private plants admitted now will reduce this is an important issue to be noted.

Stock Exchange

SEBI in early March announced a format for a new forward trading system which from April will start on line trading in whole sale debt instrument, with Bombay's stock exchange drawing up a new marginal system. The JPC refers to "the deregulation without affective checks and balances" as an unmitigated disaster. What matters is the magnitude of discipline that the Board requires of brokers such as the time limit of 90 days in every carry forward transaction and the stipulation that brokers should square up all existing outstandings by March 12. The introduction of on line trading in whole sale debt market instrument under the aegis of national stock market will make stock market operations both transparent and expeditious in settlements. The changed margin system introduced by BSE and the enhancement of carry forward limit coincide with the greater discipline introduced by SEBI. Meanwhile the Calcutta Stock Exchange is reported to be disposing of Rs.120 crores of securities while SEBI remains silent over the crucial issue of the proposed twin functioning of the badla system. The BSE has to liquidate its entire net out standing position by March 10 and the fact to SEBI has not said anything on the Badla trading is unsettling. Later the major stock exchanges forwarded the plan of action with SEBI to break the deadlock over the future of badla trading. SEBI which was waiting for this has the system under study. A consensus is to have financial merger on the new forward trading system among the four stock exchanges, the essence of which is that the business of the brokers will be split in a three way trading forward with separate rules for each of these.

Economy

In the two months, March, April, number of developments involved the economy. There are varying views about the affect of the economic reforms and the budget on the economy. With inflation not under control,

agricultural production faring poorly with all foodgrains and sugar below target, stagnation in industrial production, the rising fiscal deficit as a percentage of GDP are some of the negative features of the effects of the new policies. On the positive side the economic survey emphasises the high growth in foreign exchange reserves and the decline in trade deficit. The long term sustainability of BOP depends on the stability of capital flows. Equity flows are inherently unstable. The bulk of foreign investment has been in portfolio, in booming stock markets and Euro equities. The important bad news is on trade, the move in export growth of 20 per cent turns out to be illusionary, because it is the means of bringing back money held already abroad and laundering black money. The World Bank on the other hand supported by the IMF points to the particular strides in economic reforms made in the country where the programme has not only succeeded in the reversing the macro economic instabilities, but has also made substantial progress in delicensing and in trade liberalisation. Another point which is emphasised by the Reserve Bank is that rapid growth can bring about reduction in poverty and to achieve significant results, direct attack on poverty is required. Finance Minister's budget for 1994-95 relies heavily on the pick up and recovery in industry. The budget gives industry a big push, and the finance minister having designed the budget on these lines now expects industry to play its part. This faith in the Laffer principle has a some what weak basis, tax have been reduced in the hope that the economy will reward the exchequer, but unfortunately tax revenues have stagnated at Rs.55,044 crores in 1992-93 and Rs.54,473 crores in 1993-94. The tax collections for the current year are Rs.8000 crores or 16 per cent below what the finance minister reckons. This raises the question as to what the critical low that would trigger a revenue flush for the exchequer. The pat explanation for non performing Laffer is that economy remains in a recession but the question should be asked as to why

successive annual reductions in tax rates have not reversed the recessionary tide. The finance minister is continuing on a quest for the "critical low" which will bring in more revenues. From Laffer to increased domestic debt is only a short step so that the only way out is either to raise tax revenues or reduce administrative expenses. Through 30 months of reform, not a single head of revenue administration has been so reduced. Given the short fall in revenue collections and the drag in industrial production which fell by 1.7 per cent between January and June last year there has been a series of questions, as to whether the industrial economy has lost momentum why the rapid growth of exports has not provided the expected multiplier, why banks are not just able to lend to industry and commerce. Of all the additional deficit of Rs.45,000 crores in 1993-94, barely Rs.7500 crores was lent as productivity credit. In the reply to the budget debate the Finance Minister announced a new package of fiscal relief to the Small Scale Industries (SSI) covering products like cement, handloom, carpets, fabrics. In addition import duty on steel scrap and iron ore pellets was reduced. The reply emphasised that the government's aim in the budget was to provide a simple and rational tax structure with special attention to SSI. Apart from this there was nothing else in the budget reply. The reaction from IMF with regard to the budget seems a little unclear. While its world economic outlook is critical about large deficit in the budget and urges fiscal correction, the Managing Director expresses satisfaction with the progress of the reforms movement as seen in the budget. India has made an earlier repayment of \$1.13 billion to IMF, reducing the country's foreign exchange reserves to \$14.507 billion. 2. On 15th March the trade ministers of 124 governments signed the final act of the results of the Uruguay round and the proposal for setting up of the World Trade Organisation from January 1, 1995. The Commerce Minister signed the act for India. On Parliament's reassembling in the third week of April, the

opposition began a non stop campaign against the signing of the GATT act with insistence that it should be subject to a parliamentary vote, which is not the normal procedure. The cabinet is authorised to sign treaties and agreements for the country. 3. The budget which aims at accelerating growth deals also with the capital goods sector. The customs duty on steel has been reduced from 75 per cent to 50 per cent and on other non ferrous metals unified at 50 per cent. Import duty on parts has been reduced to 25 per cent from 85 per cent, project import and general capital goods attract import duties at 25 per cent. Domestic production of capital goods have been granted some protection from imports by the imposition of countervailing duties equivalent to the value of domestic excise duties. In lowering the import duties the costs of the Indian industry will be reduced, and countervailing duties will continue to protect the domestic capital goods industry. As a result of unification of import duties at 50 per cent, protection to some non ferrous metals has actually increased though only marginally but demands of global competition makes this unviable. 4. The question of the proper definition of primary deficit has cropped up again with the RBI's report on Currency and finance 1992-93. The report reiterates its position on the net concept, which the Economic Survey 1993-94 opts for the gross concept on the ground that it might be a "more accurate reflection of the total public sector". The report on Currency and Finance states that the deduction of net interest payments for the net fiscal deficit is "relevant for determining the stability of debt to GDP ratio". These contrary definitions of primary deficit are confusing to both the researcher and the public. While the finance ministry and RBI are citing two different reasons for their stand, it would seem that the RBI's net concept is more relevant. The confusion over this controversy must be resolved and this can be done only with the finance ministry examining the stability of net GDP ratio and RBI examining the total public

sector deficit. This resolving of the controversy is particularly important because as the Economic Survey states the volume of the fiscal deficit depends on the appropriate definition of the primary deficit. 5. The government states that it has plans to impose stiff measures to curb the expenditure particularly if there is any slippage in the quarterly targets fixed for it. The finance ministry establishes the fiscal deficit for 1994-95 at 6 per cent of GDP despite the higher rate of deficit for the previous year. While the expenditure next year will be kept under close watch, the ministry is hoping for tax buoyancy (80 per cent of the excise rates are new ad-valorem) along with the removal of unused past exemption of customs duty. Also on the expenditure side it plans to reduce the size of the bureaucracy by as much as 2.18 lakhs. Though for 1993-94 it planned for an increase in employees by over 41.67 lakhs, the actuals were 2.18 lakhs less involving a substantial reduction; but the bureaucracy is planned to increase to 99.83 lakhs by the end of March 1995. Hence this important source of saving by reducing staff may not be available. 6. The possibility of abolishing octroi now seems to be ruling in favour of its retention. This may lead to another strike by truck operators which the union ministry of surface transport must prevent at all costs. While octroi has a role in the state's revenue management, its collections create problems for the truck operators and consumers. In the interest of development, the octroi must be abolished but as the IX Finance Commission points out the Centre which has been assigned the major productive source of revenue has a responsibility to support states which will be at the losing end. Even if full compensation of the loss is not possible there should be some adjustment in the prices of capital goods and intermediates to compensate the states losses. The states on their side need to follow a policy of discipline. 7. The corporate sector was expected to raise about Rs.13,000 crores through public issues during 1993-94. In the first eleven months Rs.11,600 crores

had been raised but the future is not so bright as the public response to this issue is getting weaker. The number of existing companies to enter the capital market is increasing continually and this trend will continue in 1994-95. A NCAER study states that industry on the one hand is optimistic about the performance of the economy and on the other that there is no perceptible change in the procedures regulating industry in the states to obtain various clearances, for this money is paid in all parts of the country, even with the payment of the money, the state authorities take atleast three months and more to provide clearance to set up new projects. This needs to be taken into account in connection with the euphoria over the liberalisation process and the positive investment climate that is reported in some states like Maharashtra and Gujarat. But the positive point is that this IXth round of business expectation survey of NCAER states that 83 per cent of the business surveyed agreed that over all economic condition are conducive for business while a similar survey six months ago showed that only 59 per cent were of that view. The survey also shows that the firms are increasingly linking to export markets for boosting their sales.

It is important that the procedures for approval of plans should follow the lead of the western region, though the problem of giving bribes to step up clearances seem to show no improvement. 9. Parliament approved the finance bill, accepting the finance minister's assurance that the bill carries forward the basic philosophy which has guided the tax reforms to move to a simpler system with moderate rates and a broadening of the base; the threshold limit has been increased a little to Rs.35,000 with effect from the assessment year 1995-96 from the previous Rs.30,000. The varying tax rates of widely held and closely held companies has been removed in the finance bill with the domestic companies now being taxed at 40 per cent with the surcharge of 15 per cent being continued. The due dates

for filing of returns and the new assessment procedures are improved. 10. The status of rural credit and rural development is difficult to evaluate though the budget makes very generous statements on both. One positive point is the proposal to restructure the regional rural banks where 150 out of 196 are in the loss making situation. This restructuration requires the cooperation of state governments and the employees of the banks who will have to accept lower salaries and perks, with some of them losing their jobs. 11. A Planning Commission panel on the functioning of JRY in 1991-92 concluded that little over 90 per cent of the rural poor live in 10 major states - Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan, Tamil nadu, Uttar Pradesh and West Bengal. This is a serious problem to which attention is not being paid. 12. At the time of the budget the finance minister referred to the report of the Malhotra Committee on insurance sector reform and said that the government accepts most of the recommendation of the reforms and that they would be implemented in two months. If this means that most of the recommendations which suggests privatisation of insurance sector, the execution will be difficult for the government both from the employees unions and the political parties. The government states that it is attempting to evolve a consensus on the report. This will be something worth watching. 13. In the area of foreign investment five priority sectors have been established by the government - a broader investment programme with increased industrial cooperation and investment between Indian and foreign entrepreneurs, food processing, leather and leather goods, ready made garments, chemicals and metallurgy. This also include exchange of technical and managerial expertise, supply of machinery and equipment, transfer of technology and access to foreign markets. The government reports that it has approved 51 proposals for direct foreign investment on the recommendations of the Committee headed by the finance

minister. These include the Swiss Pharmaceutical Giant La Roche which has been allowed to set up a wholly owned company to undertake research and licensing of products to Indian manufacturers. Another important proposal is that of AMADIUS finances and investment Ltd. For a joint venture with Telestar holdings of Australia for providing data communication facilities to the National Stock Exchange of India. Also sanctioned is the proposal to produce Tiger balm for the domestic market as well as for export. Knorr Beemse of Germany has also been permitted to set up a 100 per cent wholly owned Indian company for design, development, manufacture of components and equipment for railway vehicles and other means of mass transport. 14. The advance estimates of NSS forecasts that GDP growth will increase by 3.8 per cent increase in 1993-94 and per capita income 1.8 per cent rise against the 4 per cent GDP growth in 1992-93. In an environment of ongoing world economic growth, the UN forecasts that India is set to attain a faster growth rate during 1994 at 4.8 per cent against the 3.8 per cent recorded in 1993. The NCAER forecasts that GDP will grow in 1994-95 at a rate ranging between 4 per cent to 4.8 per cent, the higher rate is based on the monsoon being normal. The country's mounting external debt reckoned at \$90 billion and a parallel rise in the debt servicing is one of the most disturbing aspects of the current economic reforms. According to RBI the total repayment of principal and interest on external borrowings in 1995-96 will be more than \$10 billion and even higher in the following year.

Agriculture

Agricultural production during 1993-94 was rather low with foodgrains increasing by 1.6 per cent and non foodgrains by 2 per cent, leading to over all growth of only 0.3 per cent foodgrains touched 1.18 million tonnes, rice at 74 million tonnes and wheat at 58 million tonnes, coarse cereals declined to 34 million tonnes against the previous year's 37 million

tonnes. There is a sharp decline in the production of ground nut, cotton, jute, chillies, tobacco and stagnation in the production of sugarcane. For 1994-95 if the rain fall is assumed to be average. Foodgrains would increase by 2.2 per cent and non foodgrains by 5.7 per cent giving an over all increase of 3.5 per cent according to CMIE. The government holds that the new economic policy has been of benefit to the farmers by improving their terms of trade, it is pointed out that at independence agriculture was taxed in order to finance the country's industrialisation, taxation of agriculture took the form of low prices for farm products (aided by PL480 imports of grain) while industrial prices were kept high. Against this, the new economy policy is reported to be gradually reversing this legacy. This non agricultural bias and protection for industrial goods is coming down, agricultural prices are going up steadily with procurement prices for rice and wheat rising by more than 50 per cent in three year (higher than the devaluation of the rupee). There is some implicit taxation on agriculture through controls on exports which keep the Indian prices of cotton and rice below the international price. But these controls are now being gradually relaxed. There are several internal matters in agriculture demanding attention. States must divert scarce funds from subsidies of power and water to investment in rural infrastructure, the movement of products should not be limited as between states, eg. ground nut oil in the case of Gujarat, monopoly procurement of cotton in Maharashtra and monopoly procurement of cashew in Kerala. It will be recalled that the special discussion on the final agreement relating to GATT in the Lok Sabha was initiated by the government stating that the farm subsidy levels could go up by Rs.30,860 crores under the new GATT dispensation. The export import bank estimate that GATT agreement will bring India \$4.6 billion annually with export gains of \$1.25 billion. These highly optimistic and exaggerated figures cannot be taken seriously. The procurement of wheat by FCI

and other government agencies at the end of April is estimated at 12.84 lakh tonnes which is about 36.5 per cent more than that achieved a year ago. For 1994-95 the government has set a target of 189 million tonnes of foodgrains which may be modified in view of the slippage of the target in the last two years. As against this the agricultural secretaries national conference on Kharif 1994 projected the food outlook at 180.5 million tonnes for 1994-95 against the Planning Commission target of 189 million tonnes. The difference between the secretaries and planning commission target is due to difference in computing the nutritional requirement. Without stating the targets, the union ministry pushed for export of coarse grains, oil cakes and horticulture surplus as India's farm subsidies were well below the 10 per cent and exports subsidies were nil. It was pointed out that there was no need to give any market access to foreign produce. The government reports that it has signed a \$3 million project agreement with FAO on coastal fisheries management in the Bay of Bengal. The agreement runs over three years and is equally funded by the governments of Japan and Denmark. It aims at introduction of improved fisheries management practice, hence multi media campaign aim at policy makers as well as fisheries management.

