

90

BULLETIN

MADRAS DEVELOPED SEMINAR
SERIES

VOL-XIX

NO 7

July - 1989



JL
X m211, N70BU
N89.19.7
144 235

27 03 1989

BULLETIN

MADRAS DEVELOPMENT
SEMINAR SERIES

90

Vol. XIX No. 7

July 1989

Rehabilitation of Tank Irrigation Systems in
Tamilnadu : Some observations at the Micro-level

Land Reforms in Tamilnadu

CONTENTS

Editorial — Some Highlights	
General Economic Scene	273
Agricultural Development in Tamil Nadu	288
Industrial Development in Tamil Nadu	290
Education, Science and Health	293
Employment and Labour Relations	296
Other Items	297
MIDS News	300
June Development Seminar	
Rehabilitation of Tank Irrigation Systems in Tamilnadu : Some observations at the Micro-level — S. S. Sivakumar	301
Land Reforms in Tamil Nadu	313
Abstracts	322
Workshop on Critical Issues in Tamilnadu Irrigation Summary of Discussion	326

EDITORIAL - SOME HIGHLIGHTS

I. General Economic Scene

State

Climate and Prices

May was hot and dry and brought to a focus the severe drought condition faced by 12 districts as a result of the poor last North East monsoon. These districts face two severe problems — acute scarcity of drinking water and widespread unemployment. The Union government sent a team of seven officials led by the joint secretary, Union ministry of agriculture which visited the districts and noted the severe effect of the drought. Their finding was that in all the 12 affected districts there was considerable loss of crops involving a shortfall of 5 lakh hectares of paddy and 5 lakh hectares of millets plus the lowering of the yield in the sown areas which could have multiplier effects if the drought persist. Some 50 per cent of the 17000 villages is affected in regard to drinking water, leading to supply being restricted to 8-10 days for 2-3 hours in some small towns,

forcing people to walk 2-3 kms to fetch water or buy it at 20 paise a pot or Rs. 30 a barrel in some villages. The team described the drinking water situation in Salem as alarming due to the lowering of the drinking water table so that deep bore wells have been non functional. The government has asked Union help of Rs. 222 crores, of which Rs. 163 crores is for desilting of tanks and to clean irrigation tanks which had all dried up, and for digging bore wells and Rs. 37 crores for employment generation works. The State government has itself given Rs. 53.8 crores for the speedy implementation of the relief programme of digging 3500 deep bore wells (Rs. 125 crores) and employment involving giving the 2.15 lakh workers Rs. 10 a day plus 1 kg of rice and 0.50 kg of wheat. In addition the government has postponed to next year land tax and loan arrears collection in these drought hit villages. On prices, CSO's monthly abstract of statistics for March 1989 reports a steep rise in October 13 points to 832 and a steeper rise 16 points to 848 in November in the

index number of consumer prices for industrial workers, a sharp rise of 14 points to 709 in December (due to the 20 point rise in food prices) in the index number of consumer prices for agricultural labourers. While the consumer price index for urban non market employees shows for December no or marginal rise, nil for Madras at 145.1 point to 140 for Coimbatore, 1 point at 144 for Madurai, 1 point at 138 for Salem, and nil at 141 for Tiruchy, showing once again as reported in the last issue, the differential price rise in rural areas, while the urban middle class enjoy price stability.

Budget

The government completed the review of the budget for 1989-90 as reported in the last issue, facing a strain on its financial resources. It began the financial year 1989-90 with a carry over liability of Rs. 75 crores from the preceding year, comprising unpaid bills from that year. Towards the end of session, the government in response to the near unanimous demand of the members announced the total exemption of sales tax on hand made matches (the tiny sector was subject to a 2 per cent levy) along with a resolution calling on the Union government to revise the excise duty on match units, which gave a concession of Rs. 6.75 per bundle to the mechanised sector and Rs. 2.50 for the hand made cottage. Unless corrected, the 10,000 hand made units will go out of existence.

Power

The power situation in the state in May continued to be bad, with the 60

per cent cut on HT industries and daily load shedding in all parts of the state. Further, the Tamil Nadu Electricity Board prohibited low tension industries in the state from working for 3 hours — 6 p.m. — 9 p.m. every day and banned the use of neon and display lighting. There was steep fall in power generation by the second thermal plant at Neyveli due to workers strike in mid May and because one of the units went out of action during the last week of the month. Industries, large, medium and small, are severely affected in the state and the fresh start being made by the government is stalled. The Union has asked the state to give MEPZ units priority in power and exempt them from power cuts. On top, farmers in the Thanjavur delta who have raised cotton, groundnut, gingelly and pulses and are planning paddy nurseries with the help of filter point wells are seriously affected by inadequate power supply. The power position is to be reviewed in June and the government holds out hope for the power cut for HT units being reduced by June. The North Madras power plant work is starting in early June, the land acquisition have been cleared by the government. The government's pushing MAPS to restart nuclear plant on an emergency basis is questionable, as there should be absolute safety ensured in the plant. The Union Planning Commission announced approval of Rs. 176.25 crores for augmenting and upgrading the electricity transmission and distribution network of the Madras Metropolitan areas. For the future, if investments are made adequately and the gestation period is not lengthened, the state can add 2000 MW by 1995 and should be free of all power cuts at the end of the VIII Plan. The main question is whether the government will give priority to this sector in regard

to resources — priority equal to that of the social welfare measures.

The power situation in the South and in the country as a whole was bad in May. Power cuts and load shedding was continuing in Karnataka. Kerala announced more restriction on power consumers over and above the 60 per cent cut on HT users which became 100 per cent from May 29. Andhra Pradesh has imposed cuts on its power intensive industries, all of which adds up to the southern states facing a 20 per cent power deficit by the end of the VIII Plan. For the country as a whole prolonged power cuts are the rule in most states, including Orissa and Kerala which were once power surplus states. Hence both investment, upkeep and maintenance and conservation measures are needed to meet this crisis. CEA predicts a peaking shortage of 17.4 per cent in 1994-95 even with the additional 36,000 MW capacity of the VIII Plan. During 1988-89 the power shortage was 7.7 per cent for the country. Given the delay in many power projects in the current Plan, the above CEA projection may prove to be optimistic if there are similar gestation delays in the 34,000 MW capacity addition for the VIII Plan. Of the four regions, the maximum peaking shortage will be in the southern region when against the requirement of 18,688 MW, the availability will be 14,820 MW - 28.7 per cent, against the Northern region's 18.8 per cent shortage, the eastern regions 11.9 per cent and the western region's low 2.6 per cent. The Union power department has developed a multipronged strategy to meet this sombre power situation in the VIII Plan, through reducing the gestation period by using gas based power stations, improving the performance of the existing units, accele-

rating capacity addition programmes reducing transmission and distribution losses, modernising load despatch system in the southern region and launching conservation measures. The Union government reports tying up Rs. 501 crores OECD assistance for rural electrification. The country's first 50 kilowatt solar thermal power plant was commissioned in Gwal Pahari, Haryana in early May. Further, the four MW wind energy farm at Muppenthal Kanyakumari district is expected to start generating power by April 1990.

Water

The problem of drinking water caused by drought was earlier analysed. The Tamil Nadu-Karnataka negotiations on the Cauvery waters have been postponed due to the fall of popularly elected government. There was a meeting of the officers of the Tamil Nadu-Andhra Pradesh government on expediting the Telugu Ganga project. The long pending multi-crore cauvery delta modernisation scheme was discussed at the technical advisory committee of the Central Water Commission on May 18. No decision was arrived at and its early clearance seems doubtful.

Technology Missions

A review of the status of the 6 Technology missions in telecommunications, oil seeds, literacy, drinking water, immunisation and dairy development in the state was undertaken at the end of the month with the Adviser to the Prime Minister on the mission. It was noted that in telecommunications, the programme is to install telephones at 5 km intervals on constantly used national high ways. In oil seeds, the

state has emerged as a major producer, second only after Gujarat: production has increased from 12.35 lakh tonnes in 1985-86 to 15.59 lakh tonnes in 1988-89, with the target of increasing per hectare productivity from 950 kgs in 1988-89 to 1140 kgs in 1989-90 and overall production at 18 lakh tonnes. On drinking water, the problem villages have been identified and programmes are under way to provide them with reliable sources of drinking water. A fact finding on desalination based on the desalination plants set up under the mission in this and other states is that the method of desalination is not as yet cost effective. In dairy development, it is noted that the state has a strong base through executing operation flood schemes. The programme is planned to cover the whole state for which an outlay of Rs. 88.89 crores is proposed. In literacy, the programme of Mass Functional Literacy and the establishment of Jana Shiksha Nilayams need to be evaluated to see how they can be speeded and further spread. In immunisation, the programme in the state is developing rather slowly.

Fishermen's March and Rice Purchase

Fishermen and sympathisers organised a march ending in Kanyakumari on May 1 to highlight the serious problems faced by artisanal fishermen as a result of the government policy in promoting rather blindly export oriented activities through financing mechanised boats which not only clash with the non mechanised fishing activity in coastal waters, but also because of the lethal equipment used damage fish larvae on the shallow ocean base and disturbed species closer to the surface. The experience in the fifth plan — 1976-80 was to increase total output of prawns but decrease the out-

put of pelagic fishes in Kerala, Karnataka and Maharashtra. While the mechanised sector's share in the reduced total output near doubled from 16 to 31 per cent, both prawn catch because of indiscriminate fishing and pelagic fisheries because of the competition of mechanised sector, declined. In all this it is the 65 lakh artisanal fishermen who have suffered and it is to highlight their plight and fight back against their exploitation that the National Fishermen's Forum organised the march. On the rice front the Union government in May permitted the State government to purchase 1.5 lakh tonnes of rice from Punjab, UP, Haryana, and AP for distribution through fair price shops. This compensates to an extent the 70 per cent procurement shortfall in the state resulting from the drought.

Hindu women's property rights and May Day gift to cycle, autodrivers

The state assembly in early May adopted a far reaching law, amending the Hindu succession Act 1956 to confer on daughters of Hindu families rights equal to sons to copersenary property. It is to have retrospective effect from March 25, 1989. The legislation was adopted unanimously. On May day, the government announced a scheme to make drivers of cycle rickshaws, autorickshaws and taxis, owners of the vehicles. This involves a government subsidy and low interest loans through TIIC and will benefit 25000 drivers.

National

VIII Plan

May has ended with the VIII Plan approach paper still not released. Its

draft, as leaked to the press, sets forth the usual litany of objectives: a) growth and modernisation involving 6 per cent annual growth, sharper focus to reduce disparities and ensure more dispersed growth, international competitiveness in existing range of manufactures and self reliance in technology, food security and resources for investment: b) poverty alleviation and equity, involving reduction of poverty level to 18-20 per cent from 28-30 per cent at end of VII Plan, employment growth of 3 per cent annually with an employment assurance for the poor and special development of women and children and other vulnerable groups: c) minimum needs programme involving foodgrains of 195 kgs per capita, universalisation of elementary education, eradication of illiteracy in the 15-35 age working groups, provision of drinking water and containment of major communicable diseases: and d) development process involving greater emphasis on decentralisation and people's participation which brings in the now favourite Panchayati Raj and the Jawahar Rozgar Yojana and systems efficiency. The 6 per cent growth calls for an aggregate investment of Rs. 6,45,000 crores, of which the public sector outlay is Rs. 3,45,000 crores — 3,55,000 crores, with public investment being in the range of Rs. 2,95,000 crores to Rs. 3,00,000 crores. This kind of doubling of investment outlay in Plan after plan (since the Fourth Plan) raises several issues, including where the resources are to come from. It calls for raising the domestic savings rate from 21.4 per cent to 24.1 per cent of GDP, the investment rate from 23.2 per cent to 25.9 per cent of GDP and the tax-GDP ratio from 16.9 to 19.2 per cent. ICOR is to be reduced from 4.6 to 4.3, inflation is to be held at 5 per cent, growth in interest payments to

be limited to 9 per cent and subsidies to 6 per cent and other non plan expenditure to 5 per cent. Export growth is to be 10 per cent calling for "aggressive" export strategy, relying on upto date technology, market innovation and quickness of response. Imports are to be limited by curbing non essential consumption demand for petroleum products. Capital inflow is to be restricted to 1.8 per cent of GDP. The agricultural strategy is a 4 per cent annual growth in the sub objectives of food security, employment, rise in incomes of the poor and promotion of exports. Agricultural Planning is to be based on agro climatic zones and sub zones, a disaggregated regional approach with emphasis on land development programmes on a massive scale, scientific water management, optimum land use in cropping pattern and diversification and modernisation in animal husbandry, poultry, and fisheries. Foodgrains production is to increase at 3.3 per cent to attain the availability of 193 kg per capita. There is to be special emphasis on land reforms and completion of record of rights. The persistence of regional disparities and decline in average size of holdings are noted as negative factors. A Planning commission's working group has recommended that exports be made a core plan activity to achieve a 12 per cent quantum growth during the VIII Plan from Rs. 24,000 crores to Rs. 42,000 crores (8.4 per cent of GDP) by 1994-1995. The Planning Commission has called for a fresh approach to double direct foreign investment in Indian industry in the VIII Plan, bearing in mind that foreign equity is cheaper to service their debt. The government states that it has set up a committee with Mr. Venkataramanan, adviser to the

Prime Minister, and chairman to review actions taken on the Narasimhan and Abid Hussain committee reports and suggests further steps to make the economy more efficient, productive and modern.

Prices and DA and loans

Wholesale prices in April rose by less than 1 per cent at 3.8 points, with the index standing at 452.9 on April 29. All groups recorded moderate increase, food by 0.4 per cent (due to rise in prices of pulses, spices, jowar, rice etc) manufactured products and edible oils by 0.7 per cent, with little change in the other. The consumer price index after remaining unchanged for January and February 1989 at 813 rose by 5 points 818 in March representing a rise of 9.3 per cent for the year April 1988 to March 1989 compared to the rise of 7.3 per cent for that period for the wholesale price index. The government announced in May the release of DA to its employees which had become due as of January 1, 1989 costing the exchequer Rs.496 crores in 1989-90. The government also announced on May 9 the issue of the first tranche of the 1989-90 public borrowing comprising 3 loans aggregating Rs.1500 crores. On May 15 the subscription accepted for the loans were announced at Rs.1500 crores with Rs.345.38 crores used for repaying matured loans and a net Rs.1154.62 crores. In early May, the government also announced the details of the equity linked savings scheme (see Vol XIX p. 161) under which the investment in UTI or other mutual funds upto Rs.10,000 a year get full deduction from income tax, of a special savings scheme for retiring and retired government servants under which the

investment of provident fund, gratuity, commuted value of pension, leave encashment will receive a 9 per cent increase payable half yearly : and of a new national savings certificate scheme under which investment in NSC-VIII would receive a 12 per cent interest and will be income tax free.

Stock Exchange

In the stock exchange, call money rate shot up to 17-19 per cent during May, with the short money market DFHI rates being at 13-13.5 per cent. The delay in enactment of legislation governing the power and functions of the securities and exchange board of India (SEBI) continued through May (two years after the assurance of the Prime Minister about it and one year after SEBI was constituted as a non statutory body) and is causing problems to investors and the orderly functioning of the stock exchanges and capital market, where investors are flocking to the market and share prices are booming, and where also malpractice continue unchecked.