Research results

In the two months of March and April, 72 research reports were recorded, the largest being in regard to vegetables numbering 27 followed by cereal numbering 16, fruits numbering 15 and animal husbandry numbering 14. These research results it is hoped will produce their effects in the coming kharif and samba season.

Plantation Crops

The tea industry has been helped by the ordinances reducing agricultural income tax and cess on green leaf particularly in the

Assam area. On the negative side the non participation of Russia in the auction and the good production last year have resulted in a sharp fall in tea prices in South India. Out of 120 small tea factories in the district of Coimbatore, nearly 40 closed down while others are facing closure. Small growers numbering around 40,000 have no alternative but abandon their fields according to the Nilgiris Small Tea Growers Association president. It is hoped with that the gradual return of Russia and the CIS tea prices will begin rising again in the Nilgiris. In the area of coffee, the Coffee Board chairman, states that the growers demand for optimal pricing is not acceptable in the Board. The proposal is rather vague and has serious financial repercussions. The former chairman of the Coffee Board is of the view that domestic consumers of coffee will not be asked to pay more despite the campaign by domestic traders to the contrary. On the rubber front, UPASI urges the Kerala government to press the centre to increase the bench mark prices of natural rubber to at least Rs.28 per kg as otherwise the rubber growers will be forced to shift to other fields as the break even prices of RMA fourth grade rubber is Rs.27.78 as against Rs.24.90 announced by the government. The Rubber Board is launching an intensive promotional campaign to boost productivity of rubber in Kerala, Kanyakumari and Dakshina Kannada district with the active involvement of over 1500 rubber producing societies. The campaign covers 1000 cultivators and will promote water harvesting and management, raising cover crop in immature plantation, once in three days system of tapping and control upward tapping, processing of quality rubber sheets, rubber based industries, and the need for replanting. World Bank schemes and other such topics related to modernisation of rubber cultivation is being discussed with the growers during the campaign. On the spices front, concerted efforts by the scientists at the national research centre for spices has finally helped in breaking the stagnation in the production and export of major Indian spices from the

national production of 1.8 million tonnes increasing to 2 million. 125000 tonnes are exported earning Rs.387 crores in foreign exchange in 1992-93. In the following year this has risen to Rs.300 crores.

Industry

Industrial output during the first nine months of 1993-94 continues to be sluggish with Quick CSO official estimates showing an average growth of 4.2 per cent, the manufacturing sector recording a poor 1.8 per cent during that period, while electricity growth was 7.3 per cent. The Quick Estimates show a growth rate of 6.7 per cent for December 1993, with the manufacturing sector showing a 7.3 per cent increase, but these impressive figures are based on the weak performance of December 1992 followed by fall in production in January-March 1992-93 which showed manufacturing at -5.2 per cent. Thus even if 1993 last quarter shows a turn around in the index it would only be because of the negative growth in the same period of the previous year. The improved performance in the last quarter of 1993-94 would lift manufacturing to about 4 per cent compared to the previous year's 2.1 per cent, but the December revival was limited to a few segments, that of the intermediate goods at 17.1 per cent, with consumer goods at 17.9 per cent. Capital goods and consumer non durable are expected to recover from the recession, the quick estimates for the core sector which include power, petroleum, steel cement etc show that in April-January 1993 growth was only 7.3 per cent. In a sense the index is outdated as it does not take into account the contribution of the unorganised industrial sector. Even so the industrial recovery is halting. The industrial growth is fed by Indian financial institutions, IDBI, IFCI, ICICI, SIDC, SFC. The process of industrialisation which was launched as a deliberate policy in the early 50s shows that it has made strides in terms of variety, quantity and quality. There has been a substantial diversification of the

industrial pace during this period. Self reliance has been achieved in basic and capital goods, the process of industrialisation has fostered entrepreneurship and development of wide variety of technical, managerial and operative skills so that today India is able to provide consultancy services as well as managers, technicians and skilled workers for setting up industrial projects abroad. This however, does not help the country's current industrial recession. It is noted that the central government has abandoned the growth centre scheme, the development oriented activities in 70 growth centres allocated in 24 states are about to come to a stand still and the Rs.90 crores spent on the project in the last six years is likely to produce no results. The centre's announcement of creating 100 growth centres during the 8th Plan should therefore be recorded as an unattainable aim. The excise burden on textile units is stated by it to be Rs.1356 crores during 1994-95 which is Rs.1141 crores more than the Rs.215 crores revenue projected to be collected from the textile industry in 1994-95. The industry records this as a case of wrong computation of revenue estimates by the finance ministry which needs urgent correction. The steel scene presents an encouraging picture, it is expected that for the first time the country will be a net exporter of steel. Total saleable steel production by SAIL and TISCO is reported at 90.55 lakh tonnes during April 1993 and January 1994 which is an increase of 2.6 per cent compared to those months in the previous year. But steel prices are going up in order to pass on the increase in freight charges which will become effective in April 1. The question then arises whether five of SAIL's products, steel plates, HR coils, tin plates, prime, tin plate wastes and CRNC will become uncompetitive with imports, as the former will have to face the changes in duties in addition to the freight charges referred to. The table of comparativeness of sale products with current landed cost of imports raises disturbing questions as to the former's competitiveness.

The union steel ministry reports that five new steel plants with the proposed capacity of 4.67 million tonnes have been recently sanctioned in the private sector to add to the country's steel making capacity. IDBI has cleared these projects at an estimated cost of Rs.10,000 crores. The new projects are expected to start commercial production within three years. It is also reported that three other proposals for steel making units are in various stages of approval/operation so that the country's steel making capacity would be increased to meet the projected demand of about 30.66 billion tonnes by the turn of the century. Domestic production at that time will be 24 million tonnes, with the country importing 6 million tonnes. The Ministry of Planning and Programme Implementation reports that as of December 1993 a total of 177 central projects out of 367 were behind schedule with cost increasing by a high 45.3 per cent from Rs.53930 crores of Rs.78,363 crores. The delayed projects include 44 in the railways, 39 in power, 21 in petroleum and natural gas, 20 in coal and 18 in surface transport. This certainly makes the case for privatisation for some of these as a means of countering the very serious lag and loss involved. ONGC plans to increase the country's oil and gas production to 245 million tonnes from the present 180 million tonnes. This involves 5 mega projects costing over Rs.12000 crores for developing oil fields which are progressing according to schedule. In this connection it should be noted that JP Morgan, the US Investment Bank has recommended that the value of ONGC should be reviewed and significantly increased. A significantly under valuation of ONGC will result in a windfall gain for investors. Indian oil Corporation has signed an agreement with star oil of Norway for supply of 1.8 million barrels of crude and 100,000 tonnes of high speed diesel. This important multi million dollar project which will bring in crude from the north sea region and might replace if not supplement supply from Russia and Gulf nations. The reform programme is slipping on many fronts one of

which is continued budget support to sick public sector units which should have been withdrawn by the end of March 1994. There has been no effort even to reduce this support in 1994-95 for which the same provision as in 1993-94 has been made. Thus sick PSUs will continue to receive funds from the budget over and above their bank loans to meet their cash losses. Does this mean that the government has given up the logic of letting unviable firms to close down, is it not wiser to retire workers through the national renewal fund and invest in fresh productive ventures. Is this one of the areas that the high power committee set up by government to be chaired by the finance minister is to look into and help it to take a stand on. This committee which has been set up at the specific request of the prime minister makes the Tripartite committee chaired by the labour minister, Mr Sarma somewhat redundant. The committee as of now has only two members, the finance minister and the commerce minister. The terms of reference of the committee are clear. 1. To take a firm government stand on sick PSUs which have been referred to BIFR. 2. To decide on various recommendations on revival of sick PSUs which are close to being referred to BIFR. 3. To take up the case of any other PSU for restructuring purposes. The composition of the committee is encouraging as it could result in quick decisions on 6 sick PSUs. The government's foreign investment projects have gone awry. Not even one fifth of the expected investment has actually taken place according to the monitoring exercise by the minister of industry. This shows that of the Rs.11482.39 crores worth investments approved the actual inflow was Rs.2947.71 crores. There is something wrong with the globalisation programme that has slowed down the pace of investment. The translation of foreign investment approvals into actual projects on the ground is well below expectation. The foreign investors seem to have been less enthusiastic in taking their investment intentions to reality. In the third

year of liberalisation as many as 797 more approvals were issued but these investors were not approached by the Ministry. The ministry further absorbed 36.10 per cent of the foreign equity received as already been noted. This absorption however is misleading for it takes into account only the approvals given during the first two years and on this only less than 585 investment holders responded to the official query. More accurate is Reserve Bank figures on actual inflow of direct foreign investment. This was worth Rs.551.53 crores in 1991, Rs.675.22 crores in 1992, Rs.1786 crores in 1993 and Rs.135 crores so far in 1994. But total inflow of investment thus stands at Rs.2942.73 crores out of Rs.14820.39 crores which were approved. The inward remittances of foreign equity starts only after the parties file the foreign collaboration agreement with RBI. Investors are demanding further rationalisation and simplification of the system. Even if this were done, it would not have accounted for the wide gap between the approvals and actuals.

Foreign Trade and Balance of Payment

Further liberalisation of the export import policy (1992-93) announced at the end of March aims at increasing export. The major changes made are: a) new category of super star trading house is introduced, b) gold, silver, some consumer goods may be imported under special import licenses with items reserved for SSI sector not being included; c) deem exporter status granted to local manufacturer supplying to duty free license holders; d) duty exemption scheme further simplified and input output norms for over 3300 items finalised; e) third party exports promoted under EPCG scheme negative list further pruned; f) advance release order facility extended to special import licenses; advance intermediate licenses and transferred advance licenses; g) LUT limit further rationalised; h) value based advance license scheme (VABAL) to be continued with safeguards. These

incentives, streamlining, and rationalising which form important changes in ex-imp policy is to take immediate effect in order to increase the tempo of export growth. It is expected that these changes will consolidate the liberal regime and underline the government's commitment to the new global trade agreement that will replace GATT early next year. Using RBI data the government's macro economic projections for 1994-95 are that export growth would decline to about 15 per cent against the estimated 20 per cent for 1993-94 and the target of 25 per cent for 1994-95. The net capital inflow during 1994-95 is set at \$6 billion which would be much lower than the \$8 billion estimated for the previous year. Imports in 1994-95 are expected to rise sharply from the previous year's 3 per cent to 10 per cent. This means that 1994-95 is expected to end with balanced trade and a surplus current account unlike the \$ half billion trade deficit of the previous year. These projections for 1994-95 are based on a GDP growth of 5 per cent, industrial growth of 6 per cent and agricultural growth of 2.5 per cent. The enlargement of the scope of imports under the special import licensing, the introduction of the super star trading house, simplification of duty exemption scheme and the launching of VABAL add up to a rather important move in the direction of liberalisation and is a reflection of the confidence that the Balance of Payment strength has helped to create consistent system with the spread of deregulation. There is now decentralisation of powers in respect of granting of the export promotion of capital goods licenses all of which constitute a mid course improvement promoting liberalisation and exports. GATT points out that when in 1993 a slow down in growth of global trade pulled down leading exporters of the world, India emerged a clear winner, recording a faster growth rate surpassing even those of the Asian tigers and China. Its data shows that the \$ value export growth rates in 1992-93 was 4.3 per cent for Taiwan, 7.8 per cent

for South Korea, 8 per cent for China, 12.8 per cent for Thailand, 13.1 per cent for Hongkong, 16.7 per cent for Malaysia, 18.5 per cent for Singapore and 20 per cent for India. The GATT total shows deceleration of world trade and volume of world merchandise exports which grow only by 2.5 per cent against which the Indian record is outstanding. Against this background the government's report of India's export in dollar terms during April-February 1993-94 estimated at \$29,825.19 million against the previous year's \$16.44 billion registering a 20.58 per cent growth is consistent and is in line with export projections made by it for the financial year 1993-94. Imports are valued at \$20385.03 million against \$19,945.17 million of the previous year signifying the growth rate of 1.95 per cent. The trade deficit in dollar terms during the period in reference has thus declined to a small \$509.84 against \$3504.42 million of the previous year. The government's decision to permit free import of sugar, edible oils and cotton under the open general license is aimed at countering the two digit inflation referred to earlier and not at opening up the consumer goods imports which are not likely to cross Rs.1200 crores during the year. Special care is to be taken to see that only those items are allowed which are not reserved for production in SSI, a limited experiment is being made through the SIL route in order to grant additional incentives to importers who could trade in these items. The important export performers are found in sea food which recorded in 1993-94 a 7 per cent increase in quantity and a 3.5 per cent increase in value over the previous year. The marine products exports development authority in Cochin reports that its dollar value realisation increased by 20 per cent. Indian software are likely to cross \$1 billion in the next two years because of indigenously developed scales entrepreneurship and promotional efforts, better software, which it may be recalled is one of the thrust areas. Production of cloth including khadi, wool and silk by all sectors

is estimated to have gone up to 25942 million sq m in 1993-94 according to the annual report with the ministry of textiles. Textiles and clothing exports contribute 35 per cent of India's total exports. The government forecasts that textile exports will touch a record of \$9 billion in 1994-95; details to give a push to these exports are being worked out specially to non quota markets like South Africa, South America and Japan. Spices exports recorded 150,000 tonnes value added over Rs.500 crores during 1993-94 marking a 36 per cent increase over that of the previous year. The question of using the large foreign exchange reserves which coexist with the great shortage of rupees and a record revenue deficit for importing consumer goods at a high rate of duty, is under study. Such imports of course will yield valuable revenue while barely denting the foreign exchange reserves. The import/export policy referred to earlier has referred to the caution with which government will be approaching the question of opening up consumer goods imports. The department of heavy industry has drawn up a strategy to promote exports for key public sector undertakings in world markets. It has identified 11 public sector enterprises for making special efforts in this direction. Other issues involved are to promote buy back arrangements with collaborators, forming joint ventures with foreign associates and promotion of products and projects through Indian missions abroad. The 11 PSUs referred to include BHEL, HMT, Cement Corporation, National Industrial Development Corporation etc.

Loan and Foreign Aid

India in March pledged \$8.4 million to the Global environment Facility (GEF) which is the largest contribution from a developing country to the environmental agency. It was created to fund the Post — environmental agenda and is run by the three agencies, World Bank, UNDP and UNEP. This should help in resolving the conflict between North

and South over this agency. The Asian Development Bank states that it will not release the second tranche of the financial sector loan to India amounting to \$125 million because of the non fulfillment of conditions such as freeing of interest rates and the removal of subsidies to priority sectors. The government in its turn is in no hurry to fulfill these conditions in view of its adequate foreign exchange reserves. The government accepts to divest 20 per cent of equity of OIL and ONGC by June 1994, this might be undertaken by the government in phases. The government also has withdrawn its request for \$250 million capital market development loan from ADB. India is to receive \$1.4 billion from IDA between July 1994 and June 1995 in addition to the \$500 million financial sector development loan. The Indian delegation to the spring meetings of the World Bank and IMF led by the Reserve Bank of India governor is negotiating the contents of these loans. IDA is also providing credit to the Maharashtra government for its agriculture development programme. At the bi-lateral level, the UK is providing 4.3 million pounds as technical assistance for developing Indian exports. Also India and Germany have concluded their negotiations with Germany promising to give DM351.5 million to "further support India's reform policy, promote private sector initiatives and remove bottlenecks to infrastructure specially in the energy sector".

Human Resource Development

In the Education field, the initial smooth start of adult education is coming up against problems. For one thing the adult education drive under the National Literacy Mission to make 21,000 Gujjars in Garhwal area and Himachal Pradesh literate is running into rough weather as the sponsors, the central and UP governments, are not backing up the programme with the immediate steps needed to check the forest department officials from stopping the literacy movement,

at the behest of the vested interest who are interested in keeping the milk producing tribals illiterate. The bill providing for compulsory elementary education for Tamil Nadu for all children of school age was introduced and passed in the Assembly. The bill makes it obligatory on the parent or guardian of a child of school age to see that the child attends an elementary school. The government assures that there will be sufficient number of elementary schools for this purpose. A parent or guardian of the child of school age who fails in the discharge of his duty would be punishable with fine which may extend to Rs.100. This is an important but difficult piece of legislation, given the fact that Tamil Nadu is one of the states where child labour (in the fire works and beedi industry) is extensive. The enforcement of the bill needs to be watched carefully. Equally the National Institute of Adult Education which is a key instrument for the overall programme in the country is facing serious problems including the possibility of being closed. The finance committee of the ministry is of the view that there are too many institutions on education and that the National Institute of Adult Education should be closed. The system of every scheme having to get a fresh sanction every year needs to be scrapped because this is being used by the government to close down NIAE. The losses which the adult education programme will suffer from this thoughtless action in terms of training, in terms of innovative programme making and syllabus is really a serious one. Another dark spot is that Tamil Nadu which is doing very well in the Adult Education literacy field is lagging in female literacy with its figure going up only marginally from 40.4 per cent in 1981 to 41.8 per cent in 1991, unlike where it has gone up from 75.7 per cent to 86.2 per cent in Kerala and even in Karnataka from 24.2 to 33.2 per cent per cent and Andhra Pradesh from 24.2 per cent to 32.7 per cent. To some extent the Tamil Nadu's lag is due to the higher base compared to that of the other states except

Kerala. Among various indicators of quality of life, Tamil Nadu's poorest performance was under the head of overall literacy rates (including male and female). The state registered a decadal change of no more than 0.2 per centage points, marking the poorest record in entire country. The government has announced the launching of an open university in the state of Tamil nadu in 1994-95 which would give a push to all forms of distance education in the state. Also the state through the chief minister has announced the abolition of property tax on educational institutions in municipalities and corporations and the withdrawal of the sales tax on books which had been proposed in the budget. These two have given new life to the voluntary agencies which are in the fore front of running higher education in the state. The property tax which was being charged retroactively from 1990 was threatening to close down major educational institutions like Loyola College. Population education as a subject of study in the school as well as by researchers is assuming importance in the context of the exploding population in the country. The National population education project launched in 1980 aimed at making the young students familiar with the inter-relationship between population, development and the quality of life. It has not produced results as of today but it must be persisted with.

Science

In the science field the problem facing the country is the languishing state of science department in most Indian universities due to the limited funds available to them, poor grade of research, lack of accountability as well as some serious mismangements. Universities mushroom against the directives of UGC due to political pressures, which use the universities as recruiting ground for professional agitation and party cadres. With the rush for admission of engineering and medical faculties, the general science area has become a dumping ground for those

who fail to get into the first two areas. This is brought out in the publication "Science: Excellence and accountability" released at the Indian Science Congress in Jaipur. Given the large number of scientific and industrial research personnel from the CSIR and IITs who use their scientific standing in order to get into the IAS where science is lost, it is not surprising that the RiasAhmed report for NIEPA points out that 40 per cent of research scholars do not spend even 8 hours a day on their research, 30 per cent of supervisors do not find enough time for their research students and 40 per cent do not take part in research. It is equally not surprising therefore that the study by the National Institute of Science, Technology and Development Studies forecasts a declining trend in India's scientific manpower which will soon start reducing the number of scholars taking up basic research. What gives this problem urgency is its finding that number of MScs and PhDs produced by the universities has started declining from 1990. This trend along with foreign collaboration which have nearly doubled from 800-1500 under the new technology import policy means that the country will increasingly be depending on imported technology and technologists. The report states that the bulk of foreign technology transfers in Indian industry are "pseudo and passive" where companies have resorted to repeated transfer agreement for the same or similar research. It has pointed out that in the context of increasing foreign collaboration, absorption and further development of acquired technology is crucial. Two essentials for scientific development are: a) our income from exports should derive finished goods rather than raw materials; b) there is also the question of selling abroad indigenous development technologies which should roughly balance the technologies bought from abroad. This is a long term requirement and it is hoped that in atleast two decades, this will mean a partnership among equals. So far the 5 million scientific manpower in the country as at 1992 has achieved some spectacular

results in nuclear power, space and defense but the scientific establishment has failed to deliver goods which the liberalisation and globalisation of the Indian economy required. Joining the developed world the demand that atleast in some critical high tech areas India should be substantially independent. The fields in which government invests its R&D are those that support infrastructure of the nation - electricity, power, communication, high ways etc. The Indian public and private sectors have so far been protected from world wide market forces but now it is time for our technology to face those of the developed countries as only that will add development. Statistics show that in the developed world for every dollar spent by the government on R&D, industries spend \$3-4. In India 1991-92 statistics show that while the government spent Rs.42,000 crores on R&D, industry both private and public spend Rs.979 crores. This needs to be urgently changed to evolve a common market culture in the country. For this three proposals are made: 1. If a foreign company setup an Indian subsidiary it should be obliged to spend the same percentage of sales in India on R&D; 2. If an Indian company sets up production based on foreign know how it should be obliged to spend the same percentage of sales from India on R&D; 3. If a company has set up production based only upon indigenously developed know how it should increase its investment on R&D and product innovation to no less than 4 per cent of sales from India. This is based on the fact that while science grows and research laboratory technologies and associated invention and innovation grow in industry, a close interaction and joint effort is needed between R&D and the industry for future development of the country.

Health

In the health field there has been considerable discussion on the Kerala model. The Kerala hypothesis has been used as

an excuse for following the soft approach to birth control (following the emergency excesses). However, there is no one to one equation between literacy and population growth even in Kerala which means that literacy is not a necessary condition for population control. It has a supportive role in promoting Family Planning but only amongst those who have attained a certain standard of living. Hence standard of living has to be raised to the level that every additional child would mean a sharing of resources. Only then will parents see small children as economic liability. A study on the Madras Corporation schools shows that incidence of various diseases among school children who were almost from very poor families is declining due to systematic school health programme run by the corporation. Even so a significant number of these under privileged children are afflicted with many preventable diseases like worm infestation, anemia, Vitamin A deficiency which the programme should correct. It is hoped that the massive school health checkup scheme for children aged 5-15 which is to be launched in the state from June will meet this problem.

Employment

The country has a dubious distinction of having a large number of anti-poverty programmes along with the record number of poor people which the union labour ministry's annual report 1992-93 highlights. It predicts a bleak outlook for the future and states that economic growth along the present pattern is not sufficient to absorb all the unemployed and under employed. The economic liberalisation that is being managed and executed in the country might not help in eradicating poverty and unemployment if the emphasis is on rapid industrialisation with capital and technology obtained through collaboration. The employment generation scheme is one of the most cost effective schemes, avoiding capital intensity. But several worsening problems of

unemployment needs to be attended and much higher priority given to them. Quick and effective employment generation demands questioning some of the basic hypothesis of our economic planning such as equating development with rapid industrialisation and rapid industrialisation with capital intensive growth and unemployment. Positive development is the extension of the prime minister's Rozgar Yojana for the educated unemployed youth to the whole state. This will increase the employment target for the state with the RBI increasing its assistance to the state by 10 per cent. The response to this programme in the state is good with the total number of applications received being 15,000 of whom 6700 have been selected and loans sanctioned for 1250. The exit policy is still in the air. Despite the assurance in the budget that this problem will be attended to. The government does not have the courage to close sick units in the public and private sectors. The union budget for 1994-95 has increased the provision for the national renewal fund by Rs.320 crores but that is all that one hears about the exit policy. The continued pursuit of weakening labour policies will not serve the cause of development, leave alone making industry internationally competitive. A parallel problem is to reduce the bureaucratic flab in the central government. The senior posts are being frozen but those holding a, b, & c posts are still left untouched. Here a number of employees are surplus, but there has been no reemployment for them. According to the annual report of the personnel ministry as of December 1, 1993 there were 96 secretaries, 87 additional secretaries and 339 joint secretaries working under the central saving staffing scheme. The question of unforeseen timely submission and proposals for redeployment has only resulted in setting dates such as October 29, 1993 which however, have resulted in little progress in central government job cuts.

International

Redefining roles of IMF and World Bank

The spring meetings of IMF and World Bank have not resulted in any concrete measures for dealing with the problem of developed and developing countries and those which are in a difficult transition stage to the market economy. The World Bank and the International Monetary Fund joint report paint a rosy picture of the outlook for developing countries with the words "the international economic environment (for developing countries) could improve markedly in the coming decade". World trade is set to increase following the recent Uruguay round agreement. But no hard decisions have been taken on the question of the benefits being unequally shared between countries, the effect of the low prices for oil on the mid east nations, the problem of the African countries for which the two agencies only propose a system of monetary aid, lack of decision on the SDRs and the crisis of confidence that is faced by them. This spring meeting of the two agencies reached however, some very important decisions on the restructuring of the international monetary and financial system. The strategy is now set for a major reorientation of the major multi-lateral banks - World Bank, ADB, IADB, and the European Bank for restructuration. The joint development committee of IMF/WB decided on the American initiative to set up a task force to recommend far reaching restructuring of all developmental activities of the above global and regional multi lateral financing institutions. This could result in unprecedented imposition of social and political conditionalities in the lending policies of these institutions which could change the very nature of governance in the developing world. If the American proposals for reform of these lending institutions go through there could emerge as "a global government" dictating social and economic policies to all

the developing countries, bringing back the "age of imperialism". At the end of the meeting the development committee formally announced that it "agree in principle to establish a small task force to review the development role being undertaken by the multilateral development banks including the World Bank and the four main regional banks". The task force is expected to identify the priorities for the second stage of reform in the developing countries and recommend ways and means of ending the current over lapping of decision making of aid to the developing countries spread over bilateral and different multilateral institutions. The recommendations of the task force are expected to be available by October 1995.

Second Asia Pacific Conference

The second Asian Pacific Conference on agricultural bio technology held in Madras in March urged the need for formation of an association of Asia Pacific bio technology and identified certain key thrust areas for development. These include strengthening of research, capacity building, communication, research support services, support for women, socio engineering and awareness engineering about bio technological research among the public. There was a special workshop during the conference on hybrid rice, linking laboratories to land and the results of cost benefit analysis favouring the promotion of hybrid rice among farmers.

The World Economy

IMF has toned down its optimism for this year but not the world wide improvement in production for 1995. In its world economic outlook it calls for an overall increase for production of 3.7 per cent in 1995. There is usually an increase each year but the rate fell after 1988 and began slowly rising from 1991. Average incomes in a country are estimated in percentage terms which is

somewhat misleading because the increase of 1 per centage point in US production is worth about \$80 billion that adds \$250 to the income of the average of American. IMF predicts the growth of only 0.7 per cent to 1 per cent for a fast growing country like Japan in 1994 compared to last year's 2 per cent. US growth on the other hand this year is placed on 3.9 per cent which will push up the world growth rate next year.

GATT and South

In the final days of the Uruguay round negotiations, it became clear that developing countries have little to say and their role was reduced to only accepting or rejecting what the US and the European Commission had agreed to. In the next several months the South faces even more pressures to give further concessions to the North as negotiations continue on the unsettled issues and the final details of the round. This is in contrast with the euphoria which characterises the conclusions of the GATT negotiations at the end of the first week in April in which even the developing countries joined though they agreed that they have never faced such intense pressure from the developed countries. The future is even more sombre for them because of the unfinished work relating to the Uruguay round itself such as the envisaged negotiations on the financial services issue over the next 18-24 months and the further talks on the anti-dumping issue and initiating the new work programme on the environment and trade. The fourth G15 summit at the end of March called for a monitoring mechanism to protect the interest of the developing countries in the implementation of the new GATT administered policy, the restructuring of the UN security Council. Underlying the need for renewing North South dialogue, it reaffirms the imperative for an international framework based on the rich and poor, and non selective and non discriminating international action on issues of global concern.

World Trade

The increased demand in North America and Asia kept world trade growing in 1993, despite a heavy backlog from the recession according to the latest GATT report. The volume of merchandise export, it reports grew by 4.2 per cent in 1993 compared to the previous year's 4.5 per cent growth. The report shows that the value of world trade in 1993 was \$3.6 billion which was 2 per cent lower than that of the previous year. The acceleration of the economy in North America helped Latin America record the higher rate of growth in the volume of merchandise exports and also helped Asia's higher export growth. An important factor was a sharp 20 per cent rise in import of electronic products in the US. Overall North America imported 8.5 per cent more in 1993 due to Canada's growth of 7.3 per cent in imports and Mexico's 5.2 per cent. Asia imported 10.5 per cent more in 1993. Its exports grew at 6 per cent even though exports of Japan and China declined. Unctad in its report on LDCs in 1993-94 calls for sustained international solidarity in favour of the world's 47 least developed countries to prevent their increased impoverishment. It reports that though in one quarter of the LDCs per capita output has risen during the 1992, the per capita income of LDCs as a whole has declined each year since the adoption of the programme of action for the LDCs for the current decade. This decline it points out increasingly translates into "poorer calorie intakes, increase in mortality and morbidity, lower school enrolment, deeper immiseration of the weakest members of the society and other serious social effects". The report states that the economic performance of the LDCs improved somewhat last year with their combined output growth reaching about 2 per cent and if the weather conditions are favourable could be 2.8 per cent in 1994. There is however, the worrisome aspect of the social, economic performance of the African LDCs which

needs attention. The mid term global revenue of the programme of action slated for next year will offer a unique opportunity for LDCs and their partners to agree on ways and means of enhancing and expediting the implementation of national action and global support measures. It points out that Uruguay round of agreement has significant implications for the trade of LDCs. It is important to ensure that any possible negative affects are countered through appropriate action including additional trade preferences, official development assistance, debt relief and compensatory finances.