Economy

On the country's poverty there are three reports. The Planning Commission's (PEO) report on IRDP points out that millions of poor families might be shown as crossing the poverty line, but in real terms may be as poor or poorer despite the IRDP effort. This is because the poverty line was fixed at Rs. 6400 per annum for rural (Rs. 3.50 per person for a day) and Rs. 7300 for urban areas in 1984-85. Since then inflation has sharply reduced the value of the rupee. Further, the poverty line definition ignores other basic needs like shelter, clothing, transport. Further, the assumption that

the average household comprises 5 persons on which the NSS underestimate is based has to be corrected. Following a steep decline in the death rate, the family size has gone up from an average 4.81 in 1951 to 5.53 in 1981. The report calls for a combined corrective of 12 per cent in the rural and 9 per cent in the urban poverty line for 1987-88. Further, an analysis of the 1983 NSS data shows that the poorest in every state consume most of the cereals, led by Orissa, WB, Bihar, Tamil Nadu, MP, Rajasthan, and UP. The data on Kerala ignores the consumption of tapioca which supplements / replaces rice. A second study by the Planning Commission states that a new approach to urban poverty is needed. Urban poverty is not spill over of rural poverty, that employment programme started in rural areas might mitigate but not eliminate the demand for new jobs in urban areas, that the net addition to rural and urban labour will be comparable towards the end of the decade. The natural increase in urban population and the growth through migration amount to 40 per cent each. It is also found that one out of every 3 urban citizen lives below the subsistence level, that about 100 million people will migrate to urban areas by 2000, and that 60 per cent of the urban poor are women and children and also from SC & ST. And so the urban anti-poverty programme should not aim at keeping villagers in rural areas or restrain employment generation in urban areas. The key issue is to create jobs and infrastructure at an accelerated pace through sustained investment in viable urban centres. The current schemes like SEPUP and low income schemes are in the right direction but of limited reach. There is need for rapid expansion of non agricultural livelihood and

employment opportunities, assisted by the promotion of technical skills, and labour intensive industrial and service units, particularly in the small scale sector. A comprehensive programme of training of urban youth for employment, credit support and technological assistance for micro enterprises, infrastructure development, creation of public assets, upgradation of shelter, extension of PDS and family security plans need to be put together. A third study on the subject is by the Operation Research Group which after detailed projection of the future concludes that the goal of poverty eradication may not be achieved by 2000 or even by 2012, when more than a quarter of the country's population will still be below the poverty line, if the population growth is not checked. The bill to establish the Small Industrial Development Bank of India (SIDBI) was introduced in the Lok Sabha at the end of the budget session. It will be a wholly owned subsidiary of IDBI and start with an authorised capital of Rs. 250 crores going upto Rs. 1000 crores contributed by IDBI, RBI and the government. Its function is to promote, finance and develop industry in the small scale sector and cooperate with institutions promoting small units. The Union government introduced, on the last day of the Lok Sabha the constitution 64th amendment Bill setting forth 3 tier panchayati raj system, with obligation to conduct panchayat raj elections every 5 years. Simultaneously the government announced and has acted on the announcement of increasing the Union government financing of the Jawahar Rozgar Yojana (reported in the last issue of the Bulletin) to Rs. 2100 crores, with State governments 20 per cent share being over and above that, and for the disbursement of the Union govern-

ment's fund to be direct to the Panchayat. Accordingly the first tranche of the funds have been made to the 500 odd Zilla Panchayats — causing a certain amount of confusion, with states who are asked to oversee its expenditure and programme.

Industry

CSO's index of industrial production shows a (seasonal), decline of 3.2 per cent over that of January. The 11 months April 1989 to February 1989 records a rise of 9 per cent, with manufactures rising by 9 per cent, mining 7.2 per cent and electricity 9.5 per cent. The government (ministry of commerce) has simplified procedures for industries engaged in exports. The engineering industry will gain from the new international price reimbursement scheme (IPRS) under which the delay in payment is drastically reduced, 75 per cent of the payment due being made within 7 days from the date of receipt of application for exports of Rs. 50,000 and above: EEPC must now work on getting a similar scheme of expeditious handling for small industries — in fact the major part of export are by small units. Also the speeding up of the process of granting advance licence to exporters through the fixing of input — output norms for some more items, making their total 545 is good. Also the increase in the use of domestic raw material will make possible the exporters keeping up in drastic supplies. The Union government has dropped the proposal for liberalising industrial licensing for MRTP and FERA companies because it was felt to be inappropriate at present. The Departments of Industrial and Rural Development have issued joint guidelines

for the state and UTs to accelerate rural industrialisation. They will help develop district and block plans for IRDP prepared by DRDRs, taking account of the scheme of DICs and KVICs. Also TRYSEM is integrated with the training institute of the industrial development department. The Public Accounts Committee has reported to Parliament that the government has not submitted the papers concerning the contract proposed (but later dropped) with the Hemlock Semi Conductor Corporation on the development of silicon. The Department of Atomic Energy reports that the Indian Rare Earths Plant at Manavalakurichi in Kanyakumari district is being modernised at a cost of Rs. 10 crores. This should not only improve mineral extraction but monitor carefully the health of the workers engaged in it.

Public Sector

Five public sector undertakings under the control of the Department of Public Enterprises — BHEL, HEC, BYN, Maruti and HMTs have signed MOUs with it. According to BHELs MOU, it is targetted that in 1989-90 turnover will be Rs. 2850 crores, with a pretax profit at Rs. 213 crores — which is a 10 per cent increase over that of 1988-89. Further, new areas have been identified — telecom, defence and transportation and the first tower type 210 MW coal fired boiler. HEC has set itself a production target of Rs. 385 crores and a gross margin of Rs. 37.34 crores which is an increase of 11 per cent. BYNL plans a turnover of Rs. 400 crores, which is 17 per cent increase and a pre tax profit of Rs.25 crores and an export target of \$ 12 million. HMT has set itself a production target of Rs.650 crores which is a 20 per cent

increase and a pre tax profit of Rs. 11.47 crores. These are high and ambitious targets which need to be realised.

National Production Front

Steel

Projections of supply and demand show that steel shortage will be 1 million - 5.1 million tonnes during the VIII Plan and would go upto 3 million — 5 million tonnes in the IX Plan. In absolute terms, demand for iron and steel items during the first 2 years of the VIII Plan will be 20 million tonnes and the availability will also be that: it is after that the shortages begin. The Rs. 10,000 crores steel plants modernisation plan (see vol XIX p 174) which has resulted in a series of tie ups with multinational consortia has left the Heavy Engineering Corporation (HEC) high and dry. The company does not expect more than a total of Rs. 200 crores orders from the steel plants at Burnpur, Durgapur, Rourkela and Bokaro. SAIL reports major changes in its marketing strategy to go into effect from October 1989 which will concentrate on removing uncertainties about the availability and meeting consumer demand for certain sensitive and high value items. It will book the orders of major concerns on an annual basis. It reports placing an emergent indent in April on MMTC for the import of 20,000 tonnes of pig iron to ease the present situation of scarcity.

Crude

In May the major emphasis was on crude exploration. ONGC reports stepping up exploration in the Krishna Godavari and Cauvery basins, employing over 55 rigs in the areas. Of these 35 will operate in the cauvery basin. Investment in the 2 basins are estimated at Rs.1686 crores by the end of VII Plan and would go on to Rs.3805 crores by the VIII Plan. The production target from the cauvery basin this year is 0.2 million tonnes of oil which could be increased but for the transportation bottlenecks. The transportation to the refinery is now done by tankers. The production potential in the KG basin is estimated at 2.5 million tonnes. Two new areas in the Ganga Valley and the Kutch offshore are being explored by OIL India. It plans to drill 5 wells in the Ganga valley and 3 in the Kutch offshore at a cost of Rs.160 crores in the VIII Plan. ONGC reports that it has struck oil and gas in the Cachar and Karimunj districts of S. Assam. The VIII Plan envisages an outlay of Rs.1650 crores for exploratory drilling and seismic survey and Rs.375 crores on land development drilling. ONGC reports that it is planning to lay a gas trunk pipeline network in East and West Godavari districts to connect all drilled structures in the basin, with a provision to connect the undrilled structure in the future. The government states that crude production in the terminal year of the VIII Plan will be 47-50 million tonnes against the 34.50 million tonnes in the terminal year of the VII Plan.

Non Ferrous

First, a comment on the overall non ferrous metals situation. An end to the

shortage of non ferrous metals is not in sight. The raw material crisis which has been affecting the non ferrous metals consuming industries since November 1988 may worsen in 1989-90 following the government decision to reduce imports to save foreign exchange. In the case of aluminium, despite the governments report that there has been a quantum jump in its production in 1988-89 at 3,60,000 tonnes (being a 30 per cent increase over 1987-88), users continue to import aluminium. Even a primary producer like INDAL has had to procure aluminium from the open market at home and abroad to meet its need. NALCO has exported both alumina (because of lack of smelting capacity) and aluminium due to attractive foreign prices and to earn foreign exchange. The government must shed its complacency about the supply of the metal as users are unable to meet the requirement of metal of commercial grade purity from indigenous sources. Primary producers must increase their smelting capacity and Indal to go in for a captive power plant which will take 2 years to install. In the meanwhile the government should stop misleading every one by reporting "self sufficiency in aluminium production" as it does in the annual report for 1988-89. Similarly, copper consumption in the northern region has been steadily declining over the years, compensated by some increase in consumption in the western region. According to a study by HCL there has been a general decline in copper consumption in all states of the region due to price sensitivity and speculation. With the significant increase in telecom, power cables, auto ancillaries and refrigerators and with the export profitability of artware industry, the demand for copper will continuously rise. The study recommends delinking

Indian copper prices from international prices, which will remove one element of uncertainty in supply. Hindustan Zinc shows a record pre tax profit of Rs. 35 crores in 1988-89. The output from the mines was a record 3 per cent increase in lead — zinc ore. The company reports the development of the 3000 tonnes a day from Rampur-Agucha open cast mines, which is one of Asia's richest and largest deposits.

Sugar and edible oils and cotton

The estimate of 10 million tonnes for the 1988-89 sugar season has not materialised. The current estimate is 91 lakh tonnes due to the large scale diversion of cane to gur and khandasari. This has made the government to back track on its announcement of exporting 1 lakh tonnes of sugar, and unless consumption is restrained it may have to import sugar. The availability in 1988-89 season is 11561 lakh tonnes — opening stock 24.31 lakh tonnes and production 91.30 lakh tonnes. After providing for consumption of 66.20 lakh tonnes till May end, there is 49.40 lakh tonnes left for the balance of the 5 months against 55.80 lakh tonne at this time last year. The Union government has eased licensing norms for new sugar mills reducing the minimum capacity from 2500 tonnes to 1750 tonnes for optimum level and reducing the distance between two mills from 40 to 25 kms. A record crop of 17 million tonnes of oil seeds during the current season November-October and the large arrivals of mustard, rape seed, groundnuts, linseed, kardsseed, sunflower has brought down the price of edible oils but which has been halted from the latter half of March due to the buffer stock operation of NDDB. There are attractive export opportunities which

the low edible oil price at home can promote provided STC is not made the canalising agency and the Indian Oil and Producer Exporters Association undertake the export promotion, in which STC can join. The Cotton Advisory Committee at its last meeting on December 20, 1988 places the cotton crop during the current season September-August, at 102 lakh tonnes which is supported by the market arrivals in May which normally dwindle but are substantial in Gujarat, MP and Karnataka. The familiar tussle between the mills and the growers on exports of cotton is on, which makes the government's job difficult. The government must decide now on the quantum of exports.

Agricultural Production

The contrast between the estimate of high foodgrain yield for 1988-89 at 168-170 million tonnes and low procurement of 5 million tonnes of rice and 5.8 million tonnes of wheat as at the first week of May (the government reports procurement of 6.60 million tonnes by May 19) needs explanation. While 9.82 million tonnes of rice was procured in 1984-85 out of the yield of 58.34 million tonnes, the procurement of 5 million tonnes out of 68 million tonnes of rice this year, against a target of 8 million tonnes and a procurement of 6.89 million tonnes even in the drought year raise questions. Given the fact that the growers do not seem to be in a hurry to dispose off their surpluses, the question whether the yield was 168-170 million tonne arises. Given the heavy depletion of stocks which the table below shows (and the decline in stocks would have been more pronounced with the 9.48 million tonnes by the beginning of this year from 14.14 million tonnes. January

1986 if there had not been imports of 20.09 lakh tonnes of wheat and 6.84 lakh tonnes of rice. The urgency is to build up the buffer, it not to the earlier peak of 30 million tonnes (see Vol XVI p 882) to the 1986 level which should be possible if the estimate of production for 1988-89 is true, and followed by another good year and if as a consequence the outgo from PDS dwindles. The Union increased the support prices of all varieties of paddy in May by Rs. 15 per quintal, from Rs. 160 to Rs. 175 for the common variety, from Rs. 170 to Rs. 185 per quintal for the fine and from Rs. 180 to Rs. 195 per quintal for the super fine varieties. This was Rs. 3 more than what the Agricultural Costs Prices Commission recommended and smacks of an electioneering event. The government reports that the national water shed development programme for rain-fed agriculture lands in July 1986 in 99 districts in 16 states is facing difficulties due to the lethargy of decision makers, administrators and scientists, weak infrastructural facilities and lack of location specific technologies. The Planning Commission reports that it has worked out a 10 point strategy for accelerated development of agriculture in the VIII Plan. It calls for an annual 4 per cent output growth and 3 per cent growth in value added and involves a) a massive land development programme of soil consolidation and land levelling and reclamation of degraded lands, b) a water management and operation strategy focussing on full utilisation of benefits from major and medium projects, c) optimal land use and cropping patterns for different agro climatic regions backed by appropriate marketing, agro processing, communication and technology, d) special plans for animal husbandry, fish and poultry

Trends in production and procurement

	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89						
Production	Procurement	Production	Procurement	Production	Procurement	Production						
Rice	60.10	7.73	58.34	9.82	63.83	9.88	60.56	9.21	56.43	6.89	68.00	8.00+
Wheat	45.48	8.29	44.07	10.35	47.05	10.54	44.32	7.88	45.10	6.53	52.00	10.0+
Coarse cereals	33.90	—	31.17	—	26.20	—	26.83	—	25.84	—	35.00	—
Pulses	12.89	—	11.96	—	13.36	—	11.71	—	11.04	—	15.00	—
	152.37	16.02	145.54	20.17	150.44	20.42	143.42	17.00	138.41	13.42	170.00	18.00+

(in million tonnes)

* Estimate + Target

Trends in stocks

As on January 1	Foodgrain stocks
	(in million tonnes)
1983	12.83
1984	15.49
1985	22.59
1986	25.21
1987	23.63
1988 (Provisional)	14.14
1989 (Provisional)	9.48

development, e) use of computers for irrigation management, seed and pesticide practices, f) economic and fiscal policy packages, g) system management policies and h) special emphasis on land reforms and record of rights in land. The targets are crop production 3.7 per cent, non food crops 4 per cent, animal husbandry 5 per cent, and fisheries 7 per cent.

Foreign Trade

The government reports that exports grew by 29 per cent (in dollar terms 15.5 per cent), and imports by 23.5 per cent (in dollar terms by 11 per cent) the trade deficit in 1988-89 is placed at Rs. 7412 crores compared to Rs. 6624 crores in the previous year. The share of manufactures increased from 69 per cent in 1985-86 to 79 per cent in 1988-89. On this basis, the export prospects for 1989-90 are rated very good. The trade gap according to the government increased only by 0.2 per

cent in SDR. But the world Bank estimates the trade gap at \$1.2 billion in 1988-89 and foreign exchange reserves fell by \$1.5 billion. The current account deficit during 1987-88 increased by 7.9 per cent to Rs. 6293 crores from Rs. 5830 crores in 1986-87. According to the RBI report the current account deficit was 1.9 per cent of GDP compared to the previous year's 2 per cent, the trade deficit fell marginally by Rs. 58 crores to Rs. 929 crores due to the 23.1 per cent exports growth compared to 13.3 per cent import growth. Under invisibles, official transfer were higher, and other invisibles recorded a fall. Foreign exchange reserves declined by Rs. 956 crores against a fall of Rs. 732 crores in the preceding year. There is still no clear policy — short term and long term to counter the trade and BOP deficits. Trimming imports are necessary, cutting an import intensive industry is needed but what is needed is policy to reduce budget deficit as a means of reducing the trade deficit and firm action on the black money front which is responsible for all luxury consumption. In all this the reconstituted Trade Board with its 30 members could be of help. The Board has set up 5 sub committees in foreign trade policy, internal policy issues, infrastructure, finance and procedural matters. In addition the country faces a serious situation with the US which has invoked its Trade and Competitiveness Act and under Super 301 has accused India (along with Brazil and Japan) of unfair trade practices because of which, unless remedied, there will be trade sanctions against Indian exports. The Indian unfair trade practices which the US objects to are a) the requirement placed on foreign investors to export a part of their production and b) the

closing of its markets to foreign insurance companies. On top of this, there is the "special 301" involving intellectual property rights". It seems somewhat difficult to understand the US position about India. On individual items, garment exports are reported at Rs. 2312 crores in 1988-89; the textile export which increased by 15 per cent at Rs. 4364 crores in 1987-88 have a target for 1989-90 fixed at Rs. 5345 crores; chemicals and cosmetics exports are Rs. 1247 crores in 1988-89 and engineering exports registered a growth of 582 per cent in 1988-89 at Rs. 2258 crores, handloom exports have increased by 36 per cent to Rs. 570 crores during the last 4 years.

Aids and loans

In May the World Bank and IDA announced a loan of Rs. 487 crores (\$325 million) for phase II of the upper Krishna river irrigation project in Karnataka. The World Bank and IDA are providing a loan of \$ 630 million to facilitate domestic transport of oil products and for a project to increase the pool of skilled workers needed by the country's growing economy. The World Bank sanctioned 2 loans totalling \$295 million to partially finance a \$ 730 million project to modernise and restructure export oriented industries in the country. The World Bank has sanctioned a loan of \$ 197 million to augment silk production and create 5,00,000 jobs. Japan has stated that its development aid for India will also cover local costs of projects. It has successfully lowered the interest on its loans in the last 2 years from 3.25 per cent from 1986-87 to 2.75 per cent in 1987-88 and 2.8 per cent in 1988-89. The Netherland government is to give 200

million guilders (Rs. 150 crores) for development of foreign trade. The Australian government has offered a loan of \$50 million for developing India's fishing industry. UK has offered a grant of 3.2 million for the purchase of British mining equipment. ADB has offered a \$137 million loan for the development of the port sector. OIL is permitted to raise \$50 million from international market. The World Bank in its review paper for the Aid India Consortium meeting in Paris in June has stated that India needs at least 10 per cent increase in concessional aid pledges from last year's \$ 3.9 billion to at least \$ 4.3 billion and the total commitments from \$6.3 billion to \$ 6.7 billion for the country to have a measure of balance of payment stability and as support to the government's anti-poverty programme. It is reported that its Rs. 200 crore loan on which we are paying 13 per cent interest to the World Bank since 1988 has not been utilised on the road construction for which it was made.