Asian Economy

ADB in its Asian development outlook 1994 states that the developing economies of Asia and Pacific region will continue their rapid pace growing at 7 per cent in 1994 and 7.2 per cent in 1995. It states that the general trend of policy changes in the region has been to promote output linking export oriented industries, reduced protectionism, increase economic efficiency and encourage competition. Trade barriers have been progressively reduced in China, Laos and Vietnam. Korea's GDP will rise to 6.7 per cent in 1994 and 6.9 per cent in 1995. The future for Hongkong is closely linked to the performance of China. Singapore's GDP growth of 9.9 per cent in 1993 will fractionally slow down to 7 per cent in 1994 and to 6 per cent in 1995. China's growth of 13.4 per cent in 1993 mainly due to the rapid expansion of the industrial sector was accompanied by a inflation rate increase to 14.5 per cent. Indonesia's GDP growth will be 6.7 per cent in 1994 and 7 per cent in 1995. Malaysia is forecast to grow by 8.6 per cent in 1994 and 8.4 per cent in 1995. Thailand will reach 8.3 per cent in 1994 and 8.5 per cent in 1995. The outlook reports that all countries of South Asia in the last few years which have undertaken wide ranging reform programmes will also witness improved

Other Items

Tamil Nadu State Council for Science and Technology

There were unusually two meetings of the Tamil Nadu State Council for Higher Education during March. The first was a regular meeting at the beginning of March which dealt with the subjects which had been postponed from the previous meetings including procedural and administrative matters. It decided to postpone to a future meeting, the question of a technical university for Tamil Nadu. The second meeting was held at the end of March and it was agreed that normally the Council would meet only once a quarter and would have an additional meeting to transact only urgent business. At the second meeting a decision was made to recommend to the government the launching of an open university for the state.

National Council for Industrial Harmony

There was the annual general meeting of the National Council for Industrial Harmony when the year's work programme was reviewed, the number of training programmes for workers and managers run by the Council was noted with satisfaction. The Council's statement of accounts was reviewed and approved.

Industrial Economist

A meeting to discuss the status of industries in the state as set forth by the Industrial Economist was held at the CLRI auditorium in early March. Some 300 industries in the state were listed by their order of sales. The annual award for the industry with the most outstanding record in productivity was made.

Asiatic Society of Bombay

There was a convocation of the Asiatic Society of Bombay when four fellows were

GDP performance. With Pakistan recovering and India attaining 5.6 per cent growth in 1995. The problem with Asia's rapid growth is the yawning gap in basic infrastructure that will cost them up to \$1000 billion to set right from Chinese railways to Philippines power units. These Asian countries have failed to match their spectacular economic growth with adequate spending on roads, railways, powerstations and telecommunication. ADB therefore urges Asia to raise spending on basic development by 40 per cent and warns that any lag in the supply of infrastructure will slow down development. Power and transport needs most spending. Apart from economic growth rapid population expansion and the region's increasing sophistication adds to the demands for better facilities. To keep pace with this demand, ADB recommends that the average spending on infrastructure by most countries should be 5-7 per cent of GDP.

Asian Urban Population

A World Bank study calls attention to Asia's teeming cities which are also being called engines of growth. The report however, points out that they are also engines of pollution and poverty. Asian cities are growing twice as fast as villages and urban population could exceed the rural total by the year 2025. Indeed in about 30 years there will be as many as people living in Asian cities as there are in other regions at present. Living standards now are higher in Asia's cities, but the over crowding population and lack of water and sanitation will make poverty a serious problem. According to a 1988 UN ranking, 5 of the world's seven most polluted cities are in Asia - Beijing, Calcutta, Jakarta, New Delhi and Shenyang in China. The number of vehicles in Asian cities are growing even faster than urban human population. There needs to be some restraint on this run away expansion and that is the task facing all cities.

admitted to the society increasing the total number of fellows to 76 since the society was founded in 1848. Both the governor, Dr.P.C.Alexander and Mr I G Patel in their address emphasised the importance of the very valuable documentation held by the Society and the need for its careful preservation.

UGC Seminar

There was an UGC regional seminar which brought together all the universities in the South to examine the report submitted to it on the financing of central universities. The number of the recommendations made in the report could also apply to state universities with or without modification. The value of the meeting was that the Vice Chancellors of the south universities were able to express clearly their financial and procedural problems, with the UGC chairman and secretary, Ministry of Human Resource Development responding to some of the questions.

Seminar on Communication for Development

There was a seminar on the problem of communication for development held in mid March at the Madras School of Social Work and organised by the Madras University, Department of Journalism. It was noted that there is a large and growing gap between various forms of communication and the development scene as both inputs and outputs. The means of closing this gap was discussed in some detail.

India International Centre

The two monthly panel meetings of the India International Centre were held at the Centre. The panel meeting in March dealt with the budget for 1994-95 calling attention to the problems of fiscal profligacy and mounting inflation which it was not correcting. The second panel meeting in April dealt with the environmental issues. The speakers covered

a wide area including deforestation, dams and development and bio-diversity conservation. The panel was rather poorly attended probably because this subject has been repeatedly dealt with in Delhi. There was a meeting of the Board of Trustees towards the end of March which dealt with the ongoing project for the Annex of India International Centre. It noted that the project has been revised by the architects in line with the comments made by the metropolitan authorities. This was followed by the annual general body meeting of the Council at which the report of the Director formed the main item of discussion. Under it all the problems faced by the members - inadequacy of parking space, the over crowding of its facilities, the need to expand the library hours etc were once more debated. April ended with a seminar on the external sector with Eric Gonsalves setting forth the broad outlines of problems, political and economic that are faced by the country, Venugopal Reddy making a rather impressive statement on the problems of the Balance of Payment and V L Rao's varying results of India's policies with regard to other developing countries. The discussions was wide ranging and pointed to several important issues which need further consideration.

Institute of Social Sciences

There was a seminar organised by the Institute of Social Sciences on using indigenous designs for housing. The star speaker here was Whitaker from Kerala who has pioneered the way in this area.

MIDS Board of Trustees

There was a meeting of the Board of Trustees in April which decided to expand the Board from the four members to six, inviting two business men to join the Board of Trustees. The Board also looked at the staff and financial position of the Institute and made a number of decision to help improve this matter.

Tamil Nadu State Council for Science and Technology

There were two important events with regard to the Council. One was with regard to the non engineering scientists - agricultural scientists, medical scientists, veterinary scientists, animal husbandry scientists, nutritionists, etc. to identify thrust areas in their fields to guide the council and the Planning Commission. There was a meeting of the Executive Committee of the Council which reviewed the programme under way of research, popularisation, awards, etc. It also reviewed and approved the programme of budget for 1994-95.

MANAR

There was a meeting of eight institutions working with MANAR (3 universities and 5 colleges). The meeting discussed the UGC grant of Rs.10 lakhs for this summer MANAR programme, it approved the projects for the eight institutions which total a little over Rs.11 lakhs. Also five other institutions which could not be present but which had programmes prepared and ready and needed a little over Rs.2 lakhs were considered. A request to UGC has been made to increase the grant for this summer to something nearer Rs.14 lakhs.

Panchayati Raj

The Tamil Nadu Science Forum organised a state seminar on the 73rd Constitutional Amendment. The issue of the reform of the Panchayati Raj institute was taken up. A number of important recommendations were made to the government, the Legislative Assembly which is considering the bill and to voluntary agencies.

Quarterly meeting of Current Problems

The quarterly meeting was held at Anna University in April on accountability and

poverty. Unfortunately the two paper writers, C.T.Kurien and Srinivasa Raghavan were not present and so to some extent the meeting strayed into many problems of unemployment, under employment, government initiatives etc. It is important that these meetings should ensure proper attendance and leadership.

Alliance Francaise

There was the annual general meeting of the Alliance Francaise in the third week of April. The activities through the year of the Alliance in the matter of plays, dance, music and training were reviewed. Its statement of income and expenditure as audited was also reviewed and approved.

SRC and TNBCE

There was the two monthly meetings of the Governing Body of State Resource Centre. The report of its Standing Committee dealing with the new and increased budgetary provisions were discussed in some detail. Some changes were made in the recommendations which were referred back to the committee. The programme of SRC was reviewed and approved. There followed the Executive Committee of Tamil Nadu Board of Continuing Education which discussed the ongoing programmes of voluntary agencies and made a number of recommendations for their improvement. The attendance of members of Executive Committee was also reviewed and the regular absence of some two or three members were noted with concern.

G N Mehta Memorial Lecture

The Institute of Financial Management organised the G N Mehta Memorial Lecture which was delivered by Mr S S Nadkarni, Chairman of SEBI, whose theme was the place of speculation in stock market. The importance of speculation as an integral

part of the securities market was stressed. It was pointed out that in controlled measure it had beneficial effects like smoothening out prices fluctuations, providing liquidity and transferring risks. If uncontrolled and over used however it could be a negative feature involving market manipulations.

First Article

The paper for the April seminar on "Natural Resources Management Using Remote Sensing Technology" appears as the first article.

Second Article

A note on the "Study of Variations in Educational Participation Based on Secondary Data: Some Suggestions" appears as the second article.

Twenty-fourth Census of Social Science Research in the Southern Universities

The Twenty-fourth Census of Social Science Research which appears in this issue summarises the responses from the Universities in southern states to our questionnaires on Ph.D/M.Phil and Projects.

From the Publisher

It is a widely known fact that from the time this publication first appeared in 1971 till now Dr. Malcolm S Adiseshiah has been its Editor. But few people know the extent to which he was personally involved in its production. The much appreciated editorial section with comments on matters relating to Tamil Nadu, the country and the international sphere, has been prepared by him. Without any kind of assistance, he has continued to collect the material, collate it and write the comments, month after month, now for 23 years - possibly an unparalleled performance of its kind which Dr. Adiseshiah alone could have done. Many issues of the periodical have also carried articles written by him on a wide range of issues. The magazine has now established itself as a much sought after reference work on Tamil Nadu. Articles published in it have also been cited in Indian and foreign publications.

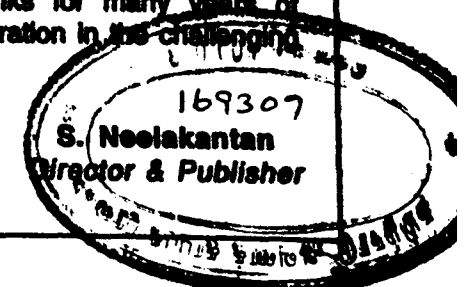
At the age of 84 Dr. Adiseshiah still continues to be alert and active. But because of a cataract problem he is not able to keep up with his reading and has reluctantly indicated that he would not be able to continue the work on the magazine for long. As no one else will be able to continue the magazine in its present form, it has been decided to terminate it with the May-June issue of 1995.

But it is Dr. Adiseshiah's cherished hope that a periodical of some kind should continue to be published under the auspices of the Madras Institute of Development Studies which he founded in 1970 and of which the Bulletin has essentially been a house magazine. He has persuaded Dr.C.T. Kurien (who succeeded him as Director of the Institute in 1978 and who continues to be Emeritus Professor since his retirement in 1984) to take up the responsibility. The thinking at present is that the new publication will be a professional quarterly journal (with the suggested title *MIDS Quarterly*) which will carry researched papers pertaining to the economy, polity and society mainly of Tamil Nadu and of the other southern States. The first issue is expected to appear in September 1995. The journal will carry papers by members of the Institute as well as scholars from outside. Further details are being worked out and the concerned authorities are being addressed for the registration of the new journal. Those who subscribe to this magazine in 1995 will automatically become subscribers of the new journal and will receive the first two quarterly issues. New subscription rates will come into effect in 1996. A more definite announcement regarding the journal will be made in a subsequent issue of this publication.

We are sure that the readers of this magazine will join us in conveying to Dr. Adiseshiah our great appreciation and sincere thanks for many years of dedicated work and in assuring Dr. Kurien of active cooperation in the challenging task that he is taking over.

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MIDS News

Dr. S. Janakirajan attended a consultative meeting convened by IDRC, New Delhi from May 3-5, 1994.

Dr. Padmini Swaminathan presented a paper on "Research Issues in Industry" for a Research Scholars' Workshop held at Tuticorin from April 25-27, 1994; and presented a paper on "Gender, Work and Employment" for a Workshop on "Gender, Sensitization of Trainees" held at Bangalore on April 29, 1994.

Dr. Paul P Appasamy served as Commissioner for the People's Commission on Environment and Development for a Workshop on Public Hearing on East Coast Road held

at Madras on April 9, 1994; and presented a paper on "Institutional Options for Solid Waste Management" for a Workshop on Solid Waste Management held at Bangalore from April 18-20, 1994.

Dr. A. Vaidyanathan served as a Resource person in a Workshop to review results of IFPRI's research collaboration with Indian Institutions held in New Delhi from May 1-5, 1994; presented a paper on "The Employment Strategy: Some Emerging Perspectives" for the Lakdawala Memorial Lecture held at Vallabh Vidyanagar on May 9, 1994; and gave a talk on "Agricultural Policy" for India International Centre, Economic Affairs Group at New Delhi on May 14, 1994.

April Seminar

Natural Resources Management Using Remote Sensing Technology

Dr. L.R.A. Narayana
Distinguished Fellow
M.S. Swaminathan Research Foundation
Madras

Introduction

IN the past management of various natural resources were carried out by using information available, which were outdated and incomplete. This is true to a great extent as exploration and exploitation of natural resources were done without much consideration to the side effects it may have on related activities and disciplines. Systematic and optimal utilisation needs very upto date and near real time information based on which a more realistic planning can be made. Natural resources as such can be broadly classified as renewable and non-renewable and to explore and exploit these, careful planning is essential, besides understanding the inter-relationship that exist between various disciplines. Resources such as minerals can generally be categorised as non renewable, while agriculture, forest, water resource etc. could be termed renewable.

The advent of remote sensing, particularly from space platforms has opened up new vistas in mapping, monitoring and managing natural resources in a more effective and realistic manner, and the use of this technology is finding newer and newer applications. In fact the potential of space borne remote sensing was recognised from early seventies, when the first Earth Resources Technology Satellite (later on called Landsat) was launched by Americans. Since then its applications and usage have been growing very rapidly, and simultaneously improving the quality of data rapidly, based on an "Application driven approach".

What is remote sensing

Remote sensing can be defined in broad terms as obtaining information of various objects by instruments called sensors from a distance, without actually coming into contact with the objects. In the case of satellite remote sensing, the sensors on board the satellite observe and record all objects on the surface of the earth and beam it down to the earth, which then can be converted by opto-electrical methods to a picture form, so that we can see it and understand the status prevailing on the surface of the earth at the time when the satellite sensors viewed it. How the technology actually works and the principles governing the imaging system is being briefly described here, not going into the details of its operation, as we are more concerned with the application aspects of the data generated. Broadly speaking it is bringing the Earth's surface in a pictorial format for us to interpret and understand the processes that are taking place. More frequently we are able to get such pictures or data, more we are able to monitor the changes that occur and facilitates possible corrective measures that may be needed, as most changes are due to human activities. It therefore serves as a dynamic tool to gather information about our earth from space altitudes.

Space remote sensing systems

Essentially the space remote sensing system comprises: a) space segment b) sensor systems, c) ground segments. Fortunately

our country has all three facilities available, as such continuity of availability of remotely sensed data is assured for a long time to come. The space segment consists of the satellite which could be put into orbit and in which a sensor system is mounted, which in turn is the 'eye' or the instrument which observes and records, in a pre-planned format and transmits them to the earth receiving stations. Factually, the process of observing and transmitting to the earth receiving station is more or less a continuous process, when the satellite is in our visible range in the sky. In the case of the earth receiving station located near Hyderabad, its 10 meter antenna has a visibility range of about 2500 km radius. The data which is transmitted in a digital format is received and stored in magnetic tapes for further processing. We are thus able to obtain data covering various adjacent countries, like Pakistan, Bangladesh, Afghanistan, part of China, Burma, Sri Lanka etc.

The Indian Remote sensing satellite 1A and 1B, now in orbit at an altitude of 904 kms takes 103 mts to make one orbit. It reappears in the same path observing the same area once in 22 days as such both IRS 1A and IRS 1B put together gives us data once in 11 days covering the same area, as both satellite carry exactly similar payloads. Due to rotation of the earth along the polar axis, the satellite observation shifts 2872 km after each orbit, at the equator. There are other satellites launched by other countries like America, France, Japan etc. with different specifications. To get uniform illumination, the satellite crosses the equator at 10.25 a.m. during its pass.

Sensors are instruments which sense the objects on the surface of the earth. For example a camera is a sensor. Similar sensors in the satellite system could be a camera or a scanner. Since, to operate a camera in a satellite involves certain practical difficulties such as film recovery etc., scanners are used, which scans the area observed on the surface of the earth in digital

form, which can be easily transmitted. In all these cases, Sun's energy, which falls on the earth and illuminates, is observed. Each scene observed in the IRS 1A and 1B covers an area on the surface of the earth of 145x145 kms² in one of the sensors and 74x74 kms² in another sensor. The ground resolutions obtainable are 72.5 meters and 36.25 meters, respectively in the camera/scanner called LISS I and LISS II (Linear Imaging Self Scanning I and II).

Electromagnetic spectrum

Remote sensing technology, uses the visible, infrared and microwave regions to collect information about the various objects on the surface of the earth. In the case of IRS, we get information only through the visible range and near infrared part of the electro-magnetic spectrum. We all know that different objects reflect in different parts of the EM spectrum, exhibiting their own spectral signatures. It is obvious that different objects manifest themselves predominantly in certain wavelengths of the EM spectrum. This physical principle is what we use in acquiring and interpreting satellite remote sensed data, to identify and understand the configuration of various objects on the surface of the earth. Thus, various scientists, specialised in various disciplines can use the same data, for interpreting objects of ground if they visit, because the remote sensed data brings home the true state of the earth's surface as existed at the time of observation. We shall not go into further details of spectral ranges of EM spectrum and its characteristics here to keep this paper short.

Advantages of satellite remote sensing

- a) Synoptic view - A large area of about 20,000 to 30,000 square kilometer of area can be imaged in one picture, an about 1:1 mill-scale and of a paper size of about 10" x 10" or 25cms x 25cms.

- b) Repetivity - We can get data of any area repeatedly at regular intervals of time, which enables monitoring changes possible rapidly. This revisit time may vary from satellite to satellite, for example, in the case of IRS it is 22 days, as mentioned earlier.
- c) Coverage of inaccessible or difficult terrain conditions, like mountains, swampy areas, thick forest etc. are imaged truthfully.
- d) Since satellite remote sensed data can be obtained in digital form, analysis using computers is possible.
- e) It is economic in cost and time.

Limitations

- a) General limitations in most cases is that when there is cloud cover, satellite data cannot be obtained. However, advancements have already been made to overcome this by using microwave region of the EM spectrum for observing, which penetrates clouds.
- b) In most cases, the resolutions obtained are inadequate for detailed mapping and study. This is also being overcome by improved satellite resolution data that is becoming available.
- c) In most cases, geographical positional accuracies are limited.
- d) View such data stereoscopically has not been possible except in the case of one satellite data called SPOT, belonging to France. The next IRS-1C is expected to have this facility also shortly.

Application of remote sensing

Application potential of satellite remote sensing has been found to be highly rewarding and economical, besides speed with which we could make an assessment of the various natural resources.

its usefulness to a large country like ours is enormous and has now reached a status of near operational. With growing impact of advancements in computer technology and also better quality remote sensed data, particularly in terms of better resolution, its usage in various studies covering natural resources, both in terms of inventorying as well as finding answers to specific problems, its usage has come to stay as an important technology, unparalleled in history. While aerial remote sensing in the form of aerial photograph improved our ability to map various natural resources more economically and speedily compared to conventional ground techniques, space remote sensing added fresh dimensions in this activity with much greater value, as real time monitoring of changes become possible in a routine manner, besides use of such data being processed using computers. In terms of economy and time, satellite remote sensing has proved itself more efficient, particularly when it is used combined with other forms of data.

Geology and Geomorphology mapping

Geological studies using remote sensing has a long history. It has been used to map unmapped and inaccessible areas much faster, updating existing maps, rapid preparation of lineament and tectonic maps, identifying features favourable for mineral localisation etc, which could not have been easily possible by other methods.

The geomorphological maps find their utility in planning, management and monitoring of several other resource aspects.

Soil classification mapping

Soil is a three dimensional continuum which depends on parent material, geomorphic processes, and environmental characteristics. Remote sensing data can study surface manifestation, improving the efficacy of soil survey.

Water resources

Understanding water resources both surface and ground water are important to agriculture, industry, commercial establishments and residential areas. Remote sensing data is useful in surface water and stream pattern mapping, pre-flood and post flood river configuration and flood plain mapping, snow cover mapping and run off prediction, irrigated area studies and its monitoring, and determining potential ground water zones.

Agriculture

One of the basic information that remote sensing can provide to agriculture is data related to crop identification and area measurement under different types of crops or acreage estimation. Indirectly it provides information for planning food security system in large country like India.

Forestry and vegetation mapping

Remote sensing can aid in providing information about extent of forest cover and give a general idea of the types of forest cover and also detection of forest hazards like fire, disease and unauthorised excessive felling, posing danger to environmental balance.

Land use mapping

The knowledge of spatial distribution of land cover/land use of a large area is of great importance to regional planner and administrators. Conventional ground methods are time consuming, expensive and not uniform. Remote sensing data can be used with great advantage in obtaining up-to-date land use pattern and changes in large areas that occur from time to time.

In short all human activities on the surface of the earth could be planned much easier with remote sensing data system. It is also an integrating agent, as the same data can

be used to extract information of several aspects by several experts and multidisciplinary character of various resources can easily be understood rather quickly. Several studies carried out during the last two decades have focussed the attention of the decision makers in the government. The environmental degradation that are taking place due to several human activities and the so called development activities, which were planned based on incomplete or outdated data, has become more glaring using Remote Sensing data than in the past.

Conclusion

Space technology has been particularly symbiotic, in recent years, in analysing planning strategies and revising national and regional policies, although in India its full potential is still not exploited. It is well-known that the social and economic development of our country is interfaced with our natural resources, and the manner in which they are managed and exploited. The finite land, minerals, water and biomass resources are currently under tremendous pressure in the context of highly competing and often conflicting demands of an expanding population. The task of optimal resources management and sustainable development has been greatly synergised by the enhanced speed and reliability with which spatial and temporal information is generated by remote sensing technology in a cost-effective manner. All development planners could take advantage of this technology to derive full benefit.

It is therefore necessary to understand what remote sensing can do, and at what cost and in what time frame, so that effective utilisation could be achieved. We have to improve our land productivity in the context of decreasing per capita availability of land. Towards achieving this we have to be very watchful of various processes and their effects. One cannot be complacent with

what has been done or achieved, but constant improvement in our data gathering systems, integrated analysis and taking deliberate decision is crucial and towards this remote sensing could be an indispensable tool for us, in all its manifestation and aspects. It may therefore be necessary for technologists, economists and decision makers to work together to make our land a better place to live.

It has not been possible in this short paper to bring out all aspects of management activities and the information systems that are required to manage natural resources of a country and that too a large one like ours. It is however hoped that this small exposition will generate hunger to know more and use advanced technologies available to us without any inhibitions, selectively and willingly.

Study of Variations in Literacy across Taluks in Rural Tamil Nadu : Some Suggestions *

I Introduction

THE purpose of the present study is to map the inter-taluk variations in the level of literacy in the state of Tamil Nadu as well as changes in this respect over time, drawing primarily on secondary data. In particular, the rural literacy scene in the taluks is our focus of attention here. That the rural population, especially females and Scheduled Castes (SC) and Scheduled Tribes (ST), are educationally the most disadvantaged in our country is old news. But the multiple socio-economic and political handicaps which debilitate their educational aspirations are not equally strong across the rural universe. There exist considerable spatial variations in the level of educational achievement (measured here only in terms of rural literacy levels), sufficiently intriguing to merit closer scrutiny. The underlying motivation of our present exercise is to trace out the magnitude of such variations across the taluks of Tamil Nadu (both in initial levels of literacy and subsequent rates of performance) as well as to identify, albeit in a limited manner, the relevant socio-economic variables that might account for such disparate performance records.

II Tracing the Terrain of Literacy in Tamil Nadu

Drawing primarily on the decennial Census Reports, we present below the results of a sample analysis of literacy characteristics (indicating both the levels as well as the growth therein over the period 1971 to 1991)

and associated characteristics in rural areas of all the taluks in Tamil Nadu. The data show significant variations across taluks in literacy rates both overall as well as among different groups of population (male-female) during the period between 1971 and 1991.

But, before we carry on, we must mention some adjustment which had to be made in the data: the Indian Census data on literacy prior to 1991 pertain to whole population, while in the 1991 Census persons aged seven and above are considered. For this reason, strictly speaking comparisons between 1991 and earlier census figures are not quite appropriate. Adjusted figures are available for 1981 and 1991 at the district, state and national levels; similar adjusted numbers for the taluk level (for 1971 or 1981) have not been thus far available. Hence, to get around this problem (admittedly in a less than ideal way), we have derived the overall literacy rates in 1991 by dividing the number of literates (aged 7+) by the total population, assuming that the number of literates in 0-6 age group is negligible.

Table 1 gives the distribution of all the taluks in Tamil Nadu by levels of (rural) overall, male and female literacy during the period of 1971 to 1991. The overall literacy rate in rural Tamil Nadu has recorded a significant rise from 32 percent in 1971 to 38.5 percent in 1981 and 47.6 percent in 1991. The increase has been relatively faster in the 80s. Female literacy in rural areas—which nearly doubled from 19 percent in 1971 to 36.7 percent in 1991—rose considerably

faster than male literacy (45 percent to 58 percent). Literacy rates—both overall and by sex—rose faster in rural areas compared to urban areas. The sex disparity as well as rural-urban disparity have thus narrowed.

Shifts in the frequency distribution of taluks in terms of overall literacy levels between the three Census periods reflect the rise in the overall literacy rates. In 1971, nearly four fifths of the taluks had a literacy rate ranging between 20 and 40 percent.

In 1981, slightly less than 80 percent of taluks registered literacy rates between 30 and 50 percent; by 1991, about 80 percent taluks had literacy rates ranging between 40 and 60 percent.

The shift is much more marked in female literacy rates. The modal value of the literacy rate in 1971 was 10-20 percent (nearly 60 percent of all taluks fell in this category). By 1991, the modal frequency was in the 30-40 group (again comprising 60 percent of all taluks).

TABLE 1 : Number of Taluks by level of Literacy in Rural Tamil Nadu 1971-1991

Literacy Rate (%)	Number of Taluks (over-all rural literacy)			Number of Taluks (rural male literacy)			Number of Taluks (rural female literacy)		
	71	81	91	71	81	91	71	81	91
0-10	0	0	0	0	0	0	5	0	0
10-20	5	0	0	0	0	0	66	30	1
20-30	41	15	1	5	0	0	37	61	24
30-40	56	53	14	22	13	1	3	18	63
40-50	9	40	65	52	29	14	2	3	20
50-60	4	6	29	32	60	50	3	4	3
60 & above	1	3	7	6	15	51	0	1	5
Total No. of Taluks	116	117	116	116	117	116	116	117	116
Tamil Nadu State Avg. (%)									
Rural	32.1	38.5	47.6	45.1	51.2	58.2	19.0	25.8	36.7

Source : Calculated from Census of Population : 1971-1991.

Table 2 delineates differences in male-female literacy rates in the three Census years: In 1971, male literacy rate in rural Tamil Nadu was twice that of females, but with a wide variation around the mean. Interestingly, taluks with a low overall literacy rate showed a higher gender disparity, compared to high literacy taluks. There is in fact a strong inverse relation between the overall literacy rate and gender disparity in literacy. In other words, higher level of male literacy goes

with higher level of female literacy and with lower level of gender disparity.

Over time the gender disparity has declined appreciably in all taluks. The dispersion in gender disparity across taluks has also declined. The decline has been much steeper among taluks with low level of literacy in the base year, compared to those whose population were more literate. Indeed, the rate of decline in gender disparity is inversely related to the base level of literacy.

* This note prepared by Vaidyanathan and Manabi Majumdar is a brief summary of a paper prepared for a national project on 'Access to and Financing of Elementary Education' as part of a larger project entitled 'Strategies and Financing for Human Development' sponsored by the United Nations Development Programme (UNDP). The authors wish to gratefully acknowledge P. Anbazhagan's major assistance in the data analysis.

TABLE 2 : Mean Change in Male-Female Literacy Ratio in Rural Tamil Nadu 1971-1991

Over-all rural literacy level in 1971 %	Mean M/F Lit. ratio in 1971	Mean M/F Lit. ratio in 1981	Mean M/F Lit. ratio in 1991	Mean Change in Gender Disparity		
				Between 71-81 (M/F 81-M/F 71)	Between 81-91 (M/F 91-M/F 81)	Between 71-91 (M/F 91-M/F 71)
10-20	3.0	2.4	1.8	-0.61	-0.56	-1.17
20-30	2.8	2.3	1.7	-0.52	-0.51	-1.03
30-40	2.5	2.1	1.6	-0.46	-0.44	-0.90
40-50	1.9	1.6	1.4	-0.27	-0.22	-0.49
50-60	1.3	1.2	1.1	-0.08	-0.08	-0.16
60 & above	1.2	1.1	1.0	-0.07	-0.07	-0.15
All taluks	Avg. 2.1	1.8	1.4			
	Std. 0.7	0.5	0.3			
	cv. 33.1	28.6	21.7			

Source : Calculated from Census of Population : 1971-1991.