International

World Economy

IMF reports that the average rate of inflation of developing countries rose for the second year in 1988 to 58.3 per cent compared to the previous year's 35.5 per cent. The average rate of inflation of Asian developing countries rose to 11.6 per cent from the previous year's 7.3 per cent, with China leading at 20.7 per cent, Sri Lanka at 14 per cent. The Western Hemisphere countries inflation rate was 216 per cent compared to 117.4 per cent in the previous year, led by Nicaragua at 10,205 per cent, Brazil at 682.3 per

cent, Argentina at 343 per cent. A number of other countries recorded moderate inflation rates, Mexico slowing the rate from 131.8 per cent to 114.2 per cent and Chile from 19.9 per cent to 14.7 per cent. IMF has published new guidelines on the Third World debt strategy which concentrates on reduction of overall debt and not on lowering interest rates in accordance with the Brady Plan.

World Development

UNCTAD reports that despite special investment aid flows and domestic efforts, the world's poorest countries are no better now than in 1980 and their people are gradually worse off. Since 1981 there has been a special international effort to help the LDCs. In 1990 there will be a meeting in Paris to review the decisions made in the 1981 conference to increase international programmes and measures to promote the development of the LDCs. The number of the poorest among them has increased from 32 to 42 in 1981. This conference is also being asked to develop new criteria for defining countries as "least developed" and also to provide for automatic graduation of countries out of the LDC list — vide the new category of NIC.

World Food

FAO reports that after 2 years of poor harvests world wide, developing countries will experience increased hunger and starvation, as their food imports bill soars this year by more than \$ 5 billion. 15 countries — Angola, Bangladesh, Ethiopia, Haiti, Jamaica, Laos, Lebanon, Mozambique, Nicaragua,

Peru, Sierra Leone, Somalia, Sri Lanka, Sudan and Vietnam — face serious food shortage and need exceptional or emergent food assistance. Grain stocks have declined to 16 per cent of the annual consumption which is the lowest since the early 1970s and a rise of 40-50 per cent in prices.

UNEP

At a conference in Helsinki called by UNEP, 80 countries agreed to step up the fight to save the disappearing ozone layer, though there are many problems to be solved before the plan can be put into effect. The conference agreed to back through new measures to halt the loss of ozone, including plans to ban some damaging chemicals. The declaration includes agreement to phase out by the end of the century man colored fluorocarbons (CFCs) blamed for eroding the ozone layer and threatening changes in the world's climate. The Helsinki declaration could lead to an acceleration of the Montreal pact which has so far committed 36 countries and the European Community to halving use and production of many CFCs by 1998. It agreed to provide financial and technological help to developing countries to phase out CFCs without damaging their economic progress.

World armament

SIPRA reports that 1988 has seen a remarkable progress towards a potentially more peaceful world. The number of wars fell from 33 in 1987 to 28 in 1989, military expenditures has declined in most areas. The US and Warsaw pact countries have cut their military budgets. But it reports that 24 developing nations had ballistic

missiles capable of delivering nuclear or chemical war heads. These countries include Argentina, Brazil, India, Israel, North Korea, Taiwan. The conventional arms trade totalled \$ 34 billion in 1985 prices, which lowered their expenditure from that of 1987. The share bought by the third world

countries dropped from 66 per cent in 1986 to 61.4 per cent in 1987. The US share of global arms market was 23 per cent, the Soviet Union share was 38 per cent. India was the biggest third world buyer in 1987 followed by Iraq, North Korea and Saudi Arabia.

* * * * *

II Agricultural Development in Tamil Nadu

Paddy and other crops

The effect of the drought, particularly in the 12 districts referred to earlier, has been serious for the farmers and their operations. In Chinglepattu district, for instance, only 69 hectares against the normal 28,000 hectares have been brought under paddy cultivation in the current sornavari season by the farmers. Farmers have cultivated millets — cumbu, ragi, cholam in only 312 hectares. Due to the failure of rains and meagre showers in February, March and April, except for 14 irrigation tanks which had some water for possibly a month, all the other 3606 tanks were totally dry. In the navarai season which ended in March, farmers were able to cultivate paddy on about half the normal area, that is 35,485 hectares as against the normal 70,000 hectares. In the earlier samba season they cultivated paddy only in 1,75,000 hectares. Farmers have not been able to use fertilisers, which declined to 317 tonnes in April against 68,700 tonnes in March. Similarly they purchased only 78 tonnes of paddy seeds in April against 2270 tonnes in March. In other words farming operation have come to a near standstill in these districts.

Research results

May reports on agricultural research include those from Khamman station which refers to the successful use of root zone applicator for wet land rice to counter insect pests and help in the area spread of urea, from IARI on the development of a new rice variety PUSA-169, from the water and land management institute, Hyderabad on intermittent irrigation for paddy cultivation, from the Nellore-Podalaku station on growing red gram with coriander and black gram which increases productivity and returns in dry lands also afflicted by floods, from South Arcot where the AP red gram variety HY-3C has been successfully adapted for dry land cultivation, from the Pudukottai laboratory on increasing pulses grain yield through seed bacterisation and use of phosphorous from Jagtial which has developed a new sesame variety yielding 550 kg/ha in kharif and 950 kg/ha in rabi, from IISR Lucknow about successful results of sowing wheat and potatoes in winter and sugarcane in February, from the Bhavaninagar station on the means of controlling the whitefly menace in sugarcane, from the Bharathiar university on the winged (Goa) bean being a

good source of nitrogen, from Adu-thurai station on use of foliar sprays to increase cotton yield, from the Anantharajupet station on the means of countering the black bordered disease in mango, from the Madurai agricultural college on the success of adopting optimum crop geometry to boost biological and economical yield of field crops, from the Delhi station on the growing of tree tomatoes for home gardens, from the Kerala stations experiment with growing betel vine as a means of earning a steady income through the year, from the Kerala agricultural university on the beneficial role of certain predatory wasps in natural biological controls, from the Thadyankudisa's research station experiment with means of controlling coreid bug attack on chow chow, from the cardamom institute Kerala on the use of bioagents to fight cardamom pests, from the Maharashtra agricultural university on the cultivators of sapota to get more fruits, from the Tirupati veterinary college on the means of treating infertility in cattle, from the Trichur agricultural university on the means of ensuring the early flowering of pineapple, from Bhavanisagar on the growing of risk free curry leaf crop throughout the year, from Indian Institute of Sugarcane Research (IISR) Lucknow on green manuring sweet sugarcane yields, from TNAU on techniques to increase chilli yields, from Agricultural Research station, Bhavanisagar on micro nutrients for turmeric and simpler technologies for coconut growers for controlling rodents, making efficient use of fertilisers and trapping rhinoceros beetles in coconut growers.

Tea

The tea industry in the south faces a serious reduction in production as a

result of the drought. The Union government has promised to assist the industry and is looking into the adequacies of the subsidies granted by the Tea Board. The government hopes that for the country as a whole tea exports will be at last year's level at 230 million kg, the North making up for the short fall in the South. This is questionable as the southern tea production has declined by 38 per cent during the first quarter of 1989 which is the opposite of the 1988's 25.98 million kg increase from the south. The industry is urging the government to restore the export subsidy on value added items, which has been reduced from 20 per cent to 8 per cent for tea bags and from 12 per cent to 8 per cent for instant tea. Also a review of the additional excise duty on packet tea has been requested. Last year's good crop in India, Sri Lanka and China resulted in a record 2.42 million tonnes production which was a 3 per cent increase. Taking the VII Plan as a whole, the target for production and exports have not been met, the shortfall in production being 158 million kg and in exports 51 million kg. New planting will meet the target in traditional area but not in the non traditional one.

Coffee

Coffee production exceeded the target during the VII Plan. Collectively the excess was 5000 tonnes. Exports were close to the targets — being 4000 tonnes more than the target. New planting in non traditional areas will reach their target, there will be a backlog in traditional areas.

Rubber

The 1989-90 rubber production is estimated at 2.75 lakh tonnes against

the target of 2.65 lakh tonnes. The performance of the rubber industry has been satisfactory and the targets for planting in traditional and non traditional areas have been met. But the country's rubber consumption has registered a steep increase from 1.14 lakh tonnes in 1968-69 to 3.94 lakh tonnes in 1988-89 and an estimated 5.72 lakh tonnes in 1994-95, the end of the VIII Plan. The pattern of natural synthetic rubber use in India is 79:21 against the global pattern of 33:67. UPASI announces that the VIII Plan pattern will be 75:25 and has recommended measures for increasing the production of natural rubber from 3.35 lakh tonnes in 1990-91 to 4.29 lakh tonnes in 1994-95. The growth rate of rubber production during 1968-69 to 1988-89 was 6.6 per cent and with the various development and research activities could be raised to 7.65 per cent, that is from 2.57 lakh tonnes in 1988-89 to 4 lakh tonnes by the end of the VIII Plan. UPASI recommends a crash programme during the VIII and IX Plans so that the country can achieve self sufficiency. Meanwhile in mid May STC raised steeply the price of imported

rubber from Rs. 20,000 a tonne to Rs. 23,573, which is over and above the September 1988 price increase from Rs. 17,000 to Rs. 20,000. There is a charge that STC is indulging in profiteering, because it is offering indigenous rubber at the new higher price of imported rubber, though the internal purchase price has been Rs. 17,000 a tonne. Whether this is meant to help the rubber growers is now being considered as the domestic price is following the trend of the price of imported rubber. Rubber users are demanding government action against this sudden increase.

Cardamom

Cardamom production has during the plan been behind the target, the production being 19900 tonnes against the target of 24,000 tonnes. On the export front, the record is very poor being 7500 tonnes against the target of 15600 tonnes. While the replanting target is being achieved, there is a serious shortfall in attaining the new planting target.

* * * * *

III. Industrial Development in Tamil Nadu

Industrialisation of the state

As part of its industrialisation policy, the State government announced in the legislature in early May a) a subsidy scheme for new industries in backward taluks in place of the union scheme of subsidy for backward districts withdrawn from September 30, 1988. This is a much needed reform which classifies back-

ward taluk on the basis of a) existing investments in medium and large industries and b) the industrial employment figures of the taluk as per the 1981 census. A capital subsidy of 10 per cent subject to a maximum of Rs. 15 lakhs will be available for industries started in the backward taluks: for industrial estate and growth centres developed by SIPCOT, the capital sub-

sidy will be 5 per cent with a ceiling of Rs. 20 lakhs. No subsidy is to be given to power intensive and conventional resource based industry. The industry must be sited 50 km from Madras, beyond 15 kms of Madurai and Coimbatore and outside municipal town limits for other locations. Further, changes in interest free sales tax are proposed to finance expansions and diversifications. Also fresh electricity tariff concessions for new industries are provided — 40 per cent in the first year, 30 per cent in the second year and 20 per cent in the third year. But this depends on the third unit of Mettur thermal and the additional 420 MW at Tuticorin becoming operational. This will take 2 years and so a 15 per cent subsidy is provided for captive power sets. This perhaps is the weakest part of the scheme as the power crisis which has overtaken the state in April — May demonstrates, subjecting all industries — large, medium and small, old and new — to cut and load shedding. The government also announced that 10 major industrial projects with a total investment of Rs.236.8 crores which have been planned over the past 5 years are to be operationalised. Also the Union and State governments are to operate a joint company for the manufacture of telephone, cable and spares at a cost of Rs.22.3 crores to be called Tamil Nadu Telecommunication limited located at Arkonam. The government also announced the creation of a new industrial sector — the Associate Sector — in which government is to have equity participation of 11 per cent. This is a sound programme and if the Union gives its share for the states to correct the investment imbalances which have developed between 1969-70 to 1985-86

when Maharashtra's Union investments increased 75 times, Andhra Pradesh 54 times, and Tamil Nadu 9 times. Actually Tamil Nadu's share of union investment in this period declined from 8 to 5.2 per cent and even recently while 5 growth centres been sanctioned each for MP and Bihar, 4 each for Maharashtra, Rajasthan and AP, only 3 have been sanctioned for Tamil Nadu. The Union government's response that this is due to the power shortage in Tamil Nadu is not acceptable because the other states have the same power constraint and union investment in the state power sector which has been lagging should have been pushed forward to make up this deficit.

Salem and HPF

Salem was awarded for the third consecutive year the Government of India's award for natural safety and was the runner up for the longest period when it was accident free. The Union government announced in May that the colour film project of Hindustan Photo Films (HPF) which had been allocated to UP (see Vol XIII p 101 & 185 and Vol XV p 293) which the UP government was not in a position to execute, is to be located in HPF, Ootacamund. HPF has been asked to prepare the project report for union clearance.

MRL and ONGC

Madras Refineries reports signing an agreement with Chebro Chemicals, USA for erecting a plant at Manali for manufacture of lube additives to be called Indian Additives Limited with an annual capacity of 15000 tonnes at a cost of Rs. 18 crores. As noted earlier, Kamalapuram, near the oil bearing

Nannilam in Thanjavur district is turning out to be another potential oil source. The well spudded in January 30 upto a depth of 3000 metres is being investigated further.

MALCO & TIDCO

The dispute between MALCO which owes TNEB Rs. 20 crores and TNEB which owes MALCO Rs. 42 crores continues. It is before the Supreme Court for adjudication. TIDCO now comes within the associate sector referred to earlier, under which the share of equity in joint profits is 11 per cent instead of the previous 26 per cent. The 26 per cent share means a budget provision of Rs. 25-30 crores, the actual allocations being only Rs. 6 crores. TIDCO has promoted 10 projects in the public sector and 43 in the joint sector, involving a total investment of Rs. 1000 crores. TIDCO's direct investment is Rs. 92 crores which does not produce a return because of the many loss making units. The government announced that it will soon clear 5 projects — titanium dioxide, tungsten metal powder, connectors, heater micanits and mineral separation at a cost of Rs. 224 crores. The government states that it is considering projects worth Rs. 1300 crores to manufacture pencillin, float glass, polyster staple fibre/filament, petro chemical downstream products, sponge iron and power generation. It states that it will implement next year the Rs. 129 crore modernisation programme of Ariyalur cement plant, Tamil Nadu cements, to double its capacity from 5 lakh tonnes to 10 lakh tonnes — promoted by TIDCO.

ELCOT, TANMAG & TMPL

ELCOT has so far promoted 11 joint sector projects with a total investment

of Rs. 18 crores, including its direct investment of Rs. 2-5 crores. Its aluminium electrolytic capacitors project has further improved its performance after it was partly privatised in December 1989. It is located at the electronic industrial estate at Hosur and since 1987-88 began to make profits which is being increased now through increased production and a higher turnover. Tamil Nadu Magnesite Ltd (TANMAG) reports that it is awaiting IDBI assistance for operating its chemical beneficiation plant with Swiss knowhow at a cost of Rs. 105 crores. TANMAG is negotiating with SAIL to participate in the venture on joint sector basis. The Tamil Nadu Magnesite Products Ltd (TMPL) and the Tamil Nadu Magnesite Limited (TML) have been amalgamated to overcome financial, equipment and capacity constraints faced by TMPL. With the amalgamation, TML's resources (paid up capital Rs. 10.25 crores, authorised capital Rs. 100 crores) and all its equipment and personnel are now available to run the merged company.

Pig iron

Coimbatore foundries face a serious problem with the supply of 3000 tonnes of pig iron by SAIL against their need for 30,000 tonnes. This has led the regional development commissioner, Iron and Steel to request his counterpart in Calcutta to divert some part of the imported pig iron to Coimbatore. This also figured in the legislative assembly where the government states that it had been asked by Union government to approach Visveshvariah steels for pig iron. A state official has flown to Karnataka to explore the possibilities. The SAIL news releases do not help. It speaks of a 30 per cent increase in pig iron production over that of

the 1.3 million tonnes in 1988-89 as being planned for the current year. It also lists its supplies to the 4 southern states as being on an increasing trend. However for Tamil Nadu it has been 3,68,900 in 1986-87, 4,49,300 in 1978 and 11,30,700 in 1988-89 which is far below what is needed — above 1/3. There is need for a long term solution to this serious problem which has to be worked out by the Foundries Association and SAIL. This has now become a permanent problem and can only be solved by SAIL not going in for value added item at the cost of the industry which is a valuable foreign exchange earner.

SCIL, Sugar & Leather

The Sparte Ceramics India Ltd. (SCIL) is being set up in Chingleput district (Tiruvallur) for manufacturing heavy duty ceramic granite tiles. The Rs. 16 crore plant has a capacity of 7.5 lakh sq metres per annum and is a 100 per cent export oriented project. It has a collaboration agreement with Nasetti of Italy and financial and marketing tie up with Hunt of UK. The state is likely to produce a record of 9.65 lakh tonnes of sugar this year and all factories (10 private and 5 cooperative) are set to crush 100 lakh

tonnes. In addition, 13 existing mills are to be expanded and 9 new ones started. This increase in the sugar units should be related to the availability of cane and the fact that cane is heavily water intensive in a water scarce state. The Leather Export Promotion Council reports that it has drawn up a programme to achieve its export target of Rs. 1600 crores every year. Nearly 50 per cent of the exports are in the form of value added items like shoe uppers, leather footwear, leather garments, leather goods, with the small scale leather units contributing substantially to its export. Modernisation and technological upgradation of the industry is under way with prototype development of machinery and equipment for footwear and leather goods. A set of improved handtool kit has been developed for use by small scale units and cobblers. An ILO mission after study of the decentralised footwear industry in different parts of the country has shown interest in restructuring it by providing assistance in the area of designed technology, training, marketing and management system. The state leather development corporations have been asked to assist small scale tanneries in setting up common effluent treatment plants for pollution control, on which Tamil Nadu has made a start.

IV. Education, Science & Health

Educational reforms

At the school level, the 208 titles being readied by NCERT could get to the schools on time, under the new

system where private publishers are associated with it for publication in regional languages. Also wholesalers are taking up with retailers the distribution of the books, so that the delays

faced by the schools and students in obtaining the text books can be overcome. UGC reports that it has concurred to proposals for autonomous status to 96 colleges — 43 in Tamil Nadu (including 6 new ones — Stella Maris, Presidency, Queen Mary, Meston, Technical Teacher and Sacred Heart), 26 in MP, 21 in AP, 5 in Rajasthan and 1 in Gujarat. There are a large number of proposals pending with the universities. In Maharashtra alone 30 proposals are ready to be approved when the statutes are amended. The State government has reduced the minimum eligibility marks from 100 to 95 & 90 for BC students entering diploma courses. The Lok Sabha committee on petitions has assailed UGC and the Union department of education for their failure to check proliferation of illegal and spurious institutions calling themselves universities. The case of the Maithili university in Bihar is cited in some detail. It recommends that the UGC act be amended to provide for the registration of all universities with UGC. Madras University has decided to include a paper on computer language in the curriculum for all its students, as the use of computers apply to all aspects of life. This is an important and far reaching decision and backs up the State government decision to provide all help for the development of the electronics sector.

Technical education

UGC has agreed to recognise the Andhra Pradesh Health University provided a) the governing body has not only head of government but also a constitutional head, and b) the university limits itself to academic activities

and does not enter into administration activities. The University Act is being so amended. In Tamil Nadu a bill authorising MGR university not to give affiliation or approval to self financing colleges in medical science unless the government's prior permission has been obtained was approved by the legislative assembly. The audit report of ICAR criticises many of the agricultural research institutions for ill maintained accounts, undue project delays, wasteful expenditure, and under utilisation of equipment. There is no proper register of assets for 1987-88, the expenditure under loans was Rs. 250.36 lakhs against the budget of Rs. 193.76 lakhs, 17 institutions have not given their accounts, CMRI has blocked Rs. 6.58 lakhs for 9 years and machinery and stores worth Rs. 54.27 lakhs are lying unused.

Adult education

A study by the Karnataka State Resource Centre on Adult Education centres where 75 per cent were covered, 53 per cent with no formal education, 52 per cent belonged to 15-25 years age group and 26 per cent to the 26-35 age group, 42 per cent were housewives, 16 per cent unmarried unemployed girls, 13.75 per cent artisans, 10 per cent small vendors, 6.25 per cent were coolies, 55 per cent were self motivated and the other motivated by AE personnel — found a very heavy dropout rate which it attributes to 3 main causes. a) household drudgery causing hindrance and no time for attending centres; b) — social inhibition and discouraging environment and c) inconvenient timings of the AE centres. More than 50 per cent of dropouts had socio economic reasons irrespective of their marital status, age, occupation. The main recommendation to combat the drop out

phenomena is that schemes like the Integrated Child Development Services (ICDS) should be extended to all women adult education centres. The study does not provide data for weightage of the different causes and does not show how ICDS can be a cure.

Science

The Department of Scientific and Industrial Research states that the number of inhouse R&D units recognised by it as of December 31 is 1069 compared to 1015 in 1987. 100 units are in the public sector, being constant for the past 3 years. The expenditure incurred by the 1089 units is over Rs. 600 crores, 40 per cent of which is by the public sector units. However only 92 have spent over Rs. 1 crore each on R & D and 213 units between Rs. 25 lakhs and Rs. 1 crore. The R & D expenditure as a percentage of GDP is 0.20 per cent for the past 3 years. The government of India reports that it has cleared a massive programme to make available to the people personal computers at low cost. The economy model which has a 12 inch black and white monitor and keyboard will cost Rs. 10,000. An integrated environmental programme of research on the Cauvery has been initiated at a cost of Rs. 91.72 lakhs for 3 years. It will be undertaken by the Centre of Environmental Studies, Anna University, Centre for Advanced Study in Marine Biology, Annamalai University and the Biotechnology Department of Madurai Kamaraj University — coordinated by the Madras Science Foundation. Madurai Kamaraj University reports that in the field of technological information system it has installed a micro earth station which will serve as a communication link between national and international information agencies.

NCL reports that it has developed a new technology to convert natural gas to kerosene and diesel on a laboratory basis. A Rs. 6 crore pilot plant is being set up at Bharat Petroleum, Trombay to move it to commercial production.

Health

The Planning Commission has called for an urgent meeting of the National Development Council to discuss the population problem and measures to curb population explosion. It is shocking that the commission says that "at the moment there is no formally adopted and approved population policy", at a time when we are adding 17 million babies every year, so that by March 31, 1989, the population stood at 807 million. The Planning Commission has also suggested that the outlay on family planning should be increased from Rs. 3520 crores provided in the VII Plan to Rs. 18000 crores in the VIII Plan. This is a big increase and the NDC must face the fact that this is the sum needed and the sources from which it can be mobilised. In addition to the present campaign on the small family norm, all media and all agencies and individuals should be involved in this urgent matter. The annual report of the Union health ministry for 1988-89 says that the average life span of an Indian which was 32 years in 1947 now stands at 58 years, which it says is "indicative of the success of the National Health Programmes and Health care services". Data on the national programme to control blindness, under which 47 lakh cataract operations were performed in the VII Plan, the leprosy control programme through multi drug treatment and TB control and family planning

are highlighted. The World Bank aided Rs.60 crores urban family welfare project, India population V, for Madras has got under way giving a new thrust to the programme in the city and its suburbs. The programme, designed to take family welfare services to the door step of urban slums in and around Madras was cleared last year by the World Bank and became functional from January 1989. The Corporation of Madras, 4 suburban municipalities — Alandur, Pallavaram, Tambaram and Tiruvottiyur and 4 township including Ambattur, and Avadi are part of the project; under the leadership of urban family welfare centres and the family welfare, child and maternity centres of the corpora-

tions and municipalities are integrated and redesignated as health posts. Both the World Bank and the Tamil Nadu government convinced that the Tamil Nadu Integrated Nutrition Project (TINP) has produced significant results during the past 8 years. Evaluation of the project shows that there has been a 50 per cent reduction in the infant mortality rate among the children in the area covered, and the percentage of children in the third and fourth degree of malnutrition has fallen from 20 - 30 in 1981 when the project was launched to 6 - 7 at the time of completion. Now Phase II of the project is being finalised and will be launched in June 1990.

* * * * *

V. Employment and Labour Relations

On the employment front, the main focus in May has been on the execution of the Jawahar Rozgar Yojana (JRY) under which the 1989-90 allocation of Rs. 2100 crores have been shared out as follows: UP Rs. 41714.40 lakhs, Bihar Rs. 31231.20 lakhs, MP Rs. 20668.20 lakhs, W.Bengal 17434.20 lakhs, Maharashtra 16695.00 lakhs, Andhra 15586.20 lakhs, Tamil Nadu 13994.40 lakhs, Orissa 10210.20 lakhs, Rajasthan 9954.00 lakhs, Karnataka 9756.60 lakhs, Gujarat 6417.60 lakhs, Kerala 5300.40 lakhs, Assam 4258.80 lakhs, Haryana 1537.20 lakhs, Punjab 1297.80 lakhs, J & K 768.60 lakhs, Himachal Pradesh 550.20 lakhs, Tripura 436.80 lakhs, Nagaland 407.40 lakhs, Meghalaya 369.60 lakhs, Goa 273.00 lakhs, Arunachal 247.80 lakhs, Sikkim 159.60 lakhs, Mizoram 151.20 lakhs, Manipur 126.00 lakhs,

Delhi 189.00 lakhs, Pondicherry 121.80 lakhs, A & N islands 58.80 lakhs, DNH 37.80 lakhs, Daman & Diu 29.40 lakhs, Chandigarh 8.40 lakhs, Lakshadweep 8.40 lakhs. The Finance Minister has warned that as the Prime Minister has now stated that the Union governments share will be Rs. 2100 crores above which the states must provide 25 per cent, Rs. 400 crores more are needed by the Union for which a supplementary demand may be presented to Parliament. One of the ministers of the Union government states it will appoint regional officers in the states to monitor JRY. They will be independent of State governments and bound by Union conditions of services. This would be tragic for then Delhi will be attempting the impossible and will be bypassing the states. There is still some confusion

in the totals. On the old basis, it is computed that the state has been allocated Rs. 133 crores, with the district wise break up as follows: Chengai-Anna Rs. 1,172.73 lakhs), North Arcot Rs. 1432.45 lakhs), South Arcot Rs. 1676.52 lakhs), Dharmapuri Rs. 610.29 lakhs), Salem (Rs. 1043.21 lakhs), Periyar (Rs. 594.74 lakhs), Coimbatore (Rs. 610.03 lakhs), Nilgiris (Rs. 119.14 lakhs), Madurai (Rs. 570.90 lakhs), Tiruchi (Rs. 1136.37 lakhs), Tanjore (Rs. 1406.10 lakhs), Pudukottai (Rs. 339.79 lakhs, Ramnad (Rs. 315.25 lakhs), Tirunelveli (Rs. 436.56 lakhs), Kanyakumari (Rs. 234.98 lakhs), Dindigul-Quaide Milleth (Rs. 570.90 lakhs), Pasumpon Thevar Tirumagan (Rs. 315.25 lakhs), Kamarajar (Rs. 315.25 lakhs), Chidambaram (Rs. 436.55 lakhs). The State government points out that while under NREP & RLEGP the state had a total of Rs. 98.94 crores out of Rs. 1258.4 crores, under JRY it received Rs. 106.62 crores out of a total of Rs. 1711 crores that is, its share has fallen from 7.86 per cent under NREP & RLEGP to 6.23 under JRY. This again points to the confusion on the allocations surrounding JRY. By mid May, the Union government deputed 50 per cent of the JRY funds to district rural development agencies and zilla parishads. Two employment schemes of IOB — one for educated unemployed of whom 5 are to be assisted by each

branch and the other for training for imparting technical skills as organised by branch managers — which had run for 1 year successfully are being extended. Trade unions are increasingly taking over unviable sick or closed companies — the latest being the Philips workers union which has offered to take 20 per cent equity in Peico Electronics, Pune, Bombay, Kalwe and Calcutta. The same trend is in regard to Hoist-a-Mach closed for a year. The April 1989 issue of Indian Labour Journal sets forth the conclusion of the survey of the 476 projects on conditions of work of contract labour employed in construction work in irrigation and power project. Of the sample 53 projects, 40 were covered in which 34,777 contract labourers were employed in multi purpose projects (the average daily 5793) and 18,980 in irrigation projects (the average daily being 2979). The majority were employed on a time rate basis. Five contractors were paying DA. Most contractors prescribed 8 hours work a day. Welfare facilities particularly drinking water and first aid were widely provided. Some (a minority) also provided provident fund. About 16 per cent of the workers in multi purpose and power projects were unionised and only 1 per cent in irrigation. In most cases there were grievances machinery.

* * * * *

VI. Other Items

State Planning Commission

The State Planning Commission was formally inaugurated in mid May by

its President, the Chief Minister who drew attention to a) the importance of planning for both the short term and long term, b) formulating by

October 1988 the VIII Plan, c) monitoring the annual Plan, and d) advising the government on its ongoing projects. He also announced that the tasks of data collection and evaluation of projects are now transferred to the Commission. The Commission now comprises: Mr. Karunanidhi chief minister as chairman, M. S. Swaminathan (Agriculture), Ramani Sivaraman (Health), V C. Kulandaiswamy (Water and Science & Technology), M. Sivagnanam (Industry), G. Chidambaram (Poverty, Unemployment and Rural Development), M. S. Adiseshiah (Education, Sports & Arts & Finance) and T. Tirumalai (Irrigation).

CSD

There was also on May 13 a meeting of the Committee of Direction of the Centre of Development Studies, Trivandrum, which accepted with regret the resignation of Dr. T. N. Krishnan as fellow and elected him as Honorary Fellow. The Governing Body met in extraordinary session and accepting with regret the resignation of Mr. Krishnan as Director, appointed Prof. P.S. George as Director for a period of 3 years with the hope that the post would rotate.

IIC

In May, there was at the India International Centre a panel presentation and discussion on Foreign Trade and Balance of Payments perspectives in the VIII Plan where the deficit situation was accepted as an inescapable fact. There was also on the following day a seminar on the prospects for accelerated growth and its consequences for the political economy. The point on which there was agree-

ment was that there was higher growth in the VI & VII Plan. The question of political economy was, growth for what and growth for whom — on which there are widely held divergent views.

TNSC S & T

A working group of the Tamil Nadu State Council for Science & Technology met at the end of May and drew up the programme for holding a conference on ocean development and conservation in relation to the state's long coast line. All the land and water uses of the ocean are to be investigated. Some 30 specialists have been invited to write papers for the conference which will be held in early August.

SRC & TNBCE

The meeting of the Governing Body of the State Resource Centre was held in May and reviewed preparations for the Mass Functional Literacy Programme. It also reviewed the activities of the centre and its future programme. The executive Committee of the Tamil Nadu Board of Continuing Education discussed in depth the activity of the Board and its members for the International Literacy Year. It was decided that every member — voluntary agency, university and college — numbering over 200 should make one village or urban slum totally literate. Also the annual conference for 1989 was discussed and its theme to prepare for the World Literacy year was agreed upon.

the Development Seminar

As noted in the last issue, a second paper for the April/May irrigation workshop Rehabilitation of Tank Irrigation System in Tamil Nadu

by S. S. Sivakumar appears as the first article.

Second Article

A note on Land Reforms in Tamil Nadu appears as the second article.

MIDS News

Dr. M. S. S. Pandian and Dr. A. Vaidyanathan attended a Conference on "Terms of Political Discourse in India" sponsored by University of York, York held at Administrative Training Institute, Mysore from 30th June to 2nd July.

* * * * *

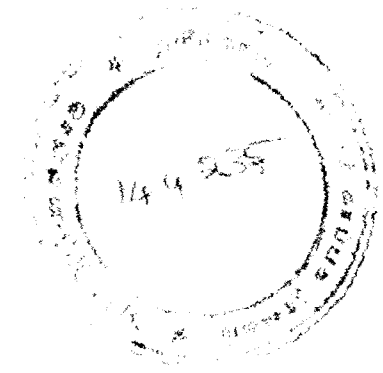
Mr. J. de wit of Free University, Amsterdam, The Netherlands gave an informal seminar on "Slums Dwellers and the Government: An Anthropological Study of Slums and Slum Policies in Madras" at 3.30 p.m. on 13th July at the seminar room.

* * * * *

Sri V. Rajagopalan, an experienced person, (on voluntary retirement as Senior Finance and Accounts Officer, after serving about 36 years in CSIR and its National Labs/Institutes) has joined our Institute on 11-5-89 (AN) as Administrative Officer.

He has to his credit publications of many articles and poems, while noted among them is the book entitled "GODA'S GARLAND OF SONGS — — THIRUPPAVAI" an English rendering with notes.

June Development Seminar



Rehabilitation of Tank Irrigation System in Tamilnadu : Some Observations at the Micro-level

by

S. S. Sivakumar
Dept. of Econometrics, University of Madras

In recent times, rehabilitation of Tank Irrigation in Tamilnadu has come to occupy the central attention of irrigation policy makers in Tamilnadu. Assistance from the European Economic Community and the World Bank are expected to be utilised for large-scale rehabilitation activity pertaining to the irrigation tanks in the state, which number over 39000.