Table 3 portrays the rural literacy landscape of 1971 (which is treated as the base year in the present analysis) as well as the change in the educational terrain in the following two decades. There is a clear

inverse relation between the extent of increase in literacy rates and the initial level of literacy: that is to say, low literacy taluks have recorded greater rise in overall literacy rates than those which already had high

TABLE 3 : Relation between Base Year Overall Rural Literacy Levels in 1971 and Changes between 1971 and 1991 : Tamil Nadu Taluks

rural over-all literacy level	Number of Taluks	Mean rural over-all Lit.	Mean rural Male Lit.	Mean M-F Lit. Ratio	Mean proportion of SC-ST to tot.r.p.	Mean Increase in Percentage Points		
						Between 71 and 81	Between 81 and 91	Between 71 and 91
10-20	5	18.3	27.2	3.0	13.4	6.5	9.9	16.4
20-30	41	26.6	38.9	2.8	24.7	6.6	8.8	15.4
30-40	56	34.7	49.5	2.5	22.6	6.1	8.5	14.6
40-50	9	42.7	56.1	1.9	22.3	7.4	6.9	14.3
50-60	4	55.6	62.1	1.3	6.5	5.6	8.4	14.0
60 & above	1	63.3	70.1	1.2	7.4	4.3	6.0	10.3
All taluks	116	32.7	45.9	2.5	22.3	6.3	8.5	14.8

NOTE : The actual number of taluks has increased since 1971 (both in 1981 and more in 1991), but for the sake of comparability we have incorporated the newly created taluks into the original ones from which the former have bifurcated / trifurcated.

Source : Calculated from Census of Population : 1971-1991.

literacy in the seventies; as well as during 1971-1991 taken as whole. But this relation is not seen, at any rate as strongly, in the 1980s. In general, however, the taluks at lower levels of literacy in the base year (1971) have registered a greater positive change - a tendency that keeps our hope about a better literacy profile alive.

Table 4 furnishes, in a greater detail, the taxonomy of taluks, reflecting the level of literacy in 1971 and the change during the subsequent two decades. The overall literacy rate in Tamil Nadu in the base year was reported to be 39.5%. On this basis, we have grouped taluks into four strata in terms of literacy levels in 1971 as follows :

10-20% : very low
20-35% : low
35-45% : medium
45%+ : high

Again, the mean increase in percentage points of overall literacy across all taluks happens to be :

1971-81 : 6.3
1981-91 : 8.5
1971-91 : 14.8

Based upon these averages, we characterize, somewhat arbitrarily, change during 1971-81 and 1981-91 in the following way :

TABLE 4 : Distribution of Taluks by Levels of and Changes in literacy : 1971-1991

Taluks at Very Low Level (10-20% in 1971) recording :

71-81	Increase in Percent age points	81-91	Increase in Percent age points	71-91	Increase in Percent age points
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Low Change : Cluster I

Denkanikottai	5.6	Denkanikottai	5.4	Denkanikottai	11.0
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Medium Change : Cluster II

Palacode	6.5	---	---	---	---
Hosur	6.0	---	---	---	---
Sankari	6.6	---	---	---	---

High Change : Cluster III

Krishnagiri	7.9	Krishnagiri	13.4	Krishnagiri	21.3
		Palacode	10.8	Palacode	17.3
		Hosur	10.5	Hosur	16.5
		Sankari	9.5	Sankari	16.0

Taluks at Low Level (20-35% in 1971) recording :

Low Change : Cluster IV

Dharmapuri	4.0	Tirukoilur	4.7	Tirukoilur	9.2
Omlaur	4.8	G.B. Palyam	7.7	Yercaud	6.0
Kallakurichi	4.9	Yercaud	4.3	Uthukottai	12.5

71-81	Increase in Percent age points	81-91	Increase in Percent age points	71-91	Increase in Percent age points
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Low Change : Cluster IV (Cond.,)

Chengam	5.1	Madurantham	7.1	Virudachalam	11.7
Tirukoilur	4.5	Rasipuram	7.5	Polur	11.8
Bhavani	3.5	Uthukottai	7.2	Mudukulathur	12.2
G.B. Palam	5.4	Sirkali	7.3	Melur	12.1
Tiruthani	5.3	Avinasi	7.7	Chyyar	12.5
Mettur	3.7	Sankarankoil	6.6	Sirivillipatur	11.7
Tindivanam	4.1	Melur	7.4	Tiruchuli	9.9
Gingee	4.1	Thirunelveli	6.9	Sivagiri	9.5
Yercaud	1.7	Tiruvallur	7.4	Shenkottai	11.3
Gumidipoondi	4.4	Sirivillipattur	6.8		
Usilampatti	4.8	Tiruchuli	7.4		
Uthukottai	5.3	Sivagiri	7.6		
Virudachalam	2.2	Palladam	5.7		
Pallipattu	3.9				
Polur	3.8				
Dindigul	5.0				
Mudhukulathur	2.2				
Melur	4.7				
Sivaganga	5.4				
Vandavasi	4.9				
Periyakulam	3.7				
Cheyar	2.0				
Sirivillipattur	4.9				
Tirupathur	4.7				
Tiruchuli	2.5				
Sivagiri	1.9				
Ilyankudi	(-1.33)				
Shenkottai	1.5				

Medium Change : Cluster V

Tiruvanamali	6.5	Kallakurichi	8.2	Omalur	14.1
Vedasundur	6.0	Chengam	8.1	Kallakurichi	13.1
Manamadurai	6.3	Salem	8.0	Chengam	13.2
Palladam	6.3	Villupuram	8.8	Bhavani	12.6
		Attur	7.3	G.B. Palayam	13.1
		Aniyambadi	8.5	Mettur	12.9
		Usilampatti	8.3	Gingee	14.2
		Erode	8.7	Vedasundur	14.8
		Polur	7.8	Gummidupoondi	13.8
		Dharapuram	7.9	Rasipuram	14.3
		Uthiramerur	8.2	Attur	14.7
		Gudiyatham	8.0	Usilampatti	13.1

71-81	Increase in Percent age points	81-91	Increase in Percent age points	71-91	Increase in Percent age points
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Medium Change : Cluster V (Cond.,)

Palani	7.8	Pallipattu	13.1
Ponneri	8.4	Uthiramerur	14.9
Vandavasi	8.6	Sankarankoil	14.5
Vedasundur	8.8	Dindigul	14.5
		Vandavasi	13.5
		Periyakulam	13.8
		Tirupathur	14.5
		Ilayankudi	14.8
		Palladam	14.0

High Change : Cluster VI

Uthankari	8.1	Uthankari	10.1	Uthankari	18.1
Karur	7.9	Dharmapuri	12.5	Dharmapuri	16.4
Tirupattur	7.0	Omalur	9.3	Karur	17.4
Thiruchencode	8.0	Karur	9.5	Tirupattur	17.3
Bhavani	9.1	Tirupattur	10.3	Tiruchencode	18.2
Salem	7.5	Tiruchencode	10.2	Tiruthani	16.4
Cuddalur	7.0	Tiruthani	11.1	Salem	15.6
Orathanadu	10.7	Mettur	9.2	Tiruvanamali	15.6
Madurantham	8.0	Tiruvanamali	9.1	Cuddalur	16.2
Villupuram	7.5	Cuddalur	9.2	Madurantham	15.1
Pattukottai	11.4	Gingee	10.1	Villupuram	16.3
Attur	7.4	Orathanadu	9.5	Pattukottai	21.3
Rasipuram	6.8	Pattukottai	9.9	Anyambadi	16.2
Aniyambadi	7.7	Gummidupoondi	9.4	Erode	18.9
Erode	10.2	Namakaal	9.7	Namakaal	19.3
Namakkal	9.6	Virudachalam	9.5	Arakonam	17.1
Dharapuram	8.2	Arakom	9.1	Paramakudi	17.2
Paramakudi	7.2	Paramakudi	10.0	Valajapet	21.7
Valajapet	12.1	Valajapet	9.6	Sirkali	29.9
Sirkali	13.6	Dindigul	9.5	Avinasi	15.5
Uthiramerur	6.7	Mudukulathur	10.6	Palani	15.4
Sankarankoil	7.9	Devakottai	13.9	Aranthagi	20.3
Gudiyatham	10.9	Manamadurai	9.2	Devakottai	21.0
Palani	7.6	Sivaganga	12.5	Thirunelveli	20.7
Aranthagi	7.5	Arani	9.1	Manamadurai	15.5
Devakottai	7.1	Periyakulam	10.1	Sivaganga	17.9
Thirunelveli	13.8	Ramanathapuram	11.7	Ponneri	16.1
Ponneri	7.7	Chyyar	10.5	Arani	16.7
Arani	7.6	Chengalpet	8.9	Papanasam	15.4
Papanasam	9.7	Tirupathur	9.8	Ramanathapuram	20.2
Ramanathapuram	8.5	Rajapalyam	8.9	Chengalpet	19.0

71-81	Increase In Percent age points	81-91	Increase In Percent age points	71-91	Increase In Percent age points
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High Change : Cluster VI (Contd.)

Chengalpet	10.1	Sriperumbudur	9.8	Tiruvallur	15.1
Tiruvallur	7.7	Tiruvadani	11.1	Rajapalyam	15.7
Rajapalyam	6.8	Peruerani	10.2	Sriperumbudur	16.7
Sriperumbudur	6.9	Ilyankudi	16.1	Tiruvadani	17.8
Tiruvadani	6.7	Shenkottai	9.8	Peruerani	17.5
Peruarani	7.3			Orathanadu	20.2

Taluks at Medium Level (35% - 45% in 1971) recording :

Low Change : Cluster VII

Karikudi	4.9	Mayuram	5.8	Chidambaram	12.9
Chidambaram	4.4	Pollachi	7.4	Virudunagar	11.9
Virudunagar	5.1	Udumalpet	5.8	Tenkasi	11.8
Tenkasi	5.0	Manargudi	7.1	Arcot	12.1
Arcot	4.1	Ottapedram	7.3	Tirumangalam	11.8
Tirumangalam	2.5	Coimbatore	5.6	Uthamapet	10.8
Uthamapalyam	5.1	Virudunagar	6.8	Aruppukottai	11.7
Kodaikanal	4.0	Madurai.S.	6.8	Kodaikanal	9.8
Kamuthi	(-1.6)	Tenkasi	6.8	Kamuthi	6.5
Nilakottai	.5	Uthamapet	5.7	Nilakottai	9.0
Vellore	2.1	Arupukottai	5.7	Vellore	10.4
Sathur	(-0.3)	Kodaikanal	5.8	Sathur	6.8
Ambasamudram	4.9	Sathur	7.1		
		Vilathikulam	7.0		
		Saidapet	6.8		
		Nannilam	6.4		
		Nanguneri	5.1		

Medium Change : Cluster VIII

Pollachi	6.6	Kovilpatti	8.6	Pollachi	14.0
Arupukottai	6.0	Chidambaram	8.5	Uthamapet	13.1
Madurai.N.	6.3	Arcot	8.0	Karikudi	14.0
Stivaikundam	6.0	Thanjavur	8.1	Madurai.S.	13.6
		Madurai.N.	8.3	Madurai.N.	14.6
		Kamuthi	8.1	Vilathikulam	13.9
		Nilakottai	8.5	Ambasamudram	14.6
		Vellore	8.3	Srivaikundam	14.0
		Nagapattinam	7.4	Nannilam	14.1
		Srivaikundam	8.0		

71-81	Increase In Percent age points	81-91	Increase In Percent age points	71-91	Increase In Percent age points
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Low Change : Cluster IX

Mayuram	12.9	Karikudi	9.1	Mayuram	18.7
Uthamapet	7.3	Tirumangalam	9.3	Kovilpatti	16.2
Kovilpatti	7.6	Tiruthuraiipo	9.4	Manargudi	17.0
Manargudi	9.9	Ambasamudram	9.7	Ottapedram	17.5
Ottapedaram	10.2			Coimbatore	15.4
Coimbatore	9.8			Tiruthuraiipo	16.5
Madurai.S.	6.8			Nagapattinam	15.8
Tiruthuraiipo	7.1			Saidapet	18.2
Thanjavur	8.9			Nanguneri	15.4
Nagapattinam	8.4			Thanjavur	17.0
Vilathikulam	6.9				
Saidapet	11.4				
Nannilam	7.7				
Nanguneri	10.3				

Taluks at Medium Level (> 45% in 1971) recording :

Low Change : Cluster X

Vilavancode	5.1	Tuticorin	5.0	Thovala	12.8
Thovala	5.2	Tiruchendur	6.9	Agasteeswaram	10.3
Agasteeswaram	4.3	Thovala	7.6		
		Agasteeswaram	6.0		

Medium Change : Cluster XI

Tiruchendur	6.4	---	---	Tiruchendur	13.3
Kalkulam	5.8			Vilavancode	14.6

High Change : Cluster XII

Tuticorin	11.2	Vilavancode	9.5	Tuticorin	16.2
		Kalkulam	9.6	Kalkulam	15.4

Source : Calculated from Census of Population, 1971-1991.

1971-81 period	1981-91 period	1971-91 period
low : <5.6	low : <7.7	low : <13.0
medium : 5.7-6.6	medium : 7.8-8.8	medium : 13.1-15.0
high : >6.6	high : >8.8	high : >15.0

In all the above cases, our aim has been to put the various means roughly at the mid-points of the medium range.

The exercise yields a twelve-fold classification of taluks, capturing the interesting and complex relationship between the original position of taluks (base year level of literacy) and their pace of progress in literacy. Inter-decadal variations exemplify several patterns of change across taluks. For example, some taluks have sustained their forward march along the road of literacy

throughout the entire period under study, some other taluks have progressed fast during 1971-81, losing the momentum in the next decade. Others have had a reverse experience, that is to say, they have effected a less than satisfactory growth in the 1971-81 period but have picked up the tempo of expanding literacy in the following decade. There are still a handful of taluks which have been sadly tottering behind the rest, featuring a low rate of change over the entire time interval considered.

The good news is that the majority of the taluks (54%) with low level of literacy in the base year have recorded high change (Table 4) in the 1971-91 period; while about twenty nine percent of the remainder has featured moderate change. But quite disturbingly, sixteen percent of the low-literacy taluks has continued to remain in the 'low-level low-change' trap. Special attention needs to be devoted to these taluks that fall in the 'low-level low-change' category.

On the one hand, we will be forced to investigate the factors — socio-economic and facility variables — that continue to prevent these taluks from overcoming their initial educational backwardness. On the more optimistic side, we expect to draw some useful insights from the experience of those taluks that have covered a significant ground, that is to say, having started from a low level they have overcome their initial disadvantage to a noticeable extent (by effecting a high rate of change). Such analysis, we hope, will throw light on the factors — socio-economic, political or policy interventions — that have facilitated their significant achievements.

Extending our investigation a little more, a simple correlation type analysis of the taluk-level variations in literacy figures and some related socio-economic characteristics (Table 5) suggests, for example, the following:

The over-all rural literacy rate shows:

a) an average, a significant positive association with the proportion of rural workforce in non-agricultural activities and the proportion of area under irrigation.