This paper is a part of on-going work by a team of researchers at the University of Madras, and the Navasakthi Foundation (a voluntary organisation) pertaining to irrigation and agriculture in Tamilnadu. The paper focusses attention on some important micro level considerations involved in the rehabilitation programme. It draws heavily on the work of Chitra Sivakumar (1988), V. Venugopal (1988) and Chitra Siva-

kumar and S. S. Sivakumar (forthcoming).

The Problem

The present preoccupation of the Government of Tamilnadu with Tank rehabilitation must be viewed in the light of the changes in priorities over the last thirty years. Broadly, the period 1950-64 could be viewed as a phase of mixed emphasis on surface and ground water (Table I), while the period 1965-85 constitutes the phase of intensive focus on ground water utilisation.¹ The adverse impact of the latter phase was profound in terms of farm-economics, as well as ecology², (Table II). Simultaneously, the future of river water availability holds out little promise;

notwithstanding the repeated assurances from the Governments of Tamilnadu and Karnataka the Kaveri water-sharing problem has become subsumed as a part of a prolonged inter-state debate with constitutional ramifications. The move to rehabilitate Tank irrigation has, therefore, come none too soon.

Tank irrigation systems have a certain uniqueness of their own, in comparison with other surface-water irrigation systems such as canals, spring channels etc.

In the first place, tank irrigation is based on storage of surplus waters from seasonal rains. Hence there is a pronounced agro-climatic and topographic specificity in this system.

In the second place, as in many other parts of the world, society evolved around irrigation systems of Tamilnadu. Social order, economic relations and the cultural universe grew around the imperatives of land and water control and management².

Present day rural Tamil society bears strong elements of these historical and agro-climatic continuities. Since these continuities are highly locality specific and heterogeneous, any activity relating to tank irrigation systems will necessarily involve a detailed appreciation of micro-level factors. In what follows, we attempt to focus attention on some of these micro-level considerations.

Pre-British Agrarian Social Order in Tank Irrigated Areas

One of the strongly present features of agrarian society in Tank irrigated areas of Tamilnadu is the presence of historical continuities⁴. Our information

mainly relates to Chengalpattu district and parts of North Arcot district⁵. In this region, kinship terms and relationships, systems of property sharing and land control, employer-employee relations and the use of modern political idioms have strongly continuing elements of the eighteenth century society in them⁶. Even more important are the interlinkages between water management and land management, which are a continuation of older forms of linkages between land control and water control.

In the eighteenth century, land controllers were known as *Kaniyatchikkarar* (literally, rulers of the village domain) or *mirasidar* (a Persian term symbolising the hereditary *Kaniyatchi* privilege).

The *Kaniyatchikkarar* had elaborately defined land control privileges which included not merely arable land but all other land in the village. Their control over the village lands was exercised in terms of their inherited share (*Pangu*) of the entire village, including Tanks, Roads, burial grounds, cremation grounds and temple orchards. *Pangu* also denoted the share of a *Kaniyatchikkarar* in the collective obligations towards the ruler, towards the dependent population, towards temple and charity and towards the village (*Oor Podhu*). Thus water control and land control were in the same hands.

The more ancient form of *Kaniyatchi* was known as *Pasungarei* in which the *Pangu* or share was never irrevocably defined. It consisted of a system of periodic rotation of arable lands among the *pangaligal* or co-sharing *Kaniyatchikkarar*. By the eighteenth century, another form of *Kaniyatchi* called *arudhikkarai* had come into vogue. In this, the arable lands were irrevocably divided in conformity with the *pangu*

of the *Kaniyatchikkarar*, but control over non-arable land including all forms of (*Porambokku*) was collectively held. The major implication of this, from the point of view of the present discussion, is that the former entailed a complete correspondence between land control and water control, while the latter involved a partial severance of land control from water control; in the latter form, land control vested individually, while water control vested collectively.

As a part of the collective effort at Irrigation management and maintenance, it was customary to levy a part of the gross village output known as *Yeri Merai* (tank dues). The actual magnitude of this levy varied from village to village, but available evidence suggests a range of 0.75% to 1.55% of the gross produce. We must also point out that land control also implied partial control over the labour force, and hence the quantum of *Yeri merai* excluded labour cost (which was met by the *Kaniyatchikkarar* as per *Pangu*). In many places collective Tank maintenance was known as *Kudi maramattu*. *Yeri merai* was levy meant for routine maintenance and management to the Tank and its distributory channels. It was not intended for major repair or rehabilitation of Tanks. The financing of rehabilitation works was evidently either beyond the means of an average *Kaniyatchikkarar* or economically unattractive as a proposition to them. At the same time there was no clear-cut legal or moral sanction against individuals undertaking rehabilitation works. Although, evidence for this is lacking from Chengalpattu district, there is some evidence from Pudukkottai district. The Pudukkottai inscriptions which pertain to Pandya and Chola periods, clearly

suggest the existence, possibility of individuals undertaking repair and rehabilitation work. In such cases, the *Urar* (or people of the *Ur* or settlement) would arrange a suitable compensation to the benefactor either in terms of land control rights or water rights⁷. A matter of importance to the present discussion was that — "The tank and tank water were public utilities of which the *Urar* of the township were guardians. Sluices at different levels had a stipulated duration of drawal availed of in a cycle. The individual fields commanded by each sluice had similarly a duration earmarked for each field, which was *enjoyed by custom and transferred with the land*. Fresh rights depending upon availability and command could be created by the *Urar*. *Water rights were sold for a consideration either by itself, or along with the fields to be irrigated...*" (emphasis added)⁸.

Sometimes, the individual who had the financial capability to repair or rehabilitate a tank was also one who had the political capability to claim the locality as his political dominion. Whether he was a petty chieftain or the agent of a regional ruler depended upon various factors such as regional power equations among chieftains, caste groups and the existence (or otherwise) of a charismatic leader with qualities of statesmanship. Be that as it may, the point being conveyed here is that at least in Chengalpattu district (which enjoyed a long period of relative autonomy from centralised political control after the eclipse of the Pallavas) tanks were very much a part of a locality specific socio-economic structure and a locality specific political regime. By the end of the eighteenth century, the caste leaders of *Kaniyat-*

chikkarar of specific *nadus* (usually 12-18 villages), known as *nattar* were much more influential than the (East India) Company Circar. They were invited by the company officials to adjudicate over many an irrigation dispute among villages which shared water source or ayacut. During the 1790s, the *Kaniyatchikkarar* even successfully questioned the right of the Company Circar to tax the fish in the Tanks.

The institutions of Caste and Kinship were closely interwoven with land control (and hence water control). The most important kinfolk were male agnatic kinsmen known as *Pangali* (co-shares of *Kaniyatchi*). Even today *Pangali* is the most important Kinsmen among Vellalas, Vanniyar and other peasant castes of the region. Caste hegemony over land and water control was rigidly maintained by the strongly prevalent tradition of discouraging "outsiders" from purchasing a *Pangu* or share of *Kaniyatchi*. It took sixty years of struggle in the company's 19th century courts and an 1860 Decree banning any further reference of the matter to Courts of Law, before "outsiders" or "strangers" could purchase land in these villages.

The labour force for water management was locally paid and looked after. The water-regulator who looked after the sluices and proper implementation of the rotation rules of water use, was known as *Nirgurti* or *Kambankatti*. Sometimes the village peon-cum-funeral attendant called *vettiyan* also attended to this task. These people had (partially or totally) revenue free land assigned to them for their upkeep, known as *manyam* (in older Tamil usage) or *Inam* (its Persian equivalent under the muslim rule).

Aside from this, the *nirgurti* the *Kambankatti* and the *vettiyan* received a customary share of paddy in sheaves at the time of harvest. These payments were known as *swatantiram* (privileges) and constituted a part of the *swatantira dittam* (scheme of privileges of various inhabitants). The *swatantira dittam* was the first to be paid out of the gross produce, even before *melwaram* (the ruler's share) was deducted.

Water rights and water sharing accounts in *Kaniyatchi* villages were maintained in great detail and were known as...In fact, *Kaniyatchi* villages maintained a set of twelve accounts pertaining to all matters from *Kaniyatchi* shares (*Pangu malai*) through a Rist of trees and cash-flow account to water-sharing accounts.

It is evident that the caste-kinship nexus, patron-client links, judiciary processes, land and water control and paddy technology were intricately bound with tank irrigation systems in the pre-British period.

Advent of the Raj

With the annexation of the Southern part of India by 1880, the British introduced institutions and practices that ran counter to the locality specific Tamil economic and social practices. The Revenue system was the first one to be centralised, for evident reasons. However, it was not till the 1860s that this revenue system could begin to function without resistance from the *Kaniyatchikkarar*. This was achieved by simply ceasing to give legal recognition to *Kaniyatchi* or *mirasi*. Temples were brought into the fold of centralised bureaucratic control¹⁰. English style

common law increasingly replaced judiciary practices in all civil litigation.

A part of this process of colonial centralisation was the emergence of the Public Works Department. Originally the engineering side of the Company's activities were under the aegis of the Military Engineering Department. With the growth of the Company's control and its administrative and economic transactions the Public Works Department was created. All major Tanks were brought under the control of this department. Thus by 1860, in a single act water control was taken away from the locality, as was land control.

By 1900, with the abolition of all forms of *manyam* and *inam* the village water-man lost all legitimacy. Unfortunately the colonial administration did not replace them with any other employee of their own. It was left to the villages to manage as best as they could. In fact, the attempt by the colonial government was to separate water control from water management. It tried to pressurise the villages to continue to manage tank water distribution and allocation without allowing them control over the structures that determined the quantity of water that a tank could hold. This state of affairs continued upto the independence of India. All tank irrigated areas continued to manage as best as they could without really having the right to alter, repair or modify structures to suit changing water requirements. This perverse state of affairs was further complemented by the formal demise of all *Kaniyatchi* institutions including the elaborate system of accounting water-use and water-rights.

After independence tanks with an area of 100 Ha or more were assigned

to the PWD and the rest to the Panchayat Unions. However, neither of these organisations have had either the man-power or resources to periodically repair, desilt and maintain most of the tanks. By the 1980s, over 39000 tanks are officially recorded in the Season and Crop Reports. However, a large number of them have become clogged, oversilted, their supply channels choked and even the sluices in bad repair. Tank beds consist of fertile soil and under growing pressure on land encroachment became inevitable. The encroachers continue to grow in numbers. In fact, it is our belief that at least 10%—15% of the Tanks under 20 HA in size have been fully encroached by the rich and poor of the village, alike. The near deliberate neglect of tank irrigation after 1965, the massive encouragement given to groundwater irrigation and the complete neglect of the crucial relationship between the storage of tank water and command-area aquifers led to a critical situation by the 1980s. The team from Navasakthi Foundation visited one village in North Arcot which had completed its passage from the status of a tank irrigated village in the 1950s, through that of well-irrigated village in the 1970s to that of a rainfed village in 1986-87.

Some issues before rehabilitating agencies

Evidently the first micro-level consideration from the point of view of the Government is the question of maintenance and operation of rehabilitated tanks. If history has proved anything clearly, it is futility and near-impossibility of state operated tank irrigation system. At the maintenance level too, the irrigation administration has found it unwieldy

to take on all levels of maintenance. The State exchequer too, will not be able to provide for a vast army of staff that may have to recruited if operation and maintenance of the rehabilitated tanks were to be undertaken by the irrigation administration or the revenue administration. At the same time, history also teaches us that divorce of water control from water management at the local levels has led to near complete mismanagement of the system. What, then, should be the policy regarding local participation in rehabilitation exercise⁹.

In the first phase of the EEC programme, this question was given the lowest priority; naturally so since the PWD as an organisation is neither designed nor equipped nor equipped for community organisation purposes. Nor are the other wings of the Government bureaucracy such as the Revenue Department. As a result, the first phase of the EEC programme emphasised purely technical factors. Studies conducted by the Anna University and others have shown that there is a definite clash of priorities as regards design, execution and maintenance aspects between the PWD and the farmers of the concerned localities. In some cases expensive on-farm-development works were deliberately broken because they interfered with local water rights and social interest hierarchy. "Farmers' Participation" in tank irrigation rehabilitation has now become accepted in principle but what exactly does "farmers' Participation" mean? From what we have seen hitherto, it must be evident that there are important socio-economic structural considerations subsumed under this euphemism. Detailed studies of such considerations have only now begun and detailed results are yet to be obtained. However, let us consider some of these factors.

First, the people of the locality, the *ayacutdars* (or land holders) clearly prefer desilting and clearing of supply channels as the first priority¹². This runs counter to the Government package which also includes on-farm-development. Further as in the case of some of the rehabilitated tanks "O and" activity of these tanks involves an even higher level of State interference than before: all parts of the system covering 10 HA or more of command area are to be under PWD management. Exactly how this technically preferred 10 HA demarcation of authority will affect the local society has not been thought of.

Secondly, the issue of rehabilitation has been taken together with "Optimum water management". The former merely involves increasing the storage capacity while the latter involves complete reorganisation of water-use practices as they exist. Whether there exists any machinery in the administration which can study, design and implement such colossal changes is another question.

Thirdly, ethical considerations enter the picture. Principles of "equity" have been raised in connection with on-farm-development. The question raised are: (a) should or should not, the *ayacutdars* in the tail-end area get "equal" water-rights as the others? (b) should or should not, hitherto unirrigated *ayacuts* get access to water from the rehabilitated system? (c) should or should not, locally influential or powerful *ayacutdars* have a say in this matter? (d) should or should not, the state over-ride all local consideration in these matters?

The answers to these questions are fundamental and far reaching. Once

again the question is whether the state has the personnel and resources to enforce decisions in these aspects. Even more importantly can the State afford to do so without running counter to the political guarantees to the citizens of democratic India?

Most experts suggest a compromise: tank irrigation systems must indeed be locally managed but they must be rigidly supervised. Where does one draw the line demarcating areas of control? This is again locality and tank specific question. They cannot use some a priori Hectare area as the criterion. In general, even those who are reasonably sympathetic to the question of locality-participation, evince mistrust in the ability of the *ayacutdars* to manage systems: farmer's can manage their system but they must be rigidly supervised by a supra local authority, to prevent disputes and exploitation. Thus, all discussions hinge on one major issue; how much freedom should the farmers of the locality have in this matter? we hazard the following suggestions in this regard:

1. Tank irrigation is essentially locally operatable and manageable system, however big or complex the system. We are not contending that the localities have a moral or political right in this regard; we are only stating the obvious: namely that it is not feasible or viable for the State to manage and operate these systems effectively by itself. History gives us further support in this regard. In fact, despite the separation of water-control and water-use rights during the last one hundred and fifty years, numerous PWD tanks are still operated by the people¹³.

2. At the same time, we do not believe for once that this would mean the restoration of the *Kaniyatchi* system. *Kaniyatchi* is a thing of the past, although its present day continuities are not. We cannot be obscurantists. Land control is no longer closely related to water as it was under *Kaniyatchi*. Nor, for that matter is water control as simple a matter today as it might have been two hundred years ago. The changes/in population size and composition, land/man ratio, well irrigation, agricultural technology, political framework and caste-kinship nexus have been profound. Therefore, our advocacy of locally managed and operated tank irrigation systems, does not come from a false sense of history.

Yet, the question, as we have already stated, has no two answers. Local operation and management of tank systems is the *only viable solution*. This means, we may have to evolve a way of doing it, a way which is acceptable to the State as well as water users. Perhaps history will teach us some lessons, but we have to learn most of the lessons ourselves.

3. Locally managed tank irrigation system will have to be arrived at through a "learning-process" approach. Granted that the process of learning is an iterative one and that there can never be a "perfect" blue-print for this process, we shall have to begin with a few experiments. These experiments will be the learning area, the place to find answers to several relevant questions which have not been answered hitherto. In fact, not merely farmer-managed or locality-managed irrigation system, but the entire process of growth and development is a learning-process.

4. For the Tamilnadu irrigation authorities and for all others concerned in this issue the pioneering experiments of Benjamin Bagadian in the Philippines will be of crucial importance. Bagadian's experiments in farmers' participation in irrigation management since 1976-77 had two objectives: (a) creating viable managerial skills at the local levels so that the National Irrigation Administration of the (NIA) Philippines would be able to avoid the enormous human-capital overheads associated with large-scale expansion of irrigation systems; and (b) enabling the creation of an apparatus through which the new projects would be financially sound i.e., the farmers alongwith NIA would be able to work out appropriate irrigation fees in order that operation and maintenance expenses of the newly created irrigation systems would be raised by the farmers themselves. A mere detailed discussion of the Bagadian experiment is being considered elsewhere,¹⁴ but for the present it would suffice to say that the experiment has proved to be a substantial success. In 1977 Bagadian was in the same position as many an irrigation administrator of Tamilnadu today: funds were available for capital expenses, but there was no precedent available from which a viable farmer-oriented model could be evolved. Bagadian solved the problem by assuming that in such matters blue-prints *would never be available*, and that it was all a learning-process¹⁵. True, the Bagadian experiment did not achieve uniform success; true also, that the socio-economic and historical pre-delictions of Bagadian's Philippines are quite different from those obtaining elsewhere. But then, Bagadian's work offers us a viable paradigm.

5. One of the main lessons of Bagadian's experiments is that it works

far better when the beneficiary population is socially, economically and historically more homogenous. In Tamilnadu, heterogeneity is a major characteristic of the village population. More specifically, skewness in land holding, the existence of a significant proportion of rural population in a landless status, the diversity of tenurial arrangements and the variety of locally obtaining caste equation pose specific problems in Tamilnadu. The introduction of locally managed tank irrigation systems will have all these sensitive issues to cope with. In the light of this, two important compulsions emerge: (a) Experiments, if any, must be initially begun with smaller tank systems (preferably with an ayacut of 40 Ha or less) which belong to localities possessing a certain amount of socio-economic homogeneity, (b) Irrigation rehabilitation must be combined with another development package for all those in the locality who are non-beneficiaries because they are non-*ayacutdars*. In this way, polarising effects of tank irrigation rehabilitation will be pre-empted.

There are also other issues to be considered. For instance, the existence (today) of over 1.5 million pumpset operated-wells, many of them in the command areas of tank irrigation systems, is a crucial factor. While there is an element of overlap between these wells and tanks (i.e., more storage in tanks usually means more water in the wells), there is also an element of contradiction. For, tank management is based on the collective principle while well-irrigation is based on individualism. In a large measure, therefore, tank rehabilitation will also have to take into consideration the past, present and future of well-irrigation. Likewise, tank irrigation tends to

standardise (and hence indirectly collectivise) land-management decisions, whereas well irrigation privatises these decisions. Well irrigation of massive proportions is an historical fact as on date. Hence an added suggestion for experiments in locally managed irrigation rehabilitation would be that these experiments begin in areas where well-irrigation has already become uneconomical for the farmers.

Conclusions

This paper has been an attempt towards building a case for locally managed tank irrigation systems in Tamilnadu.

History suggests that very few of our tanks were created by a single organisation like a giant state apparatus. They were locally created, locally maintained and locally operated.

The main lesson from history is the common-sense of it all; the importance and diversity of locality specific condi-

tions make local management an inescapable necessity.

The period of colonial rule was characterised by the rise of State institutions which centralised water control and management, a process that was necessary to achieve the purposes of colonialism. However, the ironic fact is that this process continued after 1947 and was combined with a massive encouragement to ground water irrigation, with harmful consequences.

The present juncture is a crucial one. The Government of Tamilnadu have at their disposal substantial funds from international agencies, for the purpose of irrigation rehabilitation. This is the time to set right the anomalies of the last century and a half. The suggestion is not that we re-create the land and water use practices or the social structure of two hundred years ago. The suggestion is that we subject ourselves to a few experimental studies that constitute the beginning of a learning process approach. Not merely to irrigation management, but also to development *per-se*.

NOTES

1. V. Venugopal (1988).
2. *ibid*; Navasakthi Foundation (forthcoming).
3. For general and specific studies of such factors see A. Vaidyanathan (1988); See also Coward (1980), Wade (1978) Wade and Chambers (1980), Ludden (1978) (1985), Jayaraman (1981), Leach (1954), and Mukundan (1988).
4. Chitra Sivakumar and S. S. Sivakumar (1979), (forthcoming).
5. *ibid*;

6. *ibid*; This and the ensuing discussion in this section derives almost entirely from Chitra Sivakumar and S. S. Sivakumar (forthcoming).
7. R. Tirumalai (1981).
8. *ibid*; p. 161.
9. Franklyn Pressler (1978).
10. Centre for Water Resources (1985), Mukundan (1988) and Elumalai (1982)
11. Members of Navasakthi Foundation visited thirty-Sir tanks. In all these areas the farmers prefer the State to see to only these aspects.
12. We are for instance aware of a system where people go 10 km to the head of a stream to divert rain water for their Tank even now, although their tanks come under the jurisdiction of PWD. What they have been doing is not strictly legal, but who cares, when all parties concerned including PWD are happy about it. Anyway, this is what these villagers did for centuries.
13. S. S. Sivakumar (1998).
14. The author's conversations with Bagadian, April 1988.

REFERENCES

1. Centre for Water Resources (1984), Anna University *A Report on Tank Rehabilitation at Padiallur, Madras.*
2. Coward, W.E. (ed) 1980 *Irrigation and Agricultural Development in Asia*, Cornell University Press, Ithaca, N.Y.
3. Elumalai (1982) *Modernisation of Tank Irrigation Systems : Farmer's Views*, paper presented at The Workshop on Modernisation of Tank Irrigation : Problems and Issues, Centre for Water Resources, Anna University.
4. Leach, E. R. (1959) 'Hydraulic Society in Ceylon' *Past and Present*, Vol. 15.
5. Ludden, D; (1978) 'Ecological Zones and Cultural Economy of Irrigation in Southern Tamilnadu', *South Asia*, New Series Vol. 1 No. 1.

6. Ludden D., (1985) *Peasant History in South India*, Princeton University Press, Princeton N.J.
7. Mukundan, T.M., (1989) 'The Ery Systems of South India', *PPST Bulletin*, Madras, Sept.
8. Navasakthi Foundation (Forth coming), *Neerum Verum : Tamilnattil 1986-87 Andin Varatchi Pattiriyai Arikkaai* (Tamil; Trans : Water and Roots - A Report on the drought in Tamilnadu During 1986-87) - under print.
9. Presler, F. (1978) *Religion under Bureaucracy : Policy and Administration for Hindu Temples*, Ph. D. dissertation. University of Chicago (mimeo).
10. Sivakumar Chitra and Sivakumar, S. S., (1979) 'Jati and Class at Asthapuram - Kanthapuram; Some comments towards a structure of interests' *Economic and political Weekly* (Annual No.) Feb.
11. Sivakumar Chitra and Sivakumar, S. S. (forthcoming) *Peasants Nawabs : Agrarian Radicalism in 18th Century Tamil Country*, Hindustan Publishing Corporation, Delhi.
12. Sivakumar Chitra (1988) 'Tank Irrigation and the Agrarian Social Order : Some Historical Notes on the Northern Tamil Country' paper presented at the National Conference on Minor Irrigation and Ecology, University of Hyderabad, Dec.
13. Sivakumar (1988) *Problems of the participatory Approach to Tank Irrigation Rehabilitation : Some Remarks Relevant to Northern Tamilnadu* paper presented at the National Conference on Minor Irrigation and Ecology, University of Hyderabad, Dec.
14. Tirumalai, R. (1981) *Studies in the History of Ancient Townships of Pudukkottai*, Institute of Epigraphy, State Department of Archeology, Government of Tamilnadu, Madras.
15. Vaidyanathan, A. (1988) 'Water Control Institutions and Agriculture : A comparative perspective' *Indian Economic Review*, Vol. XX. No. 1.
16. Venugopal, V. (1988) 'Private Well Irrigation and Tank Irrigation : A study of Impact since 1965', Paper presented in the *National Conference on Minor Irrigation and Ecology*, University of Hyderabad, Dec.

17. Wade, R. (1978), 'Water Supply as an Instrument of Agricultural Policy : A case study' *Economic and Political Weekly, March*.
18. Wade, H. and Chambers R. (1980) 'Managing the Main system : Canal Irrigation's Blind Spot', *Economic and Political Weekly, Oct*.

Land Reforms in Tamil Nadu*

The land reform envisaged in India during the last three decades have involved the abolition of intermediary tenures, regulation of rent, conferment of ownership rights on tenants, ceiling on holdings, distribution of surplus lands, and consolidation of holdings. As these measures are intended to introduce important changes in the agrarian structure a brief look at the latter should give a general idea of the state of land reforms in it.

1. Agrarian structure

Such a look in the context of Tamil Nadu reveals that despite all its land reform enactments of the last three decades, there has not been any substantial change in its agrarian structure. This is evident from the data presented

in Table 1 : At one end of the agrarian structure are a small number of households in the ownership size classes of more than five hectares, owning a very large proportion of the available land. They accounted for 1.87% of the rural households in 1961, 2.05% in 1971, and 1.20% in 1982, but owned as much as 22.73% of the land in 1961, 24.24% in 1971 and 16.99% in 1982. Though the data for 1982 show a decline in the proportion of their households and the area owned by them, and a rise in the area owned by the households in the ownership size class of 1.01 to 2.02 hectares, because of the likely limitations of the data it is doubtful if these changes have taken place. Even assuming that they have taken place, far from being real, they seem to reflect the manoeuvres of big land

* Paper presented by Dr. P. Radhakrishnan at the ICHR sponsored seminar on Agrarian Reforms and Social change in South India, held at the Dept. of History, Calicut University in August 1987.

TABLE I
Percentage distribution of rural households and area owned Tamil Nadu, 1961-1982.

Size class of holding (in hectares)	1961-62			1971-72			1981-82		
	House-holds	Area owned	Average size	House-holds	Area owned	Average size	House-holds	Area owned	Average size
0 Landless	24.20	—	—	17.01	—	—	19.13	—	—
1 0.00 — 0.20	30.75	1.33	0.03	35.31	1.22	0.02	39.32	2.12	0.03
2 0.21 — 0.40	6.79	2.92	0.31	8.21	3.23	0.29	8.53	4.37	0.29
3 0.41 — 0.50]				5.27	3.06	0.43	3.85	2.93	0.43
4 0.51 — 1.00]	16.68	15.74	0.68	12.60	12.72	0.74	11.02	14.15	0.72
5 1.01 — 2.02	11.07	21.67	1.42	11.39	21.84	1.41	10.89	27.24	1.41
6 2.03 — 3.03	5.47	18.53	2.45	4.76	15.95	2.46	3.61	15.53	2.42
7 3.04 — 4.04	1.76	8.51	3.50	1.99	9.26	3.43	1.33	8.00	3.38
8 4.05 — 5.05	1.41	8.57	4.42	1.41	8.48	4.45	1.12	8.66	4.34
9 5.06 — 6.07	0.46	3.46	5.46	0.60	4.51	5.54	0.38	3.65	5.42
10 6.08 — 8.09	0.62	5.89	6.86	0.72	6.73	6.94	0.44	5.28	6.70
11 8.10 — 10.12	0.41	5.03	8.79	0.27	3.25	8.74	0.22	3.35	8.72
12 10.12 — 12.14	0.10	1.48	10.32	0.15	2.24	10.69	0.07	1.33	11.00
13 12.15 — 20.24	0.21	4.42	15.45	0.22	4.46	15.08	0.06	1.41	13.63
14 20.25 — and above	0.07	2.45	24.00	0.09	3.05	23.91	0.03	1.97	32.54
All sizes	100.00	100.00	0.95	100.00	100.00	0.74	100.00	100.00	0.56

Source : Tabulated from the NSS, 17th, 26th and 37th rounds.

owners for circumventing the ceiling laws. Such an inference seems all the more valid in the light of the fact that Tamil Nadu has not had any land reform legislation for conferring ownership rights on tenants. What is more, the redistribution of ownership rights through ceiling laws and grant of homesteads is not intended to benefit the size class of 1.01 to 2.02 hectares.

At the other end of the agrarian structure are the vast bulk of landless and land-poor households, including most of the Scheduled Castes who account for about one-fourth of the rural households. These landless and land-poor households accounted for as much as 54.95% in 1961, 52.32% in 1971, and 58.45% in 1982, but owned only 1.33% of the land in 1961, 1.22% in 1971, and 2.12% in 1982. While about half of these households have at least some nominal holdings, the other half do not have even that. These landless households accounted for 24.2% in 1961, 17.01% in 1971, and 19.13% in 1982. Assuming that this fluctuation in the proportion of their households between 1971 and 1982 has taken place, it seem to suggest that even if a significant proportion of them have gained some land through redistribution, they are already in a process of losing it out because of their precarious economic conditions, and the absence of supportive measures.

2. Tenancy

In a highly inequitous agrarian structure such as the one discussed above, tenancy is bound to be extensive, and its oppressive and exploitative virulence is likely to be rampant. The available data on the extent of tenancy in terms of both percentage of households

leasing in land and percentage of area leased in as presented in Table 2 are gross underestimates, mainly because of the prevalence of oral and concealed tenancies. Despite this limitation, these data serve to point to the great dependence of the landless and the land-poor households on tenancy as their principal means of livelihood. It is in the light of this dependence of the bottom groups in agrarian structure and their oppression and exploitation by the landed groups that the existing land reforms, mostly in the nature of tenancy regulations and partly land redistribution through ceiling laws and grant of homesteads, have to be understood.

3. Tenancy Regulations

Important among the Acts in this category are :

- The Thanjavur Tenants and *Pannaiyals* Protection Act, 1952;
- the Tamil Nadu Cultivating Tenants Protection Act, 1955;
- the Tamil Nadu Cultivating Tenants (Payment of Fair Rent) Act, 1956;
- the Tamil Nadu Occupants of *Kudiyiruppu* (Protection from Eviction) Act, 1961;
- the Tamil Nadu Public Trusts (Regulation of Administration of Agricultural Lands) Act, 1961; and
- the Tamil Nadu Agricultural Lands (Record of Tenancy Rights) Act, 1969.

Of these, the 1952 Act, mainly confined to Thanjavur district and to wet land holdings, was to prevent rackrenting and eviction. It stipulated the maximum

rent payable in an year by any cultivating tenant as not more than 60% of the gross produce, and provided for guaranteeing

occupancy right to the tenant for five years through a document executed between the landlord and the tenant.

TABLE 2

Percentage of rural households leasing in land to total rural households and percentage of area leased into total area owned.

Size class of holding (in hectares)	1971		1981-82	
	% of HH leasing in land	% of area leased in	% of HH leasing in land	% of area leased in
0 Landless	87.87	Neg.	82.34	—
1 0.00 — 0.20	19.89	Neg.	13.79	191.94
2 0.21 — 0.40	25.86	45.25	30.08	26.20
3 0.41 — 0.50	16.17	18.84	20.49	22.07
4 0.51 — 1.00	24.43	12.05	18.09	11.22
5 1.01 — 2.02	15.53	6.89	16.44	6.68
6 2.03 — 3.03	17.32	2.99	19.21	3.41
7 3.04 — 4.04	14.32	2.99	9.76	3.64
8 4.05 — 5.05	10.13	3.11	11.81	3.86
9 5.06 — 6.07	8.57	1.33	1.26	0.19
10 6.08 — 8.09	5.04	1.77	4.77	0.62
11 8.10 — 10.12	3.75	0.52	0.56	1.59
12 10.13 — 12.14	7.78	0.04	23.01	0.02
13 12.15 — 20.24	5.51	0.02	—	—
14 20.25 and above	—	—	—	—
All sizes	31.16	13.99	29.22	13.39

Source: Tabulated from the NSS 26th and 37th rounds.

The 1955 Act was also to check arbitrary evictions, and prevented eviction of cultivating tenant from his land except for non-payment of rent, acts harmful to the land or to the crop therein, failure to cultivate the land, using the land for non-agricultural or horticultural purposes, etc.

The 1956 Act was also to prevent rackrenting of cultivating tenants having wet land lease-holds not exceeding 6.7 acres, and for doing this, it provided for fixation of fair-rent. Upto 1980 the rent payable was between 33.33% and 40% of the gross produce. In 1980, by an amendment to this Act the fair rent was reduced to 25% or its value in money.

The 1961 *Kudiyiruppu* Act, enforced for a period of 12 years, provided for protection from eviction to any agriculturist or agricultural labourer occupying any *Kudiyiruppu* or homestead; and for resumption of any *Kudiyiruppu* which he might have occupied as on 31-3-1959 but from which he might have been evicted thereafter.

The 1961 Public Trusts Act provides for the regulation of tenancy of the lands of public trusts broadly on the lines of the other existing Acts. It stipulates that no public trust shall directly cultivate more than 20 standard acres of land and that the excess lands are to be leased out to tenants subject to a ceiling of five standard acres per family.

The 1969 Act was for the preparation and maintenance of a record of tenancy rights in respect of agricultural lands. Under its provisions, any person making an application in pursuance of any of the provisions of the other tenancy Acts has to annex to his appli-

cation a certified copy of the relevant entry in the approved record of tenancy rights. In other words, the record of tenancy rights is intended to be the effective basis for initiating action under the other tenancy Acts.

Land redistribution Acts

Of these, the 1961 ceiling Act provides for fixation of a ceiling on agricultural lands, for the acquisition of surplus lands and the distribution of the same to the landless and landpoor. The ceiling fixed was 30 standard acres for a family of five members, and five acres for every additional member subject to an overall ceiling of 60 standard acres. By an amendment in 1970 the ceiling for a family was reduced to 15 standard acres. The overall ceiling was reduced to 40 standard acres, and again to 30 standard acres in 1972.