(The information on the proportion of irrigated area has thus far been available for 1981 only).

b) a significant negative association with rural worker participation rate (This tendency is more pronounced in 1981 than in 1971 and 1991).

c) No significant association with land-man ratio or with the proportion of SC/ST in the total rural population. (The 1971 and 1991 data on land-man ratio are yet to be compiled). However, one qualification is in order here: the taluks that have attained 50% (and above) overall rural literacy appear to have noticeably low proportion of SC/ST in the rural population.

III Conclusion

Admittedly, the observed correlations are only indicative of the type of relations one might explore with this data set. It is necessary to systematically spell out hypothesis regarding the various socio-economic characteristics and their role in determining supply of or demand for education in order to permit more sophisticated analysis of this body of data on the basis of well-developed hypothesis of causal relations. Moreover, in order to capture the true relation between socio-economic variables and literacy, we might have to lag the former set of variables, since the former characteristics might have been different when the current literates have actually gone for schooling.

In addition, we need to use more extensively the information on supply-side factors presented in Census Reports in order to ascertain their impact on varied literacy records. More elaborately, we might utilize

TABLE 5a : Apparent Association Between Over-all Rural Literacy Rates and a Few Selected Socio-economic Characteristics of Taluks : 1971-91

Literacy Level (%)	Mean SC-ST to R.P.	1971 Mean MW/R. Pop.	Mean Agr + Culti / R.M.W.	Mean SC-ST to R.P.	1981 Mean MW/R. Pop.	Mean Agr + Culti / R.M.W.	Mean SC-ST to R.P.	1991 Mean MW/R. Pop.	Mean Agr + Culti / R.M.W.
10-20	13.4	38.6	87.0	—	—	—	—	—	—
20-30	24.7	38.8	80.6	23.5	44.3	80.0	—	—	—
30-40	22.6	38.4	77.8	26.3	44.5	81.0	25.9	46.5	80.1
40-50	22.3	37.4	66.6	24.0	43.2	72.7	25.4	47.4	78.6
50-60	6.5	29.8	59.8	18.4	31.1	75.9	25.8	42.5	73.7
60 +	7.4	30.2	57.4	7.0	29.9	58.3	11.6	34.2	62.6

Source : Calculated of Population : 1971-1991.

TABLE 5b : Literacy Rates and Irrigated Areas Across Clusters : 1991

Literacy Level (%)	Mean Rural Lit.	Mean % of Irr. to Tot. Agr. land
10-20	—	—
20-30	27.2	32.1
30-40	35.3	34.8
40-50	43.7	50.1
50-60	54.7	46.0
60 +	63.5	69.0

information on taluk characteristics pertaining to educational facilities (number of villages with primary, middle and secondary schools), communication facilities (location of the nearest bus stop: in village, within 1-4 kms, within 5-9 kms), communicable roads (number of villages with pucca roads), access to electricity (number of villages electrified) and so on.

To reiterate once more at the end, in the above exercise we have sought to discern the literacy profile of Tamil Nadu taluks as well as the complex pattern that exists between literacy and different socio-economic factors. And the case of variations both in the dependent and determining variables is sufficiently intriguing to merit an in depth investigation.

Twentyfourth Census of Social Science Research In Southern States, 1994

Introduction

THE Census reports on the research work that are currently undertaken by the candidates and the topic of the research (name of the supervisor where applicable) and the year of commencement. It is classified into ongoing Ph.D/M.Phil and Projects.

Table 1 tabulates the entries according to disciplines. There is a sharp drop in the listing of disciplines this time - 9 as against 22 last year. Of the total of 132 entries, Economics leads with 45 which is 34 per cent of the total entries, Education has 22 entries which is 17 per cent of the total entries. The third place is taken by Sociology with 16 entries. Commerce and Management Studies, Social work and Political Science has more than 10 entries each and the rest have less than ten entries.

An interesting aspect of the census is that Ph.D account for 72 entries out of the total 132, (roughly 54 per cent of total entries), followed by M.Phil with 35 entries (6 per cent) and the remaining are ongoing projects.

Table 2 classifies the census according to disciplines and institutions. The list is by no means exhaustive and it is a matter of great disappointment that inspite of reminders many of the leading southern research institutions and University/ Departments have not responded to the census. Only 4 universities in Tamil Nadu have responded to the census and many of the departments even within them have not responded. From Kerala only one university has responded

and that too specialising in one discipline only. Both in Karnataka and Andhra Pradesh some of the leading research institutions, universities and Departments have not responded. Practically all universities/ institutes that have responded concentrate just in a few areas even though several departments exist with fulfilled research programmes.

The cooperation of all the departments is therefore a prerequisite to make the census more comprehensive in the future.

Table 1: Subject Classification

Sl. no.	Area	Ph.D	M.Phil	Project	Total
1	Commerce & Management Studies	9	2	1	12
2	Economics	19	16	10	45
3	Education	13	6	3	22
4	Geography	5	--	1	6
5	History	5	--	--	5
6	Political Science	6	3	1	10
7	Psychology	4	1	--	5
8	Sociology	6	73	16	
9	Social Work	5	--	6	11
Total		72	35	25	132

Table 2 : No. of Ongoing Ph.D/M.Phil/Projects

Sl. no.	Name of the Institution/ Department		Comm. & Mgt.	Econ.	Edn.	Geog.	Hist.	Polit. Scien.	Psych.	Socio.	Social work	Total
1	Annamalai University	Ph.D) M.Phil) Project)	- - -	1 10 -	13 - -	- - -	3 4 1	6 3 1	4 1 -	1 2 -	- - -	26 20 2
2	Bharathiar University	Ph.D) M.Phil) Project)	5 2 -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	5 2 -
3	Bharathidasan University	Ph.D) M.Phil) Project)	- - -	2 4 -	- - -	- - -	- - -	- - -	- - -	3 - -	4 - 1	9 4 1
4	Cochin University of Science and Technology	Ph.D) M.Phil) Project)	3 - 1	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	3 - 1
5	Madras Institute of Development Studies	Ph.D) M.Phil) Project)	- - -	13 - 9	- - 1	- - -	- - -	- - -	- - -	1 - -	1 - -	15 - 10
6	Madurai Kamaraj University	Ph.D) M.Phil) Project)	- - -	- - -	- - -	3 - 4	- - -	- - -	- - -	- - -	- - -	3 - 4
7	Mangalore University	Ph.D) M.Phil) Project)	- - -	- - -	- - -	- - -	- - -	- - -	- - -	2 5 3	- - -	2 5 3
8	Sri Krishnadevaraya University	Ph.D) M.Phil) Project)	- - -	3 2 -	- - -	- - -	2 2 2	- - -	- - -	- - -	- - -	5 4 2
9	Sri Venkateswara University	Ph.D) M.Phil) Project)	- - -	- - -	- - -	1 - 2	- - -	- - -	- - -	- - -	- - -	1 - 2
10	University of Madras	Ph.D) M.Phil) Project)	1 - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	1 - -
Grand Total			12	44	14	10	14	10	5	17	6	132

Note : Comm. & Mgt. = Commerce and Management Studies; Econ. = Economics; Edn. = Education; Geog. = Geography; Hist. = History; Polit. Scien = Political Science; Psych. = Psychology; Socio. = Sociology.

Table 3: Ph.D, M.Phil and Projects

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
Ph.D : Economics				
1	M. Rathinasabapathi	Dr. R. Elango	Drought and Famine	1991
M.Phil : Economics				
1	M. Gunasekar	Dr. G. Vinayakam	Cashew Kernel Production and Cashewnut Shell Oil Extraction at Panruti	1993
2	G. Baghyalakshmi	Dr. N. Ramagopal	The Uruguay Round and its impact on Indian economy	1993
3	G.Devendra Nath	Dr. V.Rangachari	Tax effort analysis in Andhra Pradesh Finances	1993
4	C.T. Elavarasi	Dr. V.Rangachari	Entertainment tax in Tamil Nadu	1993
5	P. Natarajamurthy	Dr. N. Malathi	An Econometric Analysis of Inflationary Trends	1993
6	P. Rajendran	Dr. E. Karupaiyan	Health status and poverty : A study of schedule caste population in Kuravenmedu village, S.A. Dist.	1993
7	S. Saidevaldi	Dr. T.S. Kalyani	A study of variations in production, price and income of crops in S.A District	1993
8	M.T. Shanthi	Dr. A.K. Ramalingam	The study of urban growth and the problems of slums in South Arcot District	1993
9	S. Sumathi	Dr. M. Arumugam	Impact of social forestry in community development in Tamil Nadu	1993
10	V. Viji	Dr. R.Elango	Gender distance in rural and urban areas : A comparative study	1993

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
Ph.D : Education				
1	K. Balakrishnan	Dr. N. Veerappan	Strategies in the teaching of English for the students of distance education	1992
2	B. Ellakka Kumar	Dr. M.R. Raja-manickam	A study of leavel of aspiration and personality factors of high, low and average achievers of engineering and agricultural college	1980
3	M. Harikrishnan	Dr. M. Andal	Achievement in Economics and its relation to selected variables	1994
4	R. Krishnakumar	Dr. C. Dandapani	Educational Philosophy	1994
5	R. Manavalan	Dr. S. Umayaparvathi	Impact of the literacy programme among the adult learners	1994
6	T. Murugeswari	Dr. M. Andal	A study of scientific creativity in relation to scientific aptitude, home-environment, school-environment, academic self imagination and achievement	1994
7	R. Muthumanickam	Dr. M. Andal	Commerce achievement in relation to selected variables	1994
8	V. Natarajan	Dr. M. Andal	A study on the problems of S.C students of secondary schools in S.A.district	1978
9	M. Pakkirisamy	Dr. M. Andal	An attitudinal study of Hr.Sec. students towards national integration	
10	S. Rajsekar	Dr. N.O. Nellaiappan	Science education : Hr.sec.students achievement in physics as related to certain variables	1994
11	S. Sampath	Dr. N.O. Nellaiappan	A study of commerce achievement of under-graduates as related to some selected variables	1994

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
12	M. Soundararajan	Dr. T. Padmanabhan	A study of values of college students with reference to some selected variable	1994
13	A. Williams	Dr. T. Padmanabhan	A study of religious tolerance of Hr.Sec. school students in Tamil Nadu with reference to certain selected variables	1994
Ph.D : History				
1	K. Sankari	Dr. P.E. Mohan	National movement in South Arcot district, Tamil Nadu	1989
2	C. Shyamala	Dr. A. Subbian	A study of Tamil Nadu welfare legislations with special reference to women	1991
3	A. Thennarasu	Dr. A. Subbian	Reservation policy in Tamil Nadu : A study in socio-economic development of backward communities and weaker sections	1991
M.Phil : History				
1	V.Balamurugan	Dr. P.E. Mohan	Later Cholas and the Sriranga Temple	1993
2	J.C. Robinson	Dr. K.S. Ramaswamy	Life andwork of Dr.Caldwell	1993
3	K. Sakthivel	Dr. K.S. Ramaswamy	History of Tiruvannamalai A.D. 900 to 1565	1992
4	P. Vanmathi	Dr. N. Alagappan	Life and work of Theodore Roosevelt	1993
Ph.D : Political Science				
1	P. Ananda Natarajan	Dr. N. Swaminathan	Economic rationality, social norms and fertility behaviour : A study in a block of South Arcot district, Tamil Nadu	1992
2	B. Krishnamurthy	Dr. A. Shanmugam	The political orientation of university teachers of Tamil Nadu : A study in political customs	1989

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
3	S.A. Pavadaisamy	Dr. R. Radhakrishnan	A comparative study of DMK and AIADMK parties goals, and their governmental performance	1992
4	P. Senthamizhselvan	Dr. N. Swaminathan	Political parties and the process of political integration of the SCs in Tamil Nadu	1991
5	Smarita Dash	Dr. A. Shanmugam	NAM's progress towards international peace	1993
6	A. Thanikodi	Dr. A. Shanmugam	Indira Gandhi's perception of USA and USSR : A content analysis	1993
7	B. Ramesh	Dr. N. Swaminathan	Political orientation of the SCs towards the national political system	1993
8	C. Subramanian	Dr. R. Radhakrishnan	C.N.Annadurai and Indian Integration	1993
9	J. Subramaniam	Dr. A. Shanmugam	Secularism and Indian integration	1993
Ph.D : Psychology				
1	D. Amalor	Dr. T.V.A. Raghavan	A study of adjustment of Hr. Sec. students in relation to decision making styles and creativity	1993
2	P. Ramalingam	Dr. T.V.A. Raghavan	Decision making styles, occupational preference of the UG students	1993
3	Sarah Manickaraj	Dr. T.V.A. Raghavan	Vocational fitness of orthopaedically handicapped	1993
4	R. Shankari	Dr. T.V.A. Raghavan	Stammering : A study of causes and techniques for cure	1992
M.Phil : Psychology				
1	K. Govind	Dr. T.V.A. Raghavan	The study of the feeling of security relation to decision-making styles among university students	1992

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement	
Ph.D : Sociology					
1	R. Lakshmi	N.A	Pattern of urban development in a district head quarter's town with special reference to Cuddalore	1992	
M.Phil : Sociology					
1	N. Kalyanakumar	Dr. J. Krishnamurthy	A sociological study of women workers	1993	
2	S. Sundar	Dr. R. Thirumurthy	A sociological study of women and children in rural areas (DWERA)	1993	
Research Projects					
Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
1	History	Human rights and peace	1985	NA	5 volumes completed
2	Political Science	Integration and stability : Patterns of political development in India : (A study of sub-nationalism in Tamil Nadu during 1950-85)	1992	1994	NA
BHARATHIYAR UNIVERSITY					
Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement	
Ph.D : Commerce					
1	Balasubramani	Dr. M. Manickam	Stock returns behaviour in India	1990	
2	P. Bruntha	Dr. M. Manickam	A study of impact company announcements on stock prices	1993	
3	E. Meera	Dr. M. Manickam	Investment goals and portfolio choice of Indian investors	1991	

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
4	K. Ramasami	Dr. M. Manickam	New Issues and equity prices	1990
5	P. Sakuntalamani	Dr. M. Manickam	A study of Indian mutual funds	1993

M.Phil : Commerce

1	SP. Mathiraj	Dr. M. Manickam	Forecasting equity share prices	1993
2	V. Pankunni	Dr. M. Manickam	Risk-return analysis of equity returns of some selected 25 companies	1993

BHARATHIDASAN UNIVERSITY

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
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Ph.D : Economics

1	Arul Raj	Dr. M. Ravichandran	Conversion and changes of urban land use : A study of urban land values in Tiruchirappalli agglomeration	1993
2	N. Jayakumar	Dr. S. Iyyampillai	An economic study of resource flows in a prosperous region	1993