The Act also provided for exemptions of lands held under a variety of categories, such as by minor sons as a result of partition, by females as *Stridhana* (upto 10 standard acres), by religious and charitable institutions of public nature, by 'colonisation societies', lands gifted as *bhoodan*, lands under and contiguous to plantations, *topes*, orchards, lands used exclusively for grazing, growing fuel trees, for sugarcane cultivation by sugar factories, for dairy farming, and livestock breeding, and lands in hill areas.

Between 1970 and 1980 the Act was amended not less than 24 times. Most of these amendments were for repealing some of the exemptions granted in the principal Act, such as for lands used for grazing, for cultivating of sugarcane by sugar factories, and lands in hill areas.

For the lands acquired after the imposition of the ceiling laws the land owners are to be paid compensation in annual instalments.

The 1971 *Kudiyiruppu* Act provides for conferment of ownership rights on agriculturists of agricultural labourers of the *Kudiyiruppus* which were in their occupation as on 19-6-1971, on payment of compensation to the government in easy annual instalments. The 1976 Act extended these rights to rural artisans who were in occupation of *Kudiyiruppus* as on 1-7-1975.

4. Implementation

Although data are not available on the implementation of all the Acts mentioned above, the available data on some of the Acts clearly show the poor performance of the implementation of the land reforms in the state.

For instance, the data available on the implementation of the 1955 tenancy Act for 12 years (upto 1967 excluding 1962 and 1963) show that it was a non-starter. From out of a total of 7.5 lakh tenant households as estimated in 1961, there were only 2324 applications for continuation or resumption of lease, and of these only 494 were allowed. There were several reasons for the non-implementation of this Act: The onus of proving tenancy was on the tenants themselves, that too despite the fact that most of them did not have any lease deed. The first of the several amendments to this Act in 1956 provided for compulsory registration of tenants, but there was no attempt in this

direction right upto 1970. Having had to prove the tenancy the onus of getting fixity for it was again on the tenants. However the fixity of tenancy right was subject to the payment of the rent arrears within a short time of one month after the commencement of the Act in the case of arrears accrued after 31-3-1954, and within a month after the rent was due in the case of arrears of rent accrued after the commencement of the Act. For resumption of the lease-holds tenants had to apply within a month after the commencement of the Act. This would not have been possible for many of them for want of information that they had to comply with such provisions of the Act especially because of the inadequate publicity of the Act.*

Data are not available on the implementation of the 1956 Act, and the 1961 *Kudiyiruppu* and Public Trusts Acts. But, their implementation might not have been any better; more so, when it was for the aggrieved tenants to initiate action. For instance, although the 1956 Act provided for constituting rent courts and rent tribunals, the fixation of fair rent was to be done at the instance of the aggrieved parties. In most cases the tenants would have been very reluctant to move the courts for fear of harassment by the landlords.

Data on the implementation of the record of tenancy Act from 1972 to 1986 as presented in Table 3 clearly show that since 1972-73 there has hardly been any implementation of this Act. This, and the fact that an Act such as this could not have been

* For the implementation of this Act, see, K. S. Sonachalam, Land Reforms in Tamil Nadu, New Delhi, Oxford and IBH Publishing, 1970.

TABLE 3

Tamil Nadu Record of Tenancy Rights Act, 1969

Year	Tenants registered		Extent of area	
	Number	%	Number	%
1972-73	388483	88.4	590164	92.7
1973-74	2253	0.5	2519	0.4
1974-75	8614	2.0	11215	1.8
1975-76	3163	0.7	1977	0.3
1976-77	4275	1.0	7595	1.2
1977-78	2358	0.5	2301	0.4
1978-79	] 25985	5.9	7969	1.3
1979-80				
1980-81	1100	0.3	2271	0.4
1981-82	1866	0.4	8529	1.3
1982-83	977	0.2	1462	0.2
1983-84	417	0.1	563	0.1
1984-85	91	Neg.	111	Neg.
1985-86	14	Neg.	33	Neg.
1986-87	16	Neg.	46	Neg.
Total	439612	100.0	636755	100.0

Source: Data supplied by, Director, Land Reforms Department, Government of Tamil Nadu.

implemented in just two years after its introduction should make it abundantly clear that the number of tenants registered and the area covered by such registration fall far short of the actuals.

Data on the 1971 occupants of *Kudiyiruppu* Act presented in Table 4 show the total number of beneficiaries

of this Act as 180090. It is, however, difficult to assess the nature of implementation of this Act because of the non-availability of data on the actual number of *Kudiyiruppus* in the state.

By the implementation of the ceiling Act the total area declared as surplus upto September 1986 was 165316 acres.

Of this the total area taken over as surplus was 155951 acres. The total area assigned was 122969 acres. The area declared as surplus is much less than the various

estimates of surplus made in the state — 2.55 million acres by the Land Revenue Reforms Committee which it later reduced to 1.25 million acres; and the official estimate of 2.82 lakh acres submitted

TABLE 4

Tamil Nadu Occupants of *Kudiyiruppu* (Conferment of Ownership) Act, 1971

Year	Number of Pattas/Beneficiaries	
	Number	%
1971-72	6764	3.8
1972-73	150501	83.6
1973-74	13502	7.5
1974-75	3112	1.7
1975-76	1345	0.7
1976-77	—	—
1977-78	172	0.1
1978-79	2487	1.4
1979-80	711	0.4
1980-81	—	—
1981-82	708	0.4
1982-82	645	0.4
1983-84	128	0.1
1984-85	8	Neg.
1985-86	7	Neg.
Total	180090	100.0

Source : Data supplied by the Director, Land Reforms Department, Government of Tamil Nadu.

to the state assembly in the early 1960s. This low surplus as also the poor performance of land reforms in general are for various reasons: the tardy implementation of the Act (see Table 5), the land transfers permitted under the Act, the numerous exemptions with which the Act has been riddled right from the beginning, the

large-scale benami transfers by the land owners, the all-encompassing definition of standard acre, the fear of the potential beneficiaries to occupy the lands of the powerful landlords even when such lands are assigned to them by the government, above all, lack of political and bureaucratic will from above and pressures from below.

TABLE 5
Area declared as surplus, taken over, and assigned under the Tamil Nadu land ceiling Act.

Year	Area declared as surplus		Area taken over		Area assigned		Beneficiaries				
	Acres	%	Acres	%	Acres	%	Number	Others	SCs	Area STs	Others
1963	130	0.08	16	0.01	—	—	—	—	—	—	—
1964	84	0.05	65	0.04	28	0.02	3	4	12	—	16
1965	1391	0.84	1109	0.71	104	0.09	11	19	40	—	64
1966	4249	2.57	2876	1.84	176	0.14	21	41	64	—	112
1967	4613	2.79	4655	2.98	270	0.22	32	83	62	—	208
1968	3011	1.82	2453	1.57	4872	3.96	1265	1885	1211	3	3658
1969	3624	2.19	3103	1.99	5046	4.10	715	2319	977	—	4069
1970	1926	1.16	2385	1.53	3578	2.91	463	1116	923	—	2655
1971	4763	2.88	2728	1.75	1846	1.50	271	802	454	—	1392
1972	11365	6.87	8214	5.27	5222	4.25	976	2301	1332	—	3890
1973	21815	13.20	22185	14.23	12749	10.37	2749	5450	3512	—	9237
1974	12839	7.77	13136	8.21	12926	10.51	3555	5681	4200	3	8723
1975	9733	5.89	11035	7.07	10347	8.41	2827	4288	3518	26	6803
1976	4718	2.85	3665	2.35	10543	8.57	2721	3354	4455	—	6118
1977	2772	1.68	2062	1.32	4318	3.51	978	1734	888	6	3424
1978	3410	2.06	1170	0.75	2044	1.66	314	886	297	—	1747
1979	32718	19.79	147	0.09	668	0.54	26	360	14	—	654
1980	4479	2.71	7542	4.84	8131	6.61	6942	5015	6403	8	1720
1981	6893	4.17	6410	4.11	6744	5.48	4184	3255	3188	5	3555
1982	16729	10.12	12447	7.98	9552	7.77	3743	3947	3696	—	5856
1983	]										
1984	]										
1985	]										
1986	]										
	14054	8.50	48548	31.13	23805	19.36	10873	11170	12056	67	11682
Total	65316	100.00	155951	100.00	122969	100.00	42669	53710	47272	114	75583

Source : Land Reforms Department, Government of Tamil Nadu; Ministry of Agriculture, Department of Rural Development, Government of India, Agenda papers for the Conference of Revenue Secretaries and Revenue Ministers, 1986.

ABSTRACTS*

Paper :

Organisation of Management of Irrigation System in Tamil Nadu

Author :

A. MOHANA KRISHNAN

Chief Engineer, General and Irrigation, (Retd.)
PWD Govt. of Tamil Nadu

Building up an efficient organisation for the management of the irrigation systems is important for Tamil Nadu in the context of the very poor water resources which is mostly brought to use already and the growing demand for water for very many uses including irrigation extension.

The present administrative set up of the irrigation system has evolved over a long period of history linked with the stage by stage development of the irrigation sources in the State. It is now necessary to induce the management concepts in the administration process and modify and restructure the organisations in charge of the systems to aim at achieving the ultimate objective of better production through optimisation of water use.

Human element in management is the key factor. Management which has been long the prerogative of the officialdom has got to move towards the consumer, the farmer. A Formal Joint Management has to be evolved for successful achievement of the objectives.

The Public Works Department needs to be reorganised to function as Department of Water Resources with the functional jurisdiction reoriented to align with the river basins. The system managers are to be made accountable for the water budgeting and the maximisation of the resources. Irrigation management should also be under unitary control right from the source to the field.

The farmers' organisation already functioning should be strengthened and where they are absent should be created and made self reliant. Research and Training facilities are to be created for developing the inservice personnel in the water Resources development and also train the farmers who are the key persons responsible for production.

Paper :

Modernisation of Existing Irrigation Systems and Other Methods to Improve the Water use in Surface Systems in Tamil Nadu

Author :

S. NAGESWARAN

Chief Engineer (Retd.) PWD, Govt. of Tamil Nadu.

With very little surface water potential available and having utilised about 85 to 90% of the available potential the stage has come when Tamilnadu has to depend solely on modernisation of the existing irrigation systems and introducing modern techniques of water management and adopt changes in cropping patterns so that the available water can be conserved for further extension of ayacut and also to get the maximum production per unit of water utilised.

The essential components of modernisation of the old irrigation systems are standardisation of the channels and realigning them wherever necessary, rehabilitating the old structures and modernising them wherever necessary, introducing new control structures to suit improved water management techniques to be adopted and lining of the channels at least at vulnerable places, if not for their entire lengths, to improve the efficiency of the conveyor systems and also to minimise transmission losses.

Cauvery accounts for nearly 50% of the surface water potential and Thanjavur delta covers 50% of the surface irrigation in Tamilnadu. Naturally, this gets priority in modernisation. The

system dating back to centuries was under inundation irrigation prior to the construction of Mettur dam. With the introduction of controlled irrigation, the entire system needs revamping and modernisation for efficient and economical use of water.

There are 36 major rivers, 27650 channels and branches and about 2230 minors and water courses covering a distance of 23313 km. Most of them serve the dual purpose of irrigation and drainage. The tail-end reaches suffer due to lack of irrigation supplies in the earlier parts of the irrigation season and get inundated and suffer due to drainage congestion during the monsoon periods. In Cauvery basin, we have some ground water potential, of course, to be recharged by Cauvery water only, whereas in Vennar basin, the ground water potential is practically nil. The problems are many and complicated and interlinked with one another and we have to suggest improvements to get the best out of the water that is made available.

Modernisation of any system will be of no use unless the system is maintained well for which the farmers' willing participation is a must. The farmer should be made to understand that what all has been done and preached are for his benefit only and the entire system is his own property.

Lastly, the modern methods of irrigation viz. sprinkler irrigation, drip irrigation etc. go a long way to economise the use of water. Their suitability and dependability depends upon the crops to be raised, soil conditions, climatic conditions, topography of the land etc.

* Abstracts of the Workshop papers on 'Critical issues in Tamil Nadu Irrigation' held at the Institute on May 11, 1989

Paper :

Appropriate Planning for the Modernisation of a Tank Irrigation System and its Management

Author :

R. SAKTHIVADIVEL

Director, Centre for Water Resources, Anna University, Madras.

and

R. VENKATASAMY

Project Engineer (Evaluation), Centre for Water Resources, Anna University, Madras

Tanks are mostly farmer-managed irrigation systems which have deteriorated over the years. Realising the important role of the tank irrigation systems in the uplift of rural population, now they are being modernised in Tamilnadu in a phased programme with the objective of optimising the acquisition and use of the scarce surface water resource.

From the observations made and the studies conducted in the field so far, the modernisation program seems likely to bring in more significant-benefits, if steps are taken to overcome certain weaknesses in the project planning process and to enforce an objective oriented implementation program. The modernisation is a process that not only responds to technological needs but also introduces new approaches of management in a given irrigation system. Modernisation should also reformulate the project concept from just a traditional design of hydraulic and irrigation structures into a new planning concept that relates infrastructures with operation, maintenance and management activities and farmers' participation. The major lacuna in the present planning process is the non-involvement of farmers — the users of the system to the required

level and inadequate investigation of the system by the project staff which has led to a standardised pattern of planning.

The planning and the execution of plans should have unified direction with proper control in achieving the set objectives. But the budgetary only controlling technique now adopted at the top level sees into the lower level also causing more emphasis on the physical development of the system without much concern for the software items without which the developed system cannot be utilised effectively. Management is essential to get the maximum benefit out of the available water resource with the modernised infrastructure. Since the tank systems are necessarily to be managed only by the farmers, it is better to form formalised farmers organisation with a good structure of authority-responsibility relationship at the planning stage itself. Appropriate training is necessary for the project staff and the farmer's representatives to plan and to implement the modernisation program in its true sense.

Paper :

Role of Pricing and Non-Pricing Institutional Mechanisms in Irrigation

Author :

U. SHANKAR,

Dept of Econometrics, University of Madras

Characteristics of an irrigation system such as lumpiness of investment, jointness in supply and technical and pecuniary externalities, lack of homogeneity among users and nature-dependent demand and supply conditions justify social intervention in allocation of water. The nature and extent of the

intervention vary, depending on the mode of irrigation and the form of irrigation organization. Some disturbing features of organization and management of large irrigation systems, are : absence of link between investment and pricing decisions, mounting deficits, growing imbalance between demand and supply of water, divergence between social value and private cost of water and increasing reliance on rationing scheme for distributing water. The marginal valuation of water by farmer is much higher than the cost he bears. This paper argues a case for an administered price scheme, which will cover the required cost and permit differential tariff to meet equity goal, to achieve a social optimum in the use of water.

Paper :

Ground Water Development and its Consequences in Coimbatore District - Tamil Nadu

Author :

L. P. SWAMINATHAN

Associate Professor (Agrl. Economics) Water Technology Centre, Tamil Nadu Agricultural University, Coimbatore.

In recent years pervasive impact of commercialised agriculture promising incentive returns had motivated the farming community in many parts of Tamil Nadu, particularly in Coimbatore district to sink more number of wells

under frequent intervals and deepen the existing ones with the prospects of higher yield. This race for tapping the groundwater, accelerated by technological advances of pumping devices developed locally was not free from the negative hydrological and agrarian consequences. The present study aimed to study the time dimension of the problem in Coimbatore district through recorded data and class dimension of the problem through cross sectional data.

The average rainfall in the district was 684 which showed around 8 to 10 years of cyclical variation and dependability of the rainfall was also very low. Percentage share of area irrigated increased from 54 percent in 1950s to 63 percent in early eighties. But the average area commanded per well decreased to 0.97 ha in 1982 from 1.30 ha in 1961. The regression analysis between the rainfall and water table showed that fluctuation in water tables had become independent of rainfall indicating the possible over-extraction.

The cropping pattern among the sample farmers showed that higher water consuming crops like sugarcane and turmeric had higher share and their proportion increased with the size of the farm. The large farmers had deepened their wells faster compared to small and marginal farmers. A comprehensive legislation on the use of groundwater is recommended to prevent further mining of these scarce resources.

Workshop on Critical Issues in Tamil Nadu Irrigation Summary of Discussion

The workshop was organised in four sessions around the following themes viz.: a) modernisation of existing canal systems and augmentation of surface water; b) rehabilitation and modernisation of tank irrigation system; c) development of ground water including conjunctive use of surface with sub-surface sources; and d) organisation and management aspects of irrigation systems.

The discussions for the first session was led by Mr. A. Mohanakrishnan and the papers discussed were: "Modernisation of existing irrigation systems and other methods to improve the water use in surface systems in Tamilnadu" by Mr. S. Nageswaran and "The prospects of augmentation of the surface water resources of Tamilnadu" by Mr. B. Manickavasagam.