M.Phil : Economics

1	R.P. Buvaneswari	Dr. S. Iyyampillai	Allocation of household resources for girls education	1994
2	V. Murugesan	Dr. C. Thangamuthu	Pattern of urbanisation in Pudukkottai district	1994
3	Y. Santhana Raju	Dr. N. Manimekalai	Rural poverty in Pudukkottai district	1994
4	S. Seran	Dr. N. Manimekalai	Economics of marketing of vegetables	1994

Ph.D : Social Work

1	M. Joseph Irudayaraj	Dr. S. Palaniswamy	Study on the effectiveness of folk media in population education on rural growth	1991
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Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
2	G. Metilda Buvaneswari	Dr. S. Palaniswamy	Problems of tribal women and children with special reference to Pachamalai Hills, Trichy Dt.	1994
3	A. Savarimuthu	Dr. S. Palaniswamy	Quality circles and quality of work life	1994
4	V. Sethuramalingam	Dr. S. Palaniswamy	Rehabilitation and resettlement of pavement dwellers in Madras city	1993

Ph.D : Sociology

1	A. Lalitha	Dr. R. Shankar	Education and socio-economic changes in rural areas of Trichirapalli taluk	1990
2	S.Martin Selvaraj	Dr. M. Thavamani	Social organisation of canal irrigation in Panguni channel Lalgudi taluk	1991
3	S. Sasireka	Dr. M. Thavamani	Health problems of pre-school children among 100 households in Thiruverumbur block	1994

Research Projects

Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
1	Social Work	Impact of wind erosion on agricultural land use in Thevaram basin	1994	NA	NA

COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
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Ph.D : Management Studies

1	K.K. Balakrishnan	Dr. P.R. Wilson	Evaluation of stock market by the stock brokers on behalf of salaried officers	1992
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Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
2	V.P. Sajeev	Dr. K. George	Varghese Technical analysis in Indian stock market	1991
3	Shally Joseph	Dr. P.R. Poduval	Sociological background, behavioural traits and value orientation of entrepreneur - managers of Kerala with special reference to the small scale industrial units in the Alwaye - Ernakulam industrial belt	1988

Research Projects

Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
1	Management Studies	A study of the Management practices in rubber plantation industry in India	1989	1994	NA

Madras Institute of Development Studies

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
Ph.D : Economics				
1	Ajit Menon	Dr. Paul P. Appasamy	Common property resources and joint forest management	NA
2	T. Albin	Dr. Nasir Tyabji	Government policy and domestic technological capability building in Indian capital goods sector : A case of machine tool industry	NA
3	P. Anbazhagan	Dr. A. Vaidyanathan	Conjunctive use of surface and ground water in Tamil Nadu agriculture	NA
4	C. Annadurai	Dr. C.T. Kurien	Public Distribution System in Tamil Nadu	NA

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
5	M.S. Edwin Innocent	Dr. C.T. Kurien	The millet economy of Tamil Nadu	NA
6	George Mathew	Dr. A. Vaidyanathan	Bovine economy of Tamil Nadu	NA
7	Millie Nihila	Dr. Padmini-Swaminathan	Industrialisation and Health : A study of leather tanning industry in Tamil Nadu	NA
8	K. Sivasubramaniyan	Dr. A. Vaidyanathan	Historical development of tank irrigation in Tamil Nadu	NA
9	S. Thirumalai-velayutham	Dr. C.T. Kurien	Land market (sales) in southern Tamil Nadu	NA
10	M. Udayakumar	Dr. A. Vaidyanathan	Inter-regional variation in agricultural growth : A study of Tamil Nadu	NA
11	L. Venkatachalam	Dr. Paul P Appasamy	Regional natural resource accounting	NA
12	R. Vidyasagar	Dr. A. Vaidyanathan	Temple, tenants and agrarian relations	NA

Ph.D : Sociology

1	R. Akila	Dr. P. Radhakrishnan	The educational status of women in India with special reference to Tamil Nadu	NA
2	G. Suchitra Rao	Dr. P. Radhakrishnan	Reproductive rights of women in Tamil Nadu	NA

Research Projects

Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
1	Economics	Panchayati Raj in Tamil Nadu	NA	NA	NA
2	Economics	Patterns of migration in Dakshina Kannada dt.	NA	NA	NA

Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
3	Economics	Growth of the corporate sector in the Madras Presidency	1989	1994	Ongoing
4	Economics	Costs and productivity of irrigation	1991	NA	Ongoing
5	Economics	Small water bodies	NA	NA	Ongoing
6	Economics	Well irrigation in Periyar Vaigai basin	NA	NA	Ongoing
7	Economics	Well irrigation in Palar basin	NA	NA	Ongoing
8	Economics	Urban environmental project	NA	NA	NA
9	Economics	Water management in the Bhavani river basins	NA	NA	NA
10	Education	National Adult Education Programme and Arivoli Iyakkam	1985	NA	Ongoing

MADURAI KAMARAJ UNIVERSITY

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
Ph.D : Geography				
1	A. Raja	Dr. S. Shanmuganandan	Tuberculosis : A medico-geographical study	1992
2	M. Sakthivel	K.S. Gopalakrishnan	An environmental impact study of human interference in Western Ghats, Kanyakumari district : A case study	—
3	G. Thilagam	Dr. S. Shanmuga-	A Medico-geographic study of burn accidents among women	—

MIDS Bulletin, May-June 1994

Research Projects

Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
1	Geography	Ecosystem analysis of Kodayar forest in Western Ghats of Kanyakumari district	1993	NA	NA
2	Geography	The study of the evolution and evaluation of land, water resources in the Kodayar region	1993	NA	NA
3	Geography	The study of the changing landuse pattern and types of natural vegetation	1993	NA	NA
4	Geography	Human responses to the changing environment	1993	NA	NA

MANGALORE UNIVERSITY

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
Ph.D : Sociology				
1	Saukath Azim	Dr. Mohammed	Peer Changing role and status of Muslim women : A study of Mangalore city	1992
2	Shreedhara-Gowda, P.	Dr. Mohammed	Peer Social change among the Malekudiyars of Dakshina Kannada	1993
M.Phil : Sociology				
1	B. Ashoka	Dr. Mohammed	Peer Police/public relations : A sociological perspectives of constabulary of D.K. district	1993
2	Hilda Kodivry Rayappan	Dr. Mohammed	Peer Women alcoholics : A sociological study	1993
3	Patric Eusbius Fertado	Dr. Mohammed	Peer Overseas Migration among Christians in Dakshina Kannada district	1992

MIDS Bulletin, May-June 1994

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
4	Shekara	Dr. Mohammed	Peer Socio-economic conditions of sanitary workers	1991
5	S. Shyamala	Dr. Mohammed	Peer Fertility trends among Billavas of Dakshina Kannada	1992

Research Projects

Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
1	Sociology	A profile of post-graduates from Mangalore university 1985-89	1991	1994	NA
2	Sociology	The Tribal development programmes : A case study of Karnataka	1992	1994	NA
3	Sociology	Social and economic life of Koragas	1994	ongoing	NA

SRI KRISHNADEVARAYA UNIVERSITY

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
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Ph.D : Economics

1	K. Suresh	Dr. M. Lakshmi-Narasiah	The supply behaviour of major agricultural crops in Andhra Pradesh	1991
2	Ch. Thandava-Krishnan	Dr. M. Lakshmi-Narasiah	Problems and prospects of handloom industry in Andhra Pradesh	1991
3	G. Venkata Naidu	Dr. M. Lakshmi-Narasiah	Regional rural banks and IDRP programme : A study of Sri Ananthagrameena bank in Anantapur district	1991

M.Phil : Economics

1	N. Anuradha	Dr. M. Lakshmi-Narasiah	Growth and performance of SSI in Anantapur district	1991
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Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
2	G. Jayaraj	Dr. M. Lakshmi-Narasiah	Development of sericulture in Anantapur district	1991

Ph.D : History

1	N. Malikarjun	Dr. R. Vasantha	Palegar system in Rayalaseema	1991
2	P. Sudhakar	Dr. K. Krishna Naik	Socio-economic conditions in Rayalaseema in the Vijayanagara period 1336-1565	1990

M.Phil : History

1	P. Ajay Babu	Dr. K. Krishna Naik	Tribal development : Historical perspectives	1993
2	T. Hemanth Reddy	Dr. K. Krishna Naik	Status of Tribal women	1993

Research Projects

Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
1	History	Promotion of Tribal/Rural art and culture : With special reference to Anantapur	1993	1994	NA
2	History	Induced change in a tribal community of AP : The case of Supaths	1993	1994	NA

SRI VENKATESWARA UNIVERSITY

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
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Ph.D : Geography

1	H. Ugandra Raju	Dr. P. Narayanamma	Impact of the pilgrims on the growth and development of Tirupati : A perspective	1992
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Research Projects

Sl. no.	Discipline	Title of Research Topic	Year of commencement	Year of completion	If the report is already published
1	Geography	The role of groundnut cultivation and industry in the rural development of A.P.	1994	ongoing	NA
2	Geography	Utilization of groundwater and its effect on irrigated lands	1994	ongoing	NA

UNIVERSITY OF MADRAS

Sl. no.	Name of the Scholar	Name of the Supervisor	Title of Research Topic	Year of commencement
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Ph.D: Commerce and Management

1	K.H. Bhanuprasad	Dr. R.T. Srinivasan	NA	1994
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Appendix 1**Addresses of the Universities, Research Institutions and Colleges which responded to the Twentyfourth Census***

Annamalai University
Annamalai Nagar 608 002
Tamil Nadu

University of Madras
Chepauk
Madras 600 005

Bharathiar University
Coimbatore 641 046
Tamil Nadu

University of Agricultural Sciences
Gulbarga 585 101
Karnataka

Bharathidasan University
Tiruchirapalli 620 024
Tamil Nadu

Cochin University of Science
and Technology
Cochin 682 022
Kerala

Institute of Social and Economic Change
Nagarbhavi PO
Bangalore 560 072

Madras Institute of Development Studies
79, II Main Road, Gandhinagar
Adyar, Madras 600 020
Tamil Nadu

Madurai Kamaraj University
Palkalai Nagar
Madurai 625 021
Tamil Nadu

Mangalore University
University Campus
Mangalagangothri
Karnataka

Sri Venkateswara University
Tirupathi 517 502
Andhra Pradesh

Sri Krishnadevaraya University
Anantapur 515 003
Andhra Pradesh

* Note : Enquiries may be addressed to the researcher(s), care of the department in the institution in which he/she, they are working.

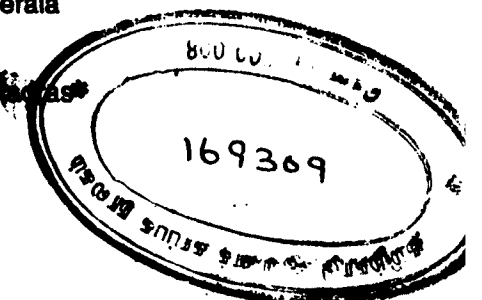
Appendix II

Specialisations

Area of specialisation	Centre
Computer Education Creativity Educational Management Educational Psychology Guidance and Counselling History of Education Language Education Mathematics Education Philosophy of Education Clinical Psychology Organisational Psychology	Annamalai University
Development Economics Finance Financial and Investment Management Money and Banking Population Studies	Bharathiar University
Agricultural Economics Agriculture and Development Agrarian Social Structure Computers in Education Environmental Economics Rural Transformation Environmental Education Educational Video Educational Technology Mass Communication Leadership Behaviour and Organisational Climate Media Material Production Research Methodology Industrial Economics	Bharathidasan University
Agrarian Change Agricultural Economics Environmental Economics Industrial Economics	Cochin University of Science and Technology

Area of specialisation	Centre
Agricultural Development Agricultural Economics Agricultural Finance Economic Theory Environmental Economics Fisheries Economics Human Resource Development Industrial Economics International Economics Plantation Economics Political Economics Political Sociology Quantitative Economics Rural Development Social Change	Madurai Kamaraj University
Agricultural Economics Agrarian Economy Agricultural Marketing Development Economics Econometrics Environmental Economics Rural Development Rural Sociology Industrial Economics Welfare Economics Women's Studies Urban Economics Social Change Social Policy	Madras Institute of Development Economics
Banking Minority Studies Sociological Theories Sociology of Education	Mangalore University
Agricultural Genetics Biotechnology Plant Breeding Tissue Cultivation	University of Agricultural Sciences, Gulbarga
Adult and Nonformal Education Evaluation and test construction Teacher Education	University of Kerala
Commerce and Business Management	University of Madras

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Publications of the Institute consist of the following categories :

1. **Publications brought out by Messrs Sangam* Publishers :** These consist of a series of monographs mainly relating to Rural Development of Tamil Nadu brought out between 1972 & 1980. Detailed list including prices available on request from the Programme Coordinator of MIDS. Orders may be placed with Sangam Publishers, 11, Sunkurama Chetty Street, Madras-600 001 for these.
2. **Cyclostyled Publications :** These consist of Working Papers, Digest Series, Data Series, Popular Series, Interns Reports and Offprint Series brought out since 1978. Detailed list available on request from the Programme Coordinator of MIDS.
3. **Occasional Publications of the Institute Include :**
 - a) *A Manual on Sources of Data on Tamil Nadu Economy* (1979) published by MIDS, pp. 92, priced at Rs. 10/- per copy and Rs. 6.50/- for bonafide research scholars.
 - b) *Area Studies Bibliography Tamil Nadu* (1984) published by MIDS, pp 226, Rs. 30/- for paper cover and Rs. 40/- for bound volume.
 - c) *Social Science Research in South Indian Universities—Listing and Review of Ph D. Dissertations* (1989) Published by MIDS and ICSSR, SRC, pp. 260, Rs. 20/-
a), b) and c) obtainable from the Programme Coordinator of MIDS.
4. **Special Publications***
 - a) *Poverty — An Interdisciplinary Approach* edited by B. Sarveswara Rao and V. N. Deshpande 1982 & published for MIDS by M/s Somaiya Publishers Pvt. Ltd., Bombay, pp. 296, Rs. 125/-
 - b) *Guide to Research in Economics*, edited by C. T. Kurien (second edition) (1985) & Published for MIDS by M/s. Rainbow Publishers, Coimbatore, pp. 390, Rs. 100/-
 - c) *Some thoughts on the Seventh Plan* by Dr. Malcolm S. Adiseshiah (1985) and published for MIDS by M/s. Dialogue Publishers, New Delhi, pp. 136, Rs. 70/-
 - d) *Shaping National Events* by Dr. Malcolm S. Adiseshiah (1985) and published for MIDS by M/s Dialogue Publishers, New Delhi, pp. 335, Rs. 180/-
 - e) *Tamil Nadu Economy : Performance and Issues* by MIDS (1988) and Published for MIDS by Oxford and IBH Publishing Co. Pvt. Ltd., Delhi, Rs. 60/-

* These publications may be ordered directly from the respective publishers.