While leading the discussion Prof. Mohanakrishnan observed that during the first and second five year plan periods the emphasis was mainly on the creation of infrastructure for new projects. Only from the third five year plan period the idea of modernisation came up for discussion. The concept of

modernisation has since undergone rapid changes. Earlier, attention was concentrated on the physical improvements like lining of the channels, and on increasing the duty. But over the years the importance of proper maintenance and management of water has come to be better appreciated. Citing from the example of Periyar-Vaigai system he emphasised that modernisation of physical structure will help only if it goes along with proper water management. He highlighted the following issues while discussing Nageswaran's paper.

1) Lining canals has advantages and disadvantages; the advantage being that water supply could be extended and effectively utilised if the seepage is stopped by lining the canals; the disadvantage being that ground water recharge from canal seepage (comprising 20 to 40 per cent of water flowing in the canal) will be reduced.

2) The desirability of extending the State / PWD intervention for maintenance and water allocation up to the level of 10 hectares.

3) The need for incorporating in the modernisation programme infrastructural facilities such as roads, threshing floors etc. involving other agencies in an integrated manner.

The discussant felt that the whole modernisation programme of Cauveri Delta is being held up by the Centre unnecessarily. The Centre is not interested in getting the approval of the Karnataka Government, though the Tamilnadu Government has assured that no extension of ayacut in the delta region will be undertaken.

While discussing Manickavasagam's paper, the discussant highlighted the point that even after exploiting the opportunities for modernisation, the irrigation potential cannot be raised to more than 50% of the net irrigated area. Therefore one should think in terms of augmenting water supply from new sources. One need not think in terms of Ganga-Cauveri link alone. In this connection he pointed out that linking of peninsular rivers and diverting the west flowing rivers into Tamilnadu are of more immediate and practical interest.

The following points emerged when the papers were opened up for discussion.

As far as the lining of canals is concerned, it was mentioned that by drastically reducing canal seepage it will enable water to be taken till the tailend of ayacut thereby ensuring more equitable distribution of water in the existing ayacut and perhaps also enabling an extension of the ayacut. Another advantage of lining was that it checks water logging in the field especially in the areas where there is drainage problem. A view was also expressed that it was a waste of resource to

pump water up for cultivation after allowing the surface water to percolate down to underground through seepage and hence in this regard lining to canal would be more advantageous. And further that only big farmers were benefitting out of seepage as their lands are generally located on the head reach and thus lining of canal would definitely benefit the small farmers.

As against this, others pointed out that canal seepage is not the only or even the major source of groundwater recharge; seepage of rainwater and irrigation water applied on the fields also contribute to significant amounts. Therefore the adverse consequences of lining on groundwater recharge are exaggerated. The notion that big farmers benefitted most from seepage because they are located in the head reach was also questioned.

In the course of the discussion, the experience of Parambikulam Aliyar project was cited to emphasise that while conjunctive can make significant differences to cropping intensity, cropping pattern and yield, its development within the ayacut is highly uneven and is conditioned by local geological conditions. Also when conditions are favourable farmers tend to disrupt the lining and resort to other illegal devices to appropriate seepage.

Most participants felt that farmers should be given a large area of operation and the Government's role in management at the local level should be reduced. At present in Tamilnadu the Government intervenes upto the level of ten hectares and it was suggested that the level should be increased to 40 hectares as in the case of Maharashtra.

The programme of modernisation should also pay greater attention to the technique of irrigation and drainage. The present practice of field to field irrigation should be eliminated by providing direct channels to each plot so that the wastage of water in the current method could be avoided. These considerations are of course easier to incorporate in the planning of new irrigation systems and should be adopted.

The papers discussed in the second session were : a) "Appropriate planning for the modernisation of a tank irrigation system and its management" by R. Sakthivadivel and R. Venkatasamy ; b) "Modernisation of tanks" by P. S. Nagendraiah; and c) "Rehabilitation of tank irrigation system in Tamilnadu - some observations at the micro level" by S. S. Sivakumar.

The discussant (Dr. A. Vaidyanathan) highlighted the critical observations made in the papers regarding the approach to modernisation of tanks : In particular reference was made to the tendency to focus only in repair / reconstruction of regulatory structures and lining of distribution channels to the neglect of desilting of the inlet channels and the tank bed ; failure to take cognizance of specific local conditions and utilise the knowledge and experience available within the local communities ; the fact that the programmes are concerned and implemented exclusively by PWD without consulting, not to speak of involving, farmers; the inadequacy of data with even basic information on present status of catchment area, number of fillings and the ayacut of tanks being unavailable; and the total ignoring of the implications of the extensive development of groundwater in Tank ayacuts for the design of tank modernisation and its management.

The following points emerged in the subsequent discussion.

1) There is a need for a systematic survey of the tanks selected for modernisation to their present conditions in terms not only of physical structures, but the availability of water, siltation and encroachment of bed, development of groundwater, and the actual ayacut.

2) The tank modernisation ought to be more broadly conceived than at present. Specifically it should pay attention to improvement of inlet channels (by widening, deepening and removal of encroachments), the impact of extension of cultivation and settlement in the catchment, the extent of groundwater development and the present state of village institutions for managing the tanks. The aim should be to increase the quantum and reassurance of water supply.

3) A proper understanding of the traditional irrigation institutions is essential for a sensible engineering modifications in the irrigation system. This will also help solving the inter-tank disputes, to a great deal.

4) The EEC modernisation programme pays practically no attention to the institutional arrangements for maintenance and operation of the facilities created. The ayacutdars and their local institutions should be brought into the farmers from the planning stage so that the programmes are balanced to the specific needs and problems of each tank and the local irrigation organisation, where it exists, is made fully aware of the rationale for the programme and facilitate its continuing management. Such consultation and involvement will vastly improve the chances of success both in terms of

the effectiveness of the improvements and of the beneficiaries willingness to bear the costs.

5) The present approach is too technocratic and overly concerned with engineering aspects. Management needs greater attention. User organisations though uneven in strength do exist in many places. The programme should utilise the local organisations where they exist, and try to encourage them where they are weak.

For a proper modernisation scheme farmer's interest should be properly articulated before taking up the actual work — otherwise it will lead to clash between farmer's interest and the modernisation programme's objectives (such instances are quoted by a participant). The necessity to avoid exacerbating inter-tank conflicts as a result of changes in bund/waste over height was also mentioned.

The following papers were discussed in the third session : a) "Development of Ground water" by R. Sethurathnam; b) "Ground Water development and its consequences in Coimbatore District-Tamilnadu" by L. P. Swaminathan and c) "Conjunctive use of surface and groundwater in Tamilnadu" by S. Janakaraman.

Commenting on the paper by L. P. Swaminathan, the discussant (A. Vaidyanathan) pointed out that it provided a good overview of the data on the current status of ground water exploitation and its consequences in Coimbatore district. The paper documents the progressive lowering of the water table; it provides evidence of the ineffectiveness of regulation regarding spacing of wells to check the over exploitation of ground water, "it presented

data to show that access to ground water is skewed in favour of large farmers : small farmers have lower horse power motors, grow less water intensive crops and in effect draw less water from wells, while big farmers have higher horse power motors, grow water intensive crops like banana, paddy and sugarcane and in effect extract more subsurface water per acre.

The discussant pointed out that there is a difference in terms of impact on cropping pattern, productivity between sole well irrigation and wells supplementing surface sources. Also the extent of conjunctive use differs across different systems. In the case of Tamrabarani system by nature there is hardly any conjunctive use perhaps because surface water availability is assured and extends over two seasons. In the case of NKLHC region though ground water is available, its salinity makes it unfit for conjunctive use. In PAP conjunctive use is very widespread ; though water table has progressively fallen and wells are quite deep. The extraction is believed to be more than the recharge. The conjunctive use is also widespread in Palar Anicut system but marked by large variations from tank to tank. In some cases one observes pure tank water irrigation and hardly any wells in the ayacut. At the other extreme there are quite a few tanks where direct irrigation from tank is negligible and wells are the principal irrigation source in the ayacut. In fact in a couple of tanks the sluices have been completely closed and water supply to the tank is used mainly for percolation to the wells. In between these two extremes one finds varying degree of conjunctive use of wells.

The discussion mainly centred around the methodology of estimating ground

water potential. It was explained that estimates of potential are based on empirical formulae defining the relation of seepage to rainfall and allowing for seepage in canal irrigated tracts, agreed upon by technical experts. As for current rates of exploitation, the estimates are said to be based on field studies of water extraction per unit electricity consumption in selected wells, in different regions of the state. This together with data on electricity consumed for pumping is used to estimate total water extract. In the case of diesel pumps and manual lifts certain assumptions of extraction relative to electricity pumps were made. This method was feasible till the early 1980s. But, with the introduction of the flat rate tariff, based on HP, it is no longer possible to monitor trends in ground water use with this method.

There was some discussion on whether the progressive lowering of water table was conclusive evidence of "over exploitation". It was pointed out that the Coimbatore data suggested that the area irrigated by wells had increased over time — the decline in area irrigated per well being more than compensated by the increase in number of wells. This suggested that the overall rate of water extracted was increasing; that the costs of extraction are raising in consequence and affect different segments of farmers unevenly is another matter.

The consequence of unregulated exploitation of ground water was emphasised by several speakers: Apart from the danger of over exploitation, increasing well density and progressive deepening of wells meant higher costs (both private and social) of getting water. In this process the smaller farmer suffered more. It was also pointed out that increased pumping in one part of

a canal command can adversely affect surface flows downstream. The case of Palar basin was mentioned: Here the relaxation of restrictions on pumping from the river bed, had led to the drying up of several spring channels which were feeding several tanks to which farmers had traditional rights.

Participants generally recognised the ineffectiveness of existing mechanisms (like licensing, spacing etc.) to regulate the exploitation of ground water. Regulations were not implemented due to political pressures and interference. In this context some participants argued for a critical look at the "property right" on ground water. The present position under the law seems to be that the owner of a piece of land had unrestricted, ownership right to exploit resources under ground. This was an impediment to effective regulation. There was a consensus that the ownership rights of members over ground water must vest with the State; the owners of land being given only right of use subject to society's regulations.

Another means for exploiting ground water (especially as conjunctive source) at a lower cost and in a more equitably distributed manner is the development of community wells. This concept has been tried but the results have been mostly unsuccessful. Nevertheless the lessons of experience need to be studied critically to devise more effective arrangements for community regulation, as it has obvious economic and social merits.

Mr. Ramachander led the discussion for the fourth session on policy implications drawing on the points made in the previous sessions and the two papers specifically addressed to this question namely Prof. U. Sankar's "Role of Pricing and non-price institutional mechanisms

in irrigation" and Prof. Mohanakrishnan's "Organisations of management of irrigation in Tamilnadu".

Mr. Ramachander highlighted the various organisational lacunae which affected the effective management of irrigation. Specifically he referred to the following: Since the responsibility of the PWD stops well before the field level, on-farm development works, land consolidation and field channel construction and maintenance do not get the attention they deserve. While cooperative organisation by farmers to manage these tasks (especially in the case of local works) is desirable, the widespread politicisation of cooperatives is inimical to their effective functioning. He stressed the need for creating organisational arrangements in which various activities involved in proper use of irrigation can be integrated under a unified management (cutting across departmental and territorial boundaries) with clearly defined tasks and budgets. He questioned the idea that the costs of irrigation should be fully recovered from the farmers, unless the same principle is applied to all public services. Also the fact that farmers face adverse terms of trade and were subject to procurement below market prices, had to be taken into consideration. He was also skeptical of the effectiveness of pricing to ensure proper use of water and felt that better regulation of supply would be a more effective institution.

In the course of the discussion the following points emerged:

1. The general consensus was that the river basin or watershed is the proper unit for planning and management of water resources. It is possible to visualise a multi-tiered organisation from river basins as a whole down to

individual projects and sub-basins and small watersheds.

2. There was considerable discussion of the need for improving the organisation for managing irrigation systems. Several speakers emphasised the necessity to integrate activities for proper use of water without being fragmented, as at present, by departmental or territorial division of responsibility. A strong plea was made for developing a specialised, professional irrigation bureaucracy in place of the existing general purpose engineering bureaucracy.

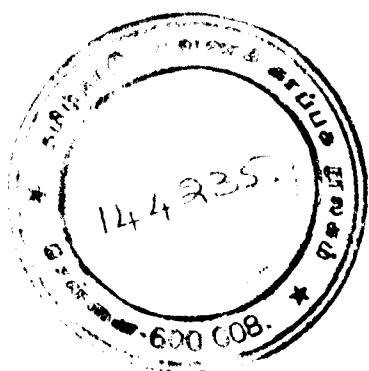
3. Most speakers agreed with the need for greater user involvement in planning and management. The means of achieving this was, however, not discussed in concrete terms or conclusively. One suggestion was that, at a minimum and as a starting point, each project administration should be constituted into an autonomous entity with its own budget and powers to levy and collect water rates in the ayacut. This could stimulate greater farmer interest in managing the system and mobilising resources for its maintenance and operation thereby laying the basis for progressive farmer involvement. One participant suggested that users would have greater interest in management if they were required to contribute a part of the capital cost, thereby giving them a direct stake in the project. Some people cautioned against a standard model and argued that organisations should be tailored to the varied local conditions. The importance of land reforms and the need to build on existing local irrigation institutions was emphasised.

4. It was felt that greater involvement of non-governmental experts in studying problems of water resource

development and management (including especially inter-state rivers) would be useful. It will help promote more informed public discussion, a more objective and unbiased analysis of alternative solutions and come up with workable compromises. Such groups could also act as pressure groups to create general awareness and persuade governments to work out agreements expeditiously.

5. Most participants disagreed with Mr. Ramachander's view on the pricing of water and were in favour of recovering at least part of the costs from beneficiaries. Some argued that generalised subsidies though underpricing of water for all classes of farmers was not socially desirable; and that from the view point of encouraging efficient use of scarce water, pricing even above cost will be socially justified. Subsidies for the poor, small farmers, for which a case exists, could be passed on through differential tariffs.

6. As for their efficacy of pricing in promoting efficient water use, the general feeling was that existing price differences between crops and seasons was inadequate; and that pricing alone would not be enough but needs to be combined with strict enforcement of deterrent penalties against violation. Some argued that a more effective way to regulating water use would be by exercising strict control over the timing and quantities of water deliveries. The consensus was that a combination of pricing (discriminating between users, seasons and crops) direct regulation and flexibility to transfer water rights would need to be explored. Even if one accepted full cost recovery, the questions of what is the cost properly chargeable to the farmer is relevant in so far costs are inflated due to errors of omission and commission by the government agencies and politicians.



Publications of the Institute consist of the following categories

1. **Publications brought out by Messers Sangam Publishers :** These consist of a series of monographs mainly relating to Rural Development of Tamilnadu 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 of Sources of Data on Tamil Nadu Economy* (1979) published by M.I.D.S. pp. 92, priced at Rs. 10/- per copy and Rs. 6/- for bonafide Research scholars.
- b) *Area Studies Bibliography Tamil Nadu* (1984) published by M.I.D.S. pp. 226 Rs. 30/- for paper cover & Rs. 40/- bound volume.

a) & b) obtainable from the Programme Coordinator of MIDS.

4. Special Publications*

- a) *Poverty — An Interdisciplinary Approach* edited by B. Sarveswara Rao & 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 & published for MIDS by M/s. Dialogue Publishers, New Delhi pp. 136 Rs. 70/-
- d) *Shaping National Events* by Dr. Malcolm S. Adiseshiah (1985) & published for MIDS by M/s. Dialogue Publishers, New Delhi pp. 335 Rs. 180/-
- e) *Tamil Nadu Economy : Performance and Issues* by MIDS (1988) & Published for MIDS by Oxford and IBH Publishing Co. Pvt. Ltd. Delhi, Rs. 60/-

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

Regd. No. M. 8831

MADRAS INSTITUTE
OF
DEVELOPMENT STUDIES
(M I D S)

The Institute was founded by. Dr. Malcolm S. Adiseshiah in 1971 and was reconstituted in 1977 as National Research Institute within the framework of the Indian Council of Social Science Research, New Delhi.

The aim of the Institute is to contribute to the economic and social development in Tamilnadu and India.

The activities of the Institute are :

- Research leading to Ph.D. and M. Phil Degree
- Studies and action-oriented research in micro-development problems
- Documentation and library service in development problems
- Exchange and dialogue at the State, National and International levels on development issues
- Publication of papers and results of the institute.

Editor : Dr. Malcolm S. Adiseshiah, Published by Dr. A. Vaidyanathan for Madras
Institute of Development Studies, 79, Second Main Road
Gandhinagar, Adyar, Madras 600 020, India

printed at reliance printers, 9, sardar patel road, madras-600 020